November 8, 2004

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

SUBJECT: THREE MILE ISLAND STATION, UNIT 1 - NRC INTEGRATED INSPECTION REPORT 05000289/2004004

Dear Mr. Crane:

On September 30, 2004, the Nuclear Regulatory Commission (NRC) completed an inspection at the Three Mile Island, Unit 1 (TMI) facility. The enclosed report documents the inspection findings that were discussed October 7, 2004 with Mr. Bruce Williams 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.

The report documents two NRC identified findings of very low safety significance (Green). The findings were determined to involve violations of NRC requirements. However, because of the very low safety significance and because they were entered into your corrective action program, the NRC is treating them as non-cited violations (NCVs) consistent with Section VI.A of the NRC Enforcement Policy. If you contest the NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis of your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspectors at Three Mile Island.

In accordance with 10 CFR 2.390 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 (PARs) component of the 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 610-337-5234 if you have any questions regarding this letter.

Sincerely,

/RA/

Peter W. Eselgroth, Chief
Reactor Projects Branch 7
Division of Reactor Projects

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

Enclosure: Inspection Report 05000289/2004004
w/Attachment: Supplemental Information

cc w/encl:
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Plant Manager - TMI, Unit 1, AmerGen
Regulatory Assurance Manager - TMI, Unit 1, AmerGen
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U.S. NUCLEAR REGULATORY COMMISSION

REGION 1

Docket No:	05000289
License No:	DPR-50
Report No:	050000289/2004004
Licensee:	AmerGen Energy Company, LLC (AmerGen)
Facility:	Three Mile Island Station, Unit 1
Location:	PO Box 480 Middletown, PA 17057
Dates:	July 1, 2004 - September 30, 2004
Inspectors:	David M. Kern, Senior Resident Inspector Galen D. Smith, Senior Resident Inspector (Acting) Kevin A. Mangan, Senior Resident Inspector (Acting) Javier M. Brand, Resident Inspector Joseph T. Furia, Senior Health Physicist, DRS Nancy T. McNamara, EP Inspector, DRS
Approved by:	Peter W. Eselgroth, Chief Projects Branch 7 Division of Reactor Projects (DRP)

CONTENTS

SUMMARY OF FINDINGS

Inspection Report 05000289/2004004; 07/01/2004 - 09/30/2004; AmerGen Energy Company, LLC; Three Mile Island, Unit 1; Surveillance Testing and Operability Evaluations.

The report covered a three-month period of inspection by resident inspectors and announced inspections by regional emergency preparedness and health physics inspectors. Two Green non-cited violations (NCVs) were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Rev. 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Barrier Integrity

- Green. The inspectors identified a self-revealing non-cited violation of 10 CFR 50.55a.(f)(4)(ii) "Codes and Standards" which requires, in part, that testing of safety-related pumps meet the requirements of the American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code. Contrary to this requirement, AmerGen did not perform quarterly Inservice Testing (IST) of the reactor river water (RR) pumps in accordance with the ASME OM-6 Code. Specifically, the quarterly test procedure did not set pump differential pressure (d/p) or flow at a reference value which was readily duplicated during subsequent tests. Additionally, the test throttle valve position, which could significantly influence pump d/p, was not monitored, documented or analyzed. The inspectors determined that over the last five years, the quarterly RR pump test was not in accordance with the Code and would not have detected a degraded pump hydraulic condition.

  This issue is more than minor because it affected the Barrier Integrity cornerstone objective and the containment barrier performance attribute. Failure to test the pumps in accordance with the code did not ensure the availability of the RR system's safety function to provide containment cooling and pressure suppression in the event of a design basis accident. However, because full flow testing had been satisfactorily conducted in November 2003 and testing performed subsequent to the identification of the issue determined that the pumps were operable, this violation was determined to have a very low safety significance. Corrective actions included revision of the test method to meet code requirements as documented in Issue Report 244066. (Section 1R22)

Cornerstone: Mitigating Systems

- Green. The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI "Corrective Action" for failure to identify a degraded 'A' emergency diesel generator (EDG) common header fuel injector tube. In addition, after the condition was identified by the inspectors, station personnel failed to document,

evaluate and correct this degraded condition, which had the potential to degrade further and adversely affect the operability of the 'A' EDG, until prompted by the inspectors. The tube degradation was caused by rubbing between the tube and the fuel oil duplex filter metal cover plate and resulted in a 40 percent reduction in tube wall thickness. The initial assessment of this degraded condition was untimely and lacked technical rigor. The duplex filter cover plate was ultimately modified to establish proper clearance and prevent further tube degradation. In addition, corrective actions were initiated to replace the degraded fuel ejector tube during the next 'A' EDG outage.

This issue is more than minor since the failure to identify and correct the degraded EDG fuel ejector tube reduced the reliability of a mitigating system component. In addition, if left uncorrected, the condition could have degraded further and affected the operability of the 'A' EDG. This finding is of very low safety significance (Green) because it did not result in an actual failure of the 'A' EDG fuel injector tubing, nor did it cause the 'A' EDG to be inoperable. (Section 1R15).

B. Licensee-Identified Findings

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.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope (1 Sample)

The inspectors reviewed AmerGen's procedures for adverse weather, relative to the protection of safety-related systems, structures, and components from the effect of external flood and high winds. The inspection was performed prior to tropical storm Bonnie and hurricane Charley's projected arrival at the site and the associated potential for high winds and flooding. This review focused on the protection of safety-related equipment from flooding and included a walkdown of buildings to verify that flood protection devises were staged and procedures were in place to ensure external flooding or hurricane events would not impact the functionality of the safety related systems (Ref: Section 1R06.2). The procedures reviewed for this inspection included: 1202-32, "Flood," Rev. 57 and 1202-33, "Tornado/High Winds," Rev. 25.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope (3 Samples)

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

- On July 20, the inspectors walked down the 'A' low pressure injection train, including its support systems, while the 'B' train was out of service for planned maintenance.

- On August 5, the inspectors walked down the 'B' emergency diesel generator (EG-Y-1B) and the 'A' and 'B' train emergency switch gear rooms while the 'A' emergency diesel generator (EG-Y-1A) was out of service for planned maintenance.

- On September 15-16, a clam-kill procedure was performed which realigned numerous river water and fire water systems. On September 17-21, the Susquehanna river rose above flood stage, posing potential challenges to the screen house intake, river water and fire protection systems. During this period

the inspectors verified partial system alignments within the screen house and heat exchanger vaults in accordance with procedures 1104-45B, “Fire Service Water System,” Rev. 88; 1103-33, “Screen House Equipment,” Rev. 32; and 1104-30, “Nuclear River Water,” Rev. 72.

