November 10, 2003

Mr. John Skolds
Chairman and CEO
AmerGen Energy Company, LLC
4300 Winfield Road
5th Floor
Warrenville, IL 60555

SUBJECT: THREE MILE ISLAND STATION, UNIT 1 - NRC INTEGRATED INSPECTION REPORT 05000289/2003004

Dear Mr. Skolds:

On September 27, 2003, the Nuclear Regulatory Commission (NRC) completed an inspection at your Three Mile Island, Unit 1 (TMI) facility. The enclosed report documents the inspection findings that were discussed October 2, 2003 with Mr. Bruce Williams and 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 one self-revealing finding of very low safety significance (Green). The finding was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because it was entered into your corrective action program, the NRC is treating it as a non-cited violation (NCV) consistent with Section VI.A of the NRC Enforcement Policy. If you contest the NCV, 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 Inspector at Three Mile Island.

Since the terrorist attacks on September 11, 2001, the NRC has issued five Orders and several threat advisories to licensees of commercial power reactors to strengthen licensee capabilities, improve security force readiness, and enhance controls over access authorization. In addition to applicable baseline inspections, the NRC issued Temporary Instruction (TI) 2515/148, "Inspection of Nuclear Reactor Safeguards Interim Compensatory Measures," and its subsequent revision to audit and inspect licensee implementation of the interim compensatory measures required by order. Phase 1 of TI 2515/148 was completed at all commercial power nuclear power plants during calendar year 2002, and the remaining inspection activities for TMI are scheduled for completion in calendar year 2003. The NRC will continue to monitor overall safeguards and security controls at TMI.

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 (PARs) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

We appreciate your cooperation. Please contact me at 610-337-5234 if you have any questions regarding this letter.

Sincerely,

/RA by Richard S. Barkley Acting For/

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

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

Enclosure: NRC Inspection Report 05000289/2003004
w/Attachment: Supplemental Information

cc w/encl:
Chief Operating Officer - AmerGen
Site Vice President - TMI Unit 1, AmerGen
Plant Manager - TMI Unit 1, AmerGen
Regulatory Assurance Manager - TMI Unit 1, AmerGen
Senior Vice President - Nuclear Services, AmerGen
Vice President - Mid-Atlantic Operations, AmerGen
Vice President - Operations Support, AmerGen
Vice President - Licensing and Regulatory Affairs, AmerGen
Director Licensing - AmerGen
Manager Licensing - TMI, AmerGen
Vice President - General Counsel and Secretary, AmerGen
Correspondence Control Desk - AmerGen
Chairman, Board of County Commissioners of Dauphin County
Chairman, Board of Supervisors of Londonderry Township
R. Janati, Chief, Division of Nuclear Safety
M. Schoppman, Framatome ANP
J. Johnsrud, National Energy Committee
E. Epstein, TMI-Alert (TMIA)
D. Allard, PADER

Distribution w/encl:
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H. Miller, RA
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U.S. NUCLEAR REGULATORY COMMISSION

REGION 1

Docket No:	05000289
License No:	DPR-50
Report No:	05000289/2003004
Licensee:	AmerGen Energy Company, LLC (AmerGen)
Facility:	Three Mile Island Station, Unit 1
Location:	PO Box 480 Middletown, PA 17057
Dates:	June 29, 2003 - September 27, 2003
Inspectors:	David M. Kern, Senior Resident Inspector Craig W. Smith, Senior Resident Inspector Javier M. Brand, Resident Inspector Ronald L. Nimitz, Senior Health Physicist, DRS Laurie Peluso, Health Physicist, DNMS Gregory C. Smith, Senior Physical Security Inspector, DRS Keith A. Young, Reactor Inspector, DRS
Approved by:	Peter W. Eselgroth, Chief Reactor Projects Branch 7 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000289/2003-004; 06/29/2003 - 09/27/2003; AmerGen Energy Company, LLC; Three Mile Island, Unit 1; Identification and Resolution of Problems.

The report covered a thirteen-week period of inspection by resident inspectors and announced inspections by regional inspectors. One Green non-cited violation (NCV) was 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," Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. A self-revealing, non-cited violation of technical specification 6.8.1.a was identified for plant operators' failure to follow procedures for applying a clearance isolation boundary on the "A" spent fuel pool cooling train. This resulted in the inadvertent draindown of the borated water storage tank (BWST) to the spent fuel pool and unplanned entry into a technical specification limiting condition for operation for BWST inventory with the plant operating at 100 percent power.

  This finding is more than minor because, if left uncorrected, it could have resulted in a more significant safety concern in that BWST inventory could have become less than required to support emergency core cooling system operability. The finding affected the reliability of the safety injection functions under the mitigating systems cornerstone and is of very low safety significance because control room operators took immediate corrective action to restore BWST inventory within the technical specification limiting condition for operation allowed outage time. (Section 1R14)

B. Licensee-Identified Findings

None.

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.

Operators declared an Unusual Event, the lowest of four emergency event categories, on July 2, 2003, in response to a Unit 2 transformer fire (Section 4OA3.1).