The partial system walkdowns were conducted on the redundant and standby equipment to ensure that trains and equipment relied on to remain operable for accident mitigation were properly aligned and protected. Additional documents reviewed during this inspection included:

- Drawing 302-640, “Decay Heat Removal,“ Rev. 79
- Drawing 302-645, “Decay Heat Closed Cycle Cooling Water, “ Rev. 36
- OP-TM-543-000, “Decay Heat Closed System,” Rev. 2
- OP 1107-3, “Diesel Generator, “ Rev. 109
- Drawing 302-353, “Diesel Generator Services-Lube Oil, Fuel Oil, Air Start,” Rev. 11
- Drawing 302-354, “Diesel Generator Jacket & Air Cooler-Coolant System, Gear Box Lube Oil System,” Rev. 12

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

1. Annual Drill Observation (71111.05A)

a. Inspection Scope (1 Sample)

The inspectors observed an announced fire brigade drill on July 27 to evaluate the readiness of station personnel to respond to and fight fires. The drill demonstrated response to a fire in the Unit 1 Fuel Handling Building Chiller Room. The inspectors observed fire brigade members regarding their use of protective clothing and appropriate turnout gear, including self-contained breathing apparatus, and their approach and methods in the combat of the fire as well as their interaction with the control room. The inspectors observed implementation of the fire fighting strategies by the fire brigade and communications between participants throughout the drill. The inspectors reviewed the drill scenario objectives, determined whether drill scenario objectives were met, and observed the post drill critique to verify that the licensee identified, discussed, and entered adverse conditions into the corrective action program. Documents reviewed during the inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

2. Area Walkdowns (71111.05Q)

a. Inspection Scope (8 Samples)

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

- Zone IB-FZ-2, Turbine Driven Emergency Feedwater Pump Room, 295' Elevation.
- Zone IB-FZ-3, Motor Driven Emergency Feedwater Pump Room, 295' Elevation.
- Zone IB-FZ-4, Intermediate Building, 295' Elevation.
- Zone IB-FZ-6, Intermediate Building, 322' Elevation.
- IR 238118, which evaluated a locked-in alarm condition for ionization type fire detector (FS-ID-11) on July 22. The inspectors also reviewed the alarm response procedure PLF, “Panel Left Front,” Rev. 27, and procedure OP-1104.45K, ”Ionization Detectors,” Rev. 34.
- IR 238173, which evaluated the location of an ionization type fire detector (FS-ID-11) installed approximately half-way between the floor and the ceiling for the ‘A’ motor driven emergency feedwater pump.
- Zone CB-FA-2A, 2B, Control Building 1P and 1S Switch Gear Rooms. In addition, the inspectors verified that a continuous fire watch was implemented between August 4 to August 10 while the Cardox system was out of service for maintenance.
- Zone ISPH-FA-2, Intake Structure Fire Pumps Room.

The rooms and areas were selected based on enclosing equipment important to safety. The inspectors conducted plant walkdowns and verified the areas were as described in the TMI Fire Hazard Analysis Report (FHAR). 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. The following documents were reviewed during the inspection:

- OP-AA-201-003, “Fire Drill Performance,” Rev. 6
- TQ-AA-210-4105, “Course Attendance Sheet,” Rev. 1
- TMI-1 Fire Hazards Analysis Report, Rev. 21

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

1. Internal Flood Protection

a. Inspection Scope (1 Sample)

On July 21 to September 30, the inspectors reviewed and assessed protection measures for internal flooding events. The inspectors reviewed the updated final safety

analysis report (UFSAR) and other selected design basis documents to identify those areas susceptible to internal flooding, and reviewed the TMI Unit 1 Probabilistic Risk Assessment (Section 10: Internal Flood Analysis) and associated flood protection reports to identify risk significant flood areas and protective features. The inspectors evaluated whether appropriate flood protection controls and appropriate precautions to mitigate the risk from internal flooding events were being implemented. In addition, the inspectors assessed the potential hazards for common mode flooding of emergency core cooling (ECCS) rooms, and whether the floor drains were being maintained to prevent backflow of water into unwanted areas. The inspectors performed several walkdowns of the building spray (BS) and decay heat (DH) vaults, the three makeup pump rooms, the nuclear service and decay closed cooling pump rooms, the annulus between the reactor building and the auxiliary building, and the emergency feedwater (EFW) pump rooms. In addition, the inspectors interviewed selected operating, engineering and maintenance staff regarding internal flood protection controls.

The inspectors reviewed IR 237783 which evaluated debris identified by the inspectors in the building spray vaults which could have blocked the floor drain system. In addition, the inspectors reviewed IR 253775 which evaluated a deficient extent of condition review identified by the inspectors during a subsequent review of the engineering evaluation of the initial debris in the building spray vault. The deficient extent of condition evaluation resulted in the inspectors' identification of debris in the auxiliary building areas which could have challenged the EFW pumps flood protection mitigation equipment. The inspectors reviewed the corrective action program to verify that identified problems were being entered with the appropriate characterization and significance. Additional documents used for this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

2. External Flood Protection

a. Inspection Scope (1 Sample)

The inspectors reviewed AmerGen's external flooding mitigation strategy during periods of elevated river water levels the weeks of August 9 and August 16, 2004. The inspectors verified compensatory measures outlined in emergency procedures provided adequate protection against flood damage for risk significant equipment located in the intake structure and other safety related areas, including; the 'A' and 'B' EDG rooms, the station blackout diesel room, intake fire pump rooms, and the Unit 1 and 2 turbine buildings. In addition, the inspectors reviewed IR 244393 which evaluated minor deficiencies identified by the inspectors regarding several missing external flood mitigation materials. The licensee entered the issues in the corrective action program and promptly corrected the material deficiencies. The following documents were used for this inspection:

- UFSAR Section 2.6.4, "Flood Studies"

- UFSAR Appendix 14A, “Design Review for Consideration of Effects of Piping System Breaks Outside Containment”
- Emergency procedure 1202-32, “Flood,” Rev. 57
- Emergency procedure 1202-33, “Tornado/High Winds,” Rev. 25

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07A)

a. Inspection Scope (1 Sample)

Bio-fouling of heat exchangers due to induction and growth of marine life present in the Susquehanna river poses a potential challenge to various safety related systems which are cooled by river water. The inspectors interviewed engineers, conducted system walkdowns, and reviewed the processes and programs used to monitor and treat river water systems to minimize the effect of various bio-fouling mechanisms. Plant life and asiatic clams are the current bio-challenges to river water system heat exchange. Additionally, engineers informed the inspectors that Zebra mussels were recently identified in the Susquehanna river, several hundred miles north of TMI. Although not a current challenge to the station, engineers initiated an evaluation of future actions to address Zebra mussels (IR 250470). In addition to small periodic (e.g. daily) biocide injections which mitigate minor biological growth, the station performs a macrofouling treatment clam-kill procedure twice per year. The inspectors observed performance of the clam kill evolution to verify systems were properly treated to mitigate the potential for bio-fouling. Observations concerning acceptance criteria and post treatment system monitoring were discussed with station management and documented in IR264716. Documents reviewed during this inspection included:

- Procedure 1104-65, “River and Circulating Water System Macrofouling Treatment,” Rev. 20, Interim Change 16668
- Topical report 117, “Microbiologically Influenced Corrosion (MIC) Program Description,” Rev. 1
- Topical report 119, “Generic Letter 89-13 Program Description,” Rev. 2
- IR 250470, “Zebra Mussels Found on the Susquehanna River”

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11Q)

a. Inspection Scope (1 Sample)

The inspectors observed licensed operator requalification training at the control room simulator. The inspectors reviewed the operators’ ability to correctly evaluate the simulator training scenario and implement the emergency plan. The inspectors

compared operator drill performance to the criteria listed in simulator scenario #34, "Loss of 1B-4160 Volt Bus, Dropped Rod, Pressure Operated Relief Valve (PORV) Failure, Loss of Station Power, and Loss of Emergency Feedwater Requiring High Pressure Injection - PORV Cooling," Rev. 6. The inspectors assessed supervisory oversight, command and control, communication practices, and crew assignments to ensure they were consistent with normal control room activities. The inspectors observed the effect training evaluators had in recognizing and correcting individual and operating crew mistakes. The inspectors attended the post-drill critique and reviewed individual operator performance critique forms in order to evaluate the effectiveness of problem identification. Additional documents reviewed during the inspection are as follows:

- Abnormal Operating Procedure 020, "Loss of Station Power," Rev. 5
- Emergency Operating Procedure (EOP) 001, "Reactor Trip," Rev. 5
- EOP-002, "Loss of 25 Degrees Fahrenheit Subcooled Margin," Rev. 3
- EOP-004, "Lack of Primary to Secondary Heat Transfer," Rev. 2
- EOP-010, "Emergency Procedure Rules, Guides, and Graphs," Rev. 3

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope (3 Samples)

The inspectors evaluated Maintenance Rule (MR) implementation for the issues listed below. Specific attributes reviewed included 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. 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," 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. 3. Additional documents reviewed during the inspection are listed in the Attachment.

- Evaluated overall maintenance effectiveness on the DH system, by reviewing resolution of selected system material degradation issues reported in issue reports during the period September 1, 2002 to September 1, 2004. Decay heat system issues included elevated DH-P-1A vibrations, slow valve opening stroke time on DH-V-5, and low motor operator thrust for DH-V-2.

- Performed a partial evaluation of AmerGen's programs to address problems identified at other facilities regarding gas voids in emergency core cooling system (ECCS) piping and components. The inspectors performed several field walk downs and interviewed applicable system engineers, the TMI operational experience coordinator and operators. The inspectors also evaluated AmerGen's response to minor deficiencies identified by the inspectors regarding

AmerGen's implementation of the industry operating experience program. The inspectors also reviewed IR 259882, dated 10/4/04, which documented similar minor deficiencies identified by the TMI nuclear oversight group during an independent review of AmerGen's implementation of the industry operating experience program.

- Issue Report 230483 evaluated a failed relay in the reactor building emergency cooling system. This time delay relay is associated with the circuit for the 'B' reactor river water pump and the 'C' nuclear river water pump. Laboratory analysis determined that an age-related diode failure caused the relay malfunction. The inspectors evaluated AmerGen's response to this failure from a maintenance rule perspective. Engineers determined that this was not a maintenance rule functional failure. The inspectors verified that the relay failure did not affect the operability of the 'B' reactor river water and 'C' nuclear river pumps since the failure affected only one of three independent channels. The inspectors verified that an adequate extent of condition review was performed and that AmerGen had already established a replacement plan for all similar relays to address the age-related failure. AmerGen plans to replace the remaining six relays by the end of 2004.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope (5 Samples)

The inspectors reviewed the scheduling and control of maintenance activities in order to evaluate the effect on plant risk. This review was against criteria contained in AmerGen Administrative Procedure, "TMI Risk Management Program," Rev. 4. Documents reviewed during the inspection are listed in the Attachment. The inspectors reviewed the routine planned maintenance, restoration actions, and/or emergent work for the following equipment removed from service:

- On July 19 to 21, risk assessment of scheduled maintenance activities on the 'B' low pressure injection system train (on-line risk evaluation # 831).

- On August 5, risk assessment during emergent maintenance activities to repair a leaking copper tubing on the 'A' emergency diesel generator fuel oil injection line (on-line risk evaluation # 522).

- On August 10, risk assessment of scheduled maintenance on 'A' Reactor River Water Pump and HPI/LPI channel testing.

- On September 15, various portions of river water systems and heat exchangers, including the safety-related decay heat closed cooling water heat exchangers were removed for service in accordance with procedure 1104-65, "River and

Circulating Water System Macrofouling Treatment," Rev. 20, Interim Change 16668 (on-line risk evaluation #1079).

- On September 16, risk assessment of scheduled quarterly heat sink protection system surveillance testing. During performance of this test both motor driven EFW pumps are taken out of service and risk increases to yellow (on-line risk evaluation # 496). The inspectors also attended the pre evolution briefing, and interviewed plant operators and the EFW system engineer.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-routine Plant Evolutions (71111.14)

a. Inspection Scope (1 Sample)

The inspectors reviewed human performance during the following non-routine plant evolution to determine whether personnel performance caused unnecessary plant risk or challenges to reactor safety.

C Plant Operation During Flood Conditions Following Hurricane Ivan

The after affects of Hurricane Ivan caused elevated river levels above flood stage in the vicinity of Three Mile Island Power Station during the period September 19 through 21, 2004. River level peaked about 17 feet above normal late on September 19. An unusually high amount of debris (i.e. trees, small cottages, clothing, etc) was present in the Susquehanna river as flood waters receded from the surrounding shoreline. The flood conditions increased the likelihood of a plant transient, a loss of offsite power, and degradation of mitigating systems (river water cooling). Station personnel implemented adverse weather precautions in advance of the flood in accordance with procedure 1202-32, "Flooding," Rev. 58. Operators monitored weather forecasts and river conditions, and conducted additional plant walkdowns. The inspectors reviewed station procedures and the Emergency Plan, toured the plant to evaluate plant conditions, monitored operator performance, and discussed plant conditions and operational contingencies with station personnel to verify operators implemented appropriate actions to mitigate the effects of the flooding.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope (4 Samples)

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

- Emergency Operation Procedure Nitrogen Tanks required for fire safe shutdown availability.

- Low Voltage alarm due to power grid voltage changes during the weeks of July 26 and August 30.

- Issue report 237638, which evaluated a degraded fuel injector tube identified by the inspectors on July 14, 2004. The inspectors also verified that an extent of condition review was performed, and reviewed Drawing 302-353, "Diesel Generator Services - Lube Oil, Fuel Oil, Air Start," Rev. 11, and IR 255767, which documented the late engineering response to evaluate the degraded condition identified by the inspectors.

- Issue report 237656, which evaluated a closed position of the 'B' EDG (EG-Y-1B) gravity damper identified by the inspectors on July 13, 2004. The engineering evaluation determined that the damper is required to be opened only after the normal ventilation is lost. In addition, no operability concern existed since operators are required by the alarm response procedure to go to the EDG room and verify the damper is open upon loss of ventilation (Procedure HVB-1-1," Heating and Ventilation Panel Annunciator B," Rev. 9.

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. The inspectors performed several field walkdowns, interviewed plant engineers and technicians, and where applicable interviewed their supervisors and consulted with regional NRC specialists. The inspectors also referenced IMC Part 9900, "Operable/Operability-Ensuring the Functional Capability of a System Component" and AmerGen procedure LS-AA-105, "Operability Determination," Rev. 1, to determine acceptability of AmerGen's operability evaluations. Documents reviewed during the inspection are listed in the Attachment.

b. Findings

'A' Emergency Diesel Generator Fuel Injector Tube Degradation

Introduction. The inspectors identified that station personnel failed to identify a degraded 'A' EDG common header fuel injector tube. In addition, after the condition was identified by the inspectors, station personnel failed to document, evaluate, and correct this degraded condition which had the potential to degrade further and adversely affect the operability of the 'A' EDG, until prompted by the inspectors. The tube degradation was caused by rubbing between the tubing and the fuel oil duplex filter metal cover plate

and resulted in a 40 percent reduction of the tube wall. The inspectors identified that the initial assessment of this degraded condition was untimely and lacked technical rigor. This issue was assessed as having very low safety significance (Green) and was determined to be a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action."

Description. On July 14, during a routine walk down of the EDGs, the inspectors identified a rub between the 'A' EDG common header fuel injector line and the associated duplex filter cover (housing). The tubing passes through an opening in the cover and there was not adequate clearance between the tubing and the filter cover opening. The rub had created a small gouge in the tube. The inspectors walked down the 'B' EDG and found the tubing to have proper clearance (no rubbing). The inspectors notified the control room operators and regulatory compliance of this condition; however, an IR was not initiated to evaluate the condition until 5 days later after being prompted by the inspectors.

On July 19, IR 237638 was issued to evaluate the degraded tube. The evaluation concluded that no immediate operability concern existed based on a visual inspection of the condition. The inspectors determined that the engineering evaluation lacked technical rigor and that no actions had been initiated to prevent further degradation of the tube. Specifically, the inspectors identified that the assessment did not consider technical data such as: 1) system pressure, 2) tubing wall thickness, 3) depth of gouge, 4) conditions that caused the rub between the tube and cover plate, and 5) time to failure. Engineers re-evaluated the issue with vendor assistance and taking into consideration applicable seismic and operational stresses, calculated that the minimum wall thickness was .015 inches. Therefore, the evaluation determined that although a 40 percent loss of wall thickness had occurred (gauge caused by rubbing was .020 inches deep), the as-left wall thickness of .029 inches was sufficient to ensure operability of the 'A' EDG.

During the course of the investigation, engineers and the inspectors identified that the cover plate was incorrectly installed and was missing 4 of the required six mounting screws, giving the thin metal cover more freedom to vibrate and cause rubbing. The engineers also concluded that failure of the tube would have caused the 'A' EDG to become inoperable, since the condition existed in the common fuel injection header to all the EDG cylinders. Therefore, actions were initiated to immediately remove and repair the cover to establish proper clearance and prevent further tube degradation. The engineering evaluation also determined that the rub may have been introduced during the April 2004 scheduled 'A' EDG outage, since the cover plate was removed and re-installed as part of a two year filter replacement. Based on the oxidation found in the groove (gouge), the engineers believed the condition appeared to have existed for a very long time, and that no further rubbing would occur (the gouge had rubbed-out).

The inspectors did not agree with the engineering conclusion and determined that if left uncorrected, the condition would have degraded further during future EDG runs (normal monthly EDG test runs or emergency EDG operation) due to the four missing screws and the flexibility of the thin metal cover.

Analysis. The incorrect installation of the fuel injector duplex filter cover plate, resulting in four missing mounting screws and interference rubbing degradation of the 'A' EDG common fuel injection header tubing, is a performance deficiency.

This issue is considered more than minor since the failure to identify and correct the degraded EDG fuel ejector tube reduced the reliability of a mitigating system component. In addition, if left uncorrected, the condition could have degraded further and affected the operability of the 'A' EDG. Using NRC Manual Chapter 0609, "Significance Determination Process, " Appendix A", Phase 1, this finding was determined to be of very low safety significance (Green) since the condition did not result in an actual failure of the 'A' EDG fuel injector tubing, nor did it cause the 'A' EDG to be inoperable.

Enforcement. 10 CFR 50, Appendix B, Criterion XVI "Corrective Action" requires in part that measures be established to assure that conditions adverse to quality are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. The condition, the cause, and the corrective action taken shall be documented and reported to appropriate levels of management. Contrary to the above, station personnel failed to identify a degraded 'A' EDG fuel injector tube. In addition, after the condition was identified by the inspectors, station personnel failed to document, evaluate, and correct this degraded condition which had the potential to degrade further and adversely affect the operability of the 'A' EDG, until prompted by the inspectors. Because this issue was of very low safety significance and has been entered into the corrective action program (IRs 237638 and 255767), this violation is being treated as an NCV consistent with Section VI.A.I of the NRC Enforcement Policy: **NCV 05000289/2004004-01**, Failure to Identify and Correct a Degraded 'A' EDG Fuel Injection Line.

1R16 Operator Workarounds (71111.16)

a. Inspection Scope (1 Sample)

The inspectors reviewed the cumulative effects of the existing operator work-arounds (OWA), the list of operator challenges, and the list of open main control room deficiencies to identify any affect on emergency operating procedure (EOP) operator actions, and impact on possible initiating events and mitigating systems. The inspectors evaluated whether station personnel were identifying, assessing, and reviewing operator work-arounds as specified in AmerGen administrative procedure OP-AA-102-103, "Operator Work-Around Program," Rev. 1.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17A)

a. Inspection Scope (1 Sample)

The inspectors reviewed design change modification ECR 04-00153, "Replacement of Radiation Monitors," Rev. 0, for technical adequacy and to verify that the design bases, licensing bases, and performance capability of the modified risk significant components were not degraded through the modifications. The modification was issued to replace existing TMI Unit 1, analog type radiation monitors with new digital type detectors, pre-amplifiers and readout assemblies. The inspectors reviewed the function of the changed components, the change description and scope, and the associated 10 CFR 50.59 screening evaluations.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope (5 Samples)

The inspectors reviewed and/or observed several post-maintenance tests (PMTs) 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. Documents reviewed during the inspection are listed in the Attachment. The following PMTs were observed and/or evaluated:

- Testing following replacement of the Station Blackout Diesel Supply Breaker.

- On August 5, during a scheduled monthly surveillance test run of the 'A' EDG (EG-Y-1A), operators identified a tube leak in the number one fuel injector compartment. Operators promptly secured and declared the 'A' EDG inoperable and verified that the redundant 'B' EDG was fully operational. The small leak (approximately 2 drops per minute) was in the 1/4 inch copper tubing for the unused clean side fuel drain line from the cylinder. The engineering evaluation (IR 241789) determined the leak was due to fatigue cracking caused by stress introduced during repeated removal and reinstallation of the tubing (previously yearly, currently every two years). The inspectors verified that an adequate extent of condition review was performed and that other degraded tubing was properly evaluated and or replaced on both the 'A' and 'B' EDGs. Post maintenance testing of the 'A' EDG was completed satisfactorily on August 6, per procedure 1303-4.16, "Emergency Power System," Rev. 102.

- On July 19, a planned low pressure injection system (LPI) outage was started. The outage affected the 'B' train for several safety-related systems including decay river, decay heat removal and reactor building spray. The inspectors interviewed the system engineer and control room operators, and verified that the

subsequent PMTs were completed satisfactorily per procedure OP-TM-212-202," IST of DH-P-1B and Valves from ES Standby Mode," Rev. 4.

- On July 22, PMT of the 'B' reactor building spray pump per procedure OP-TM-214-202, "IST of BS-P-1B and Valves," Rev. 3.

- On September 30, PMT per OP 1303-5.5, "Control Room Emergency Filtering System Operational Test," Rev. 30, after replacement of the 'B' control building return air fan AH-E-19B.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope (5 Samples)

The inspectors observed and/or reviewed the following operational surveillance tests, concentrating on verification of the adequacy of the test to demonstrate the operability of the required system or component safety function. Documents reviewed during the inspection are listed in the Attachment.

- On July 15, quarterly surveillance testing of the 'A' decay heat removal system per AmerGen procedure OP-TM-212-201, "IST of DH-P-1A and Valves from ES Standby Mode," Rev. 4.

- On July 21, reviewed emergency feedwater monthly valve lineup.

- On August 20, reviewed 'B' reactor river water quarterly inservice testing.

- Surveillance procedure 1303-11.28, "Liquid Waste System Leak Check," Rev. 9, completed on August 2. The inspectors interviewed the system engineer and plant operators, and performed several walk downs of the area including an inspection of the fuel transfer canal. The inspectors also reviewed IR 242874 which documented evidence of minor spent fuel pool leakage, and IRs 244311 and 245009 which documented minor boric acid leakage of associated piping, one of which was identified by the inspectors. The inspectors also verified that actions were initiated to address procedural deficiencies identified by the inspectors regarding the current method used to measure potential leakage.

- Monthly surveillance test of the control room emergency filtration fan AH-E-18A completed on August 28, per procedure 1305-5.5, "Control Room Emergency Filtration Operational Test," Rev. 30.

b. Findings

Introduction. The inspectors identified a Green non-cited violation (NCV) for failure to perform quarterly testing of the reactor river water (RR) pumps in accordance with the applicable American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code. Over the span of 5 years, the quarterly test of these pumps was not in accordance with the code and would not have detected a degradation in pump performance.

Description. The inspectors reviewed the results of surveillance procedure 1300-3K, "In-Service Test of RR Pumps and Valves," Rev. 67, performed on August 13th for the 'B' RR pump (RR-P-1B) to determine whether the test met applicable code requirements. The inspectors noted that the test used recirculation piping that included a two inch minimum flow recirculation valve in parallel with a 12 inch manually operated full flow test valve. The procedure instructed operators to verify the minimum flow recirculation valve open and then reposition the 12 inch test valve, as necessary, to obtain 85 psig pump discharge pressure. Pump differential pressure (d/p) was then calculated, based on the current river level, and was recorded on the surveillance form. Flow information was not recorded because the system design does not include a flow instrument in the recirculation flow path. The inspectors noted that neither the position of the 12 inch test valve, nor the consequential change on system flow resistance were recorded or analyzed.

The applicable Code for the current TMI Unit One inservice test (IST) program interval is the 1989 edition of ASME Section XI, Subsection IWP, which references ASME OM standard (OMa-1988), Part 6. The ASME OM-6 Code, Section 5 requires that the quarterly test measure pump d/p, flow rate, and vibration. NUREG 1482, Staff Position 9, "Pump Testing Using Minimum-Flow Return Lines With or Without Flow Measuring Devices" endorses an alternative quarterly pump test method when the system minimum-flow path does not have a flow instrument. Staff Position 9 allows for establishing flow and "measuring at least the pump differential pressure and vibration." ASME OM-6, Section 5.2 states "An inservice test shall be conducted with the pump operating at specified test reference conditions." Section 4.3 states that "Reference Values shall be at points of operation readily duplicated during subsequent tests. ..... If the particular parameter being measured or determined can be significantly influenced by other related conditions, then these conditions shall be analyzed." Further, Section 2 indicates that by duplicating a set of reference values when testing a pump, changes in pump performance can be detected and may indicate the need for corrective action.

The inspectors determined that AmerGen was not interpreting Staff Position 9 correctly and as a result was not meeting the requirements of the ASME Code. NUREG 1482, Position 9, response to Group Question 49 states that "It is not permissible for both parameters [flow rate and pump d/p] to vary during a test. With one parameter set at a reference value, the other parameter is compared to the acceptance criteria." Staff Position 9 states that data from quarterly test is to be trended. Contrary to ASME OM-6 and Staff Position 9, procedure 1300-3K did not set pump d/p or flow at a reference value point readily duplicated during subsequent quarterly tests. Instead, the procedure set pump discharge pressure as the reference value by changing the test throttle valve

position (resistance and flow characteristics in the system). Pump d/p was actually a calculated variable, which was dependent on the position of the test throttle valve and river level. The position of the test throttle valve and pump flow were not documented and the valve position could have varied between tests. Contrary to the Code, neither of these parameters which significantly influence pump d/p (the parameter being determined and evaluated to the test acceptance criteria) were analyzed. Additionally, contrary to ASME OM-6, Section 2, reference values during subsequent quarterly tests were not reliably duplicated and therefore the test was inadequate to monitor for and identify changes in pump performance.

The inspectors determined that this testing practice had been in effect since 1999 when the licensee changed the IST surveillance procedure. The change to the procedure incorporated the use and throttling of the test valve in a manner contrary to the Code. The licensee did not submit the change to the September 19, 1995, IST program to the NRC for approval. In response to the inspectors' concern, engineers revised procedure 1300-3K. The pumps were subsequently retested by using a fixed system resistance to establish a repeatable reference condition, and recording the differential pressure as the variable component which could now be evaluated to assess pump performance trends.

Analysis. The performance deficiency associated with this issue is the failure to correctly apply the requirements of the ASME code and NUREG 1482 guidance to adequately test the RR pumps during required quarterly testing. This issue is more than minor because it affected the Barrier Integrity cornerstone objective and the containment barrier performance attribute. Failure to test the pumps in accordance with the Code did not ensure the availability of the RR system's safety function to provide containment cooling and pressure suppression control in the event of a design basis accident. In accordance with the Reactor Safety SDP, a Phase 1 analysis of this condition was performed using Inspection Manual Chapter 0609, Appendix A, Significance Determination of Reactor Inspection Findings for At-Power Situations. However, because full flow testing had been satisfactorily conducted in November 2003 and testing performed subsequent to the identification of the issue determined that the pumps were operable, this violation did not cause an actual degradation in the physical integrity of containment or reduction in the defense-in-depth for the atmospheric pressure control system. The inspectors determined that the issue had very low safety significance (Green). Corrective actions included revision of the test method to meet code requirements as documented in Issue Report (IR) 244066.

Enforcement. 10CFR50.55a.(f)(4)(ii) - Codes and Standards - requires, in part, that testing of safety related pumps meet the requirement of the ASME OM Code. The ASME Code OM-6 requires that pumps be tested quarterly. An inservice test shall be conducted with the pump operating at specified test reference conditions. Reference Values shall be at points of operation readily duplicated during subsequent tests. Contrary to these requirements, procedure 1300-3K did not set RR pump d/p or flow at a reference value point readily duplicated during subsequent tests. Pump d/p was actually a calculated variable, which was dependent on test throttle valve position and river level. Test throttle valve position, a related test condition which could significantly influence pump d/p, was not monitored, documented or analyzed. Consequently the test did not monitor for changes in pump performance. This violation has been determined to have

a very low safety significance since there was not an actual loss of function of the Reactor River water system. This violation is documented in AmerGen's corrective action program (IR 244066) and, therefore, is being treated as a non-cited violation, consistent with Section VI.A.1 of the NRC Enforcement Policy: **NCV 05000289/2004004-02**, Failure to Perform Testing of the Reactor River Water Pumps in Accordance with ASME OM Code.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope (2 Samples)

The inspectors reviewed temporary modifications (TMs) and associated implementing documents to verify the plant design basis and the system or component operability were 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. The inspectors reviewed the following TMs:

- TM 04-00483-001, "AH-E-19B, Temporary Change-Air Dam," Rev. 1, was issued to allow the temporary installation of an air dam and a temporary ramp in order to maintain the control room normal and emergency filtration system operational while the AH-E-19B fan and motor were replaced. The inspectors also performed several system walk downs and interviewed the system engineer and operators. In addition, the inspectors reviewed IR 259235 which documented a deficiency identified by the inspectors regarding scaffold poles used for the platform installation which were inadvertently not removed prior to declaring the system back in service as required by the temporary modification.

C Procedure 1104-65, "River and Circulating Water System Macrofouling Treatment," Rev. 20, interim change 16668 which revised nuclear service water, intermediate closed cooling, and secondary closed cooling water system flush configurations and controlled the installation and removal of temporary equipment for chemical treatment and sampling of these systems. This was a procedurally controlled temporary modification.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness [EP]

1EP4 Emergency Action Level (EAL) and Emergency Plan Changes (71114.04)

a. Inspection Scope (1 Sample)

A regional in-office review was conducted of licensee submitted revisions to the emergency plan, implementing procedures, and EALs which were received by the NRC during the period of April - September 2004. The review included plan aspects related to the risk significant planning standards (RSPS), such as classifications, notifications, and protective action recommendations. A cursory review was conducted for non-RSPS portions. These changes were reviewed against 10 CFR 50.47(b) and the requirements of Appendix E and they are subject to future inspections to ensure that the combination of these changes continues to meet NRC regulations. In addition, in January 2003, the licensee generated a consolidated Emergency Plan for all Exelon sites in Pennsylvania (Peach Bottom, Limerick, TMI) and an Annex Plan related specifically to TMI. The 10 CFR 50.54(q) reviews associated with the specific changes/deletions made from the original Plan to the current Plans will be reviewed and assessed during the next EP program inspection to ensure that Exelon did not decrease the effectiveness of the original Plan during the transition. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 4, and the applicable requirements in 10 CFR 50.54(q) were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope (1 Sample)

On August 25, the inspectors observed an emergency event training evolution conducted at the Unit 1 control room simulator to evaluate emergency procedure implementation, event classification, event notification, and protective action recommendation development. The event scenario involved multiple safety-related component failures and plant conditions warranting simulated Alert, Site Area Emergency, and General Emergency event declarations. The licensee counted this training evolution for evaluation of Emergency Preparedness Drill/Exercise Performance (DEP) Indicators. The inspectors reviewed the station critique 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. 2. Additional documents used for this inspection activity included:

- IR 248051 Technical Support Center Failed Facility Objectives - August 25, 2004 Exercise.

- IR 247902 August 25, 2004, Off-Year Exercise - 2 Missed DEP Opportunities.
- IR 247931 EOF unable to connect to the simulator replica plant process computer.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Public Radiation Safety [PS]

2PS1 Radiological Effluents Technical Specification (71122.01)

a. Inspection Scope (10 Samples)

The inspectors reviewed the most current Radiological Effluent Release Report to verify that the program was implemented as described in RETS/ODCM; reviewed the report for significant changes to the Offsite Dose Calculation Manual (ODCM) and to radioactive waste system design and operation; determined whether the changes to the ODCM were made in accordance with Regulatory Guide 1.109 and NUREG-0133 and were technically justified and documented; determined whether the modifications made to radioactive waste system design and operation changed the dose consequence to the public; verified that technical and/or 10 CFR 50.59 reviews were performed when required; and, determined whether radioactive liquid and gaseous effluent radiation monitor setpoint calculation methodology changed since completion of the modifications. The inspectors determined that anomalous results reported in the current Radiological Effluent Release Report were adequately resolved. The inspectors reviewed RETS/ODCM to identify the effluent radiation monitoring systems and its flow measurement devices; reviewed effluent radiological occurrence performance indicator incidents for onsite follow-up; reviewed licensee self assessments, audits, and licensee event reports that involved unanticipated offsite releases of radioactive material; and, reviewed the Final Safety Analysis Report (FSAR) description of all radioactive waste systems.

The inspectors walked-down the major components of the gaseous and liquid release systems (e.g., radiation and flow monitors, demineralizers and filters, tanks, and vessels) to observe current system configuration with respect to the description in the FSAR, ongoing activities, and equipment material condition.

The inspectors observed the routine processing (including sample collection and analysis) and release of radioactive liquid waste to verify that appropriate treatment equipment is used and that radioactive liquid waste is processed and released in accordance with procedure requirements and observed the sampling and compositing of liquid effluent samples. The inspectors reviewed several radioactive liquid waste release permits, including the projected doses to members of the public. The inspectors also observed the routine processing (including sample collection and analysis) and release

of radioactive gaseous effluent to verify that appropriate treatment equipment is used and that the radioactive gaseous effluent is processed and released in accordance with RETS/ODCM requirements. The inspectors reviewed several radioactive gaseous effluent release permits, including the projected doses to members of the public.

The inspectors reviewed the records of any abnormal releases or releases made with inoperable effluent radiation monitors and reviewed the licensee's actions for these releases to ensure an adequate defense-in-depth was maintained against an unmonitored, unanticipated release of radioactive material to the environment.

The inspectors reviewed changes made by the licensee to the ODCM as well as to the liquid or gaseous radioactive waste system design, procedures, or operation since the last inspection. For each system modification and each ODCM revision that impacted effluent monitoring or release controls, the inspector reviewed the licensee's technical justification and determine whether the changes affect the licensee's ability to maintain effluents ALARA and whether changes made to monitoring instrumentation resulted in a non-representative monitoring of effluents.

The inspectors reviewed a selection of monthly, quarterly, and annual dose calculations to ensure that the licensee had properly calculated the offsite dose from radiological effluent releases and to determine if any annual TS/ODCM (i.e., Appendix I to 10 CFR Part 50 values) were exceeded and, if appropriate, issued a PI report if any quarterly values were exceeded.

The inspectors reviewed air cleaning system surveillance test results and licensee specific methodology to ensure that the system is operating within the licensee's acceptance criteria. The inspectors also reviewed surveillance test results and methodology the licensee uses to determine the stack and vent flow rates and verified that the flow rates are consistent with RETS/ODCM or FSAR values.

The inspectors reviewed records of instrument calibrations performed since the last inspection for each point of discharge effluent radiation monitor and flow measurement device and reviewed any completed system modifications and the current effluent radiation monitor alarm setpoint value for agreement with RETS/ODCM requirements. The inspector also reviewed calibration records of radiation measurement (i.e., counting room) instrumentation associated with effluent monitoring and release activities and reviewed quality control records for the radiation measurement instruments.

The inspectors reviewed the results of the interlaboratory comparison program to verify the quality of radioactive effluent sample analyses performed by the licensee; reviewed the licensee's quality control evaluation of the interlaboratory comparison test and associated corrective actions for any deficiencies identified: and reviewed the results from the licensee's quality assurance (QA) audits and determined that the licensee met the requirements of the RETS/ODCM.

The inspectors reviewed the licensee's Licensee Event Reports, Special Reports, audits, and self assessments related to the RETS/ODCM program performed since the last

inspection. The inspectors determined that identified problems were entered into the corrective action program for resolution.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems (71152)

1. Annual Sample- Boric Acid Program Review

a. Inspection Scope (1 Sample)

The inspectors reviewed AmerGen's boric acid corrosion control (BACC) program to evaluate the implementation of key elements such as station personnel walk downs and identification of boric acid leaks, assessment of identified leaks, mitigation, corrective actions, training, and use of industry operational experience. The review included the reactor coolant systems (RCS) and other safety-related systems inside and outside the containment building. The inspectors performed several field walk downs of these systems, and held interviews with operators, system engineers, applicable supervisors, and the BACC program owner. The inspectors also reviewed a selected list (total of 12 industry operating experience (OPEX) issues, see Attachment) of recent BACC-related industry events to assess AmerGen's response and evaluation of the issues for applicability to TMI. Additional documents reviewed for this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

2. Routine Inspection Activities and Cross-Reference to PI&R Issues Reviewed Elsewhere

a. Inspection Scope

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 hard copies of each issue report, attending daily screening meetings, and accessing the licensee's computerized database.

b. Findings

Section 1R06.1 describes that the inspectors found debris in the building spray vaults (IR 237783) which had the potential to impact mitigation of an internal flooding event. The subsequent engineering evaluation was narrowly focused and the extent of

condition review was deficient. The inspectors subsequently identified debris in the intermediate building which had not been identified by the engineers during their extent of condition review. This debris could have challenged the internal flood mitigation system (IR 253775).

Section 1R15 describes a finding involving failure to identify a degraded 'A' EDG common header fuel injector tube. In addition, after the condition was identified by the inspectors, the response to this issue was untimely in that station personnel failed to document, evaluate, and correct this degraded condition which had the potential to degrade further and adversely affect the operability of the 'A' EDG, until prompted by the inspectors. The inspectors also identified that the initial engineering evaluation lacked technical rigor in that it did not include technical data such as: 1) system pressure, 2) tubing wall thickness, 3) depth of gouge, 4) conditions that caused the rub between the tube and cover plate, and 5) time to failure. This issue was a violation of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action.

Section 1R22 describes procedural deficiencies involving operators measuring minor spent fuel pool (SFP) leakage via the fuel transfer tube. Identification and corrective action were deficient in that the issue was identified by the inspectors and later prompting was necessary by the inspectors to ensure proper corrective actions were implemented in a timely manner.

3. Public Radiation Safety

a. Inspection Scope

The inspectors selected items identified in the licensee's issue reporting system for detailed review of events associated with the RETS/ODCM performance during 2004. The inspector met with the plant chemist to discuss these issue reports (IRs 207124 and 236687). Issue report 207124 involved discrepancies in the analysis program for tritium in the waste gas decay tanks, while the other involved the frequency of testing the components for the reactor building purge (Unit 1). The documented reports for the issues were reviewed to ensure that the full extent of the issues was identified, an appropriate evaluation was performed, and appropriate corrective actions were specified and prioritized.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up (71153)

a. Inspection Scope

Power Excursion Due to Heater Drain System Failure

On July 13, the inspectors observed operations personnel response to small oscillations in the condensate and feed system. The operators were monitoring the oscillation and

resulting primary pressure oscillations on the plant computer. Additionally, the licensee observed excessive vibration levels in the heater drain system. Station personnel developed and implemented a troubleshooting plan to determine the cause of the vibration and oscillations. A gag was installed on the 'B' heater drain control valve as part of the troubleshooting effort; however, this caused a large transient on the secondary system and resulted in the failure of the entire heater drain system. Operators were monitoring the system during the troubleshooting and quickly reduced power to 90 percent. In addition to the operator actions, control rods automatically inserted to reduce power. The combined effort stopped the transient and restored the plant to steady state conditions. Station personnel isolated the 'B' valve, replaced the air control system on the valve, and returned to 100 percent power on July 16.

On July 21, the licensee observed the return of feed flow and primary pressure oscillations. Operators were dispatched to the heater drain system and observed high vibration levels. The licensee reduced power to 90 percent which resulted in a large decrease in oscillations and vibrations. Subsequent troubleshooting determined that the 'A' heater drain control valve had failed due to a stem disc separation. The licensee isolated the valve and returned to 100 percent power. Documents reviewed during the inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

4OA6 Management Meetings

Exit Meeting Summary

On October 7, 2004, the resident inspectors presented the inspection results to Mr. Bruce Williams and other members of his staff who acknowledged the findings. The regional specialist inspection results were previously presented to members of AmerGen management. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

S, Acker, Chemist, ODCM/RETS
K. Bartes, Plant Operations Director
M Benson, System Engineer
R. Brady, Emergency Preparedness Manager
G. Chick, Director, Maintenance
L. Clewett, Director, Site Engineering
E. Fuhrer, Regulatory Assurance
G. Gellrich, Plant Manager
T. Knisely, Security Manager
D. Lawyer, Radiological Engineer
D. Merchant, Manager, Radiological Health and Safety
A. Miller, Regulatory Assurance
S. Queen, Manager, Chemistry and Radwaste
G. Rombold, Regulatory Assurance
L. Weber, Chemist, Laboratory
B. Williams, Vice President, TMI Unit 1

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

2004004-01	NCV	Failure to Identify and Correct a Degraded 'A' EDG Fuel Injection Line (Section 1R15)
2004004-02	NCV	Failure to Perform Testing of the Reactor River Water Pumps in Accordance with ASME OM Code (Section 1R22)

LIST OF DOCUMENTS REVIEWED

Section 1R06: Flood Protection Measures (71111.06)

U-17	Zurn Floor Drains Inspection Procedure, Rev. 10
PRF1-3-5	Intermediate Building Flooding Alarm response Procedure, Rev. 5
TI-IS-412024-003	Emergency Feedwater Long Term Flood Protection Modifications" Rev. 0, dated April 24, 1984
Letter 5211-84-2193	Intermediate Building Flooding Modification," dated August 1, 1984
TMI calculation	C-1101-424-E540-064, "Flooding Due to a Postulated Pipe Break in The Intermediate Building," Rev. 1

Section 1R12: Maintenance Effectiveness

Topical Report 178	TMI-I Maintenance Rule Periodic Assessment Per 10 CFR 50.65(a)(3) for 9/30/2001 to 6/30/2003," Rev. 0
IR 179644	DH-V-5A Failed Open Stroke Time Testing
IR 184283	DH-V-2 Failed As-Found Motor Operated Valve Test Criteria
IR 188624	Intermittent Vibration Alarms on DH-P-1A
IR 217389	DH-P-1A Vibration Readings in Alert Region
IR 229535	Vibration for DH-P-1A More Than 50 Percent Less Than Previous Results
IR 256483	Documented minor deficiencies identified by the inspectors regarding the use of fill and venting operational experience.
ER-AA-2030	Conduct of Plant Engineering Manual, Rev. 2
LS-AA-115	Operating Experience Procedure, Rev. 4
OP-TM-211-274	Procedure For Filling And Venting HPI Lines, Rev. 1
OP-TM-212-255	Procedure For Venting Portions of DHR System Following Maintenance Activities For Standby Mode," Rev. 1
MD-H227-001	DH System Cross-connect Vents Modification, Rev. 0
C-1101-211-E610-066	Makeup Tank Level & Pressure Limits Calculation, Rev. 8
1920-98-20654	Response to NCV, regarding a change to the makeup system cross-connect valves
TMI LER-98-009	Potential Loss of HPI During Postulated LOCA

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

On-Line Station Risk Evaluation Documents

On-Line Risk # 496	1303-11.39A, Emergency Feedwater System, Rev. 3
On-Line Risk # 522	1303-4.16A EG-Y-1A, Emergency Diesel Generators, Rev. 5
On-Line Risk # 527	RR-P-001A, Rev. 5
On-Line Risk # 550	1303-4.19 HPI LPI Analog Channel Check, Rev. 5
On-Line Risk # 565	1300-3K RR Pump and Valve Testing, Rev. 5
On-Line Risk # 565	1300-3K RR Pump and Valve Testing, Rev. 5
On-Line Risk # 831	'B' Decay Heat Train Outage, Rev. 8

Procedures

1082.1	TMI Risk Management Program, Rev. 4

Section 1R15: Operability Evaluations

Issue Reports

IR 00238874	IR 00239836

Drawings

302-660	Make-Up & Purification, Rev. 40
302-661	Make-Up & Purification, Rev. 54
302-690	Liquid Waste Disposal, Rev. 20

Procedures

1107-11	TMI Grid Operations, Rev. 12
ES-037T	TMI-1 Voltage Criteria, Rev. 1

OP-TM-EOP-020	Cooldown from Outside of Control Room, Rev. 3

Section 1R19: Post Maintenance Testing

Issue Reports
IR 00240397

Procedures

1001J.1	Surveillance Testing Program, Rev. 7
1107-9	SBO Diesel Generator, Rev. 48
1303-4.16	Emergency Power System," Rev. 102

Work Orders

C2004503	C2008133

Section 1R22: Surveillance Testing

Issue Reports
IR 00244066

Drawings

302-011	Main Steam, Rev. 64
302-082	Emergency Feedwater, Rev. 22
302-611	Reactor Building Normal & Emergency Cooling Water System, Rev. 12
RR-P1A	Vibration Data, 10/95 thru 8/04
RR-P1B	Vibration Data, 10/95 thru 8/04
1300-3K	Valve Stroke Times Data, 1/00 thru 4/00
RR-V-4A-D	Valve Stroke Times Data, 9/94 thru 5/03
RR-V-10A	Valve Quarterly Stroking Data (1300-3K), 1/92 thru 8/04
RR-V-10B	Quarterly Stroking Data (1300-3K), 1/92 thru 8/04

Miscellaneous

1300-3K Data Sheets	
AMSE/ANSI OM-1987	Operation and Maintenance of Nuclear Power Plants
NUREG-1482	Guidelines for Inservice Testing at Nuclear Power Plants
NRC Staff Position 9	Pump Testing Using Minimum-Flow Return Lines With or Without Flow Measuring Devices
9/21/95 GPU Letter	Inservice Testing of ASME Code Class 1, 2, and 3 Pumps and Valves (IST) - Program for the Third Ten Year Interval

Procedures

1300-3K	IST of RR Pumps and Valves
OP-TM-424-271	Standby Lineup and Flow Path Verification Check of EFW System

Section 2PS1: Radioactive Gaseous and Liquid Effluent Treatment and Monitoring

Issue Reports

00195437	00198660	00199382	00200571	00200603
00201399	00201513	00207329	00209278	00210118
00210772	00211016	00227111	00228835	00229372
00229938	00230688	00231887	00232810	00233791
00235265	00236968	00240357	00241907	00242190
00242501	00222524	00239182		

Miscellaneous

Three Mile Island Nuclear Station Unit 1 and Unit 2 Combined 2003 Annual Radioactive Effluent Report (April 15, 2004)
Offsite Dose Calculation Manual, Rev 24 (July 1, 2003)
Gas Release Permits: G200406013; G200406014; G200407015; G200407016; G200408017
Nuclear Oversite Audit No. NOSA-TMI-03-08, NOS REMP, ODCM, Non-Radiological Effluent Monitoring, NPDES Audit Report (October 15, 2003)
Check-In Self-Assessment No. 208696, NRC Pre-Inspection Check-In for RETS (July 16, 2004)

Work Orders

Radiation Monitoring System -
R2022624; R2006072; R2019927; R2041871; R2028735; R2037510; R2037227; R2022623; R2027064; R2027597; R2011094; R2016815; R2009040; R2012495
Flow Monitoring Devices -
R2028933; R2029189; R2029798; R2022925; R2022620; R2051210
Air Treatment Systems -
R2032595; R2036335; R2055127; R2012498; R1801648; R1801975; R2055190; R2030491; R2030489; R2054858

Section 4OA3: Event Follow-up

Issue Reports

IR 00235795 IR 00236462 IR 00236533 IR 00237938

Drawings

Feedwater Heater and Moisture Separator Drain System, TMI Operations Plant Manual Section I-05, Rev. 13

Miscellaneous

Decision to Remain at 90% Power During Heater Drain System Troubleshooting
Troubleshooting Plan per IR 235795 for HD-V-3A and HD-V-3B
Heater Drain System Troubleshooting Guide
TMI's Active Operations Narrative Logs
HD-V-3B Failure and Repair Overview - July 4

LIST OF ACRONYMS

ASME	American Society of Mechanical Engineers
ADAMS	Agencywide Documents and Management System
ALARA	as low as is reasonably achievable
AmerGen	AmerGen Energy Company, LLC
BS	Building Spray
CAP	Corrective Action Program
CFR	Code of Federal Regulations
DH	Decay Heat
DRP	Division of Reactor Projects
DRS	Division of Reactor Systems
EDG	Emergency Diesel Generator
EFW	Emergency Feedwater
ER	Engineering Procedure
FSAR	Final Safety Analysis Report
IMC	Inspection Manual Chapter
IR	Issue Report
IST	Inservice Testing
LER	Licensee Event Report
LS	Licensing Services Procedure
MRC	Management Review Committee
NCV	Non-Cited Violation
NER	Nuclear Event Report
NNOE	Nuclear Network Operating Experience
NRC	Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
OPEX	Industry Operating Experience
OP	Operating Procedure
PORV	Pressure Operated Relief Valve
QA	Quality Assurance
RETS	Radiological Effluents Technical Specifications
RR	Reactor River Water
SDP	Significance Determination Process
SOC	Station Ownership Committee
TMI	Three Mile Island, Unit 1
UFSAR	Updated Final Safety Analysis Report