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope

Hurricane Isabel approached Three Mile Island on September 18, 2003. Station personnel implemented procedure 1202-33, "Tornado/High Winds," and portions of procedure 1202-32, "Flood," in preparation for arrival of the storm. Engineers conducted plant walkdowns and identified materials and structures to be secured or removed prior to the arrival of high winds. The NRC staffed the Region I Incident Response Center in advance of and during the storm. Resident inspectors monitored onsite activities to verify procedures were properly implemented and that the station's potential vulnerabilities to adverse weather from the hurricane were addressed to minimize plant risk.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

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

- Instrument air system during a station instrument air compressor system maintenance outage performed on July 16, 2003
- "A" decay heat (DH) removal train during in-service testing of "B" DH train on July 22, 2003
- "B" DH removal train during an "A" DH train system maintenance outage on August 12, 2003

The systems were chosen based on their high risk significance. 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. The inspectors verified the systems were aligned in accordance

with operating procedures 1104-25, “Instrument and control air system,” and OP-TM-212-000, “Decay heat removal system.” The inspectors verified system parameters were within the required band for current plant conditions as determined by TMI operating logs.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

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

- Control building 1D engineered safeguards 4160 volt switchgear room (CB-FA-3a)
- Control building 1E engineered safeguards 4160 volt switchgear room (CB-FA-3b)
- Control building engineered safeguards actuation system relay room (CB-FA-3c)
- Control building cable spreading room (CB-FA-3d)
- Intermediate building valve gallery and penetration room (IB-FZ-1)
- Intermediate building turbine driven emergency feedwater pump room (IB-FZ-2)
- Intermediate building motor driven emergency feedwater pump room (IB-FZ-3)
- Intermediate building 295 foot elevation (IB-FZ-4)

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. 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.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

a. Inspection Scope

The inspectors observed an operating crew training session on the plant reference simulator on September 3, 2003. The session involved scenarios requiring the operators to diagnose and respond to failure of various secondary plant control modules, loss of control room main alarm panels, and a major fire in the intake structure requiring plant shutdown. The inspectors observed the crew performance critique following the training session.

b. Findings

No findings of significance were identified.

1R12 Maintenance Implementation (71111.12)

a. Inspection Scope

The inspectors verified AmerGen's implementation of the maintenance rule for (1) various ventilation system performance issues and (2) the functional failure evaluation for the containment air cooler excess condensate flow switches. The inspectors reviewed AmerGen's performance monitoring plan for the ventilation system, which was classified a maintenance rule a(2) system.

The inspectors referenced 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants;" Nuclear Management and Resources Council (NUMARC) 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Plants;" and AmerGen administrative procedure ER-AA-310-1000 series, "Maintenance Rule."

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

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

- Planned digital turbine control system circuit card replacement on July 3, 2003
- Planned integrated control system module replacement on July 31, 2003
- Emergent "A" sequence of events recorder card replacement on August 8, 2003
- Planned "A" decay heat removal train system outage on August 12, 2003
- Emergent station instrument air compressor maintenance with the standby compressor out of service on August 26, 2003
- Planned repair of the fire service valve, FS-V-233, which affected the cooling water supply to the station blackout diesel generator on September 18-27, 2003

The inspectors reviewed the risk assessment of these planned and emergent maintenance activities with respect to 10 CFR 50.65(a)(4). The inspectors referenced AmerGen administrative procedure 1082.1, "TMI Risk Management Program," and NUMARC 93-01. In addition to the documents reviewed, the inspectors walked down the protected equipment and maintenance locations to verify that risk was managed in accordance with AmerGen's risk evaluation documents.

b. Findings

No findings of significance were identified.

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

1. Inadvertent Borated Water Storage Tank Draindown

a. Inspection Scope

The inspectors observed operator performance in response to an inadvertent borated water storage tank (BWST) draindown on August 26, 2003. The inspectors observed followup actions by the control room operators to restore BWST level and identify the cause of the inadvertent draindown. As part of the followup to this event, the inspectors reviewed AmerGen's prompt investigation and immediate corrective actions, as well as the formal root cause analysis report.

b. Findings

Introduction. A Green, self-revealing NCV was identified for an inadequate clearance application that allowed BWST inventory to drain to the spent fuel pool. The BWST provides emergency core cooling system inventory to both trains of high pressure and low pressure safety injection. The human performance error resulted in unplanned entry into a technical specification action statement for low BWST level.

Description. On August 26, 2003, at approximately 12:30 a.m., while operating at 100 percent reactor power, plant operators applied a clearance to isolate the "A" spent fuel pool cooling train for planned maintenance activities. Application of the clearance boundary required installation of mechanical gags on several air operated isolation valves. Plant operators committed several procedure errors during installation of the clearance boundary that allowed the air operated valves to drift from their fully shut position, creating a pathway for BWST inventory to gravity drain to the spent fuel pool through interconnected system piping. Control room operators became aware of the situation at 9:09 a.m., when they received a plant process computer BWST low level alarm. At 9:44 a.m., while control room operators were taking actions to identify and isolate the leak path, the control room overhead BWST low level alarm annunciated. At this time, operators declared the BWST inoperable due to less than required inventory and entered technical specification action statement 3.3.1.1(a). Operators took immediate actions to restore BWST levels and the action statement was cleared at 10:03 a.m. The technical specification allowed outage time for BWST inventory is one hour. Operators added approximately 3,000 gallons of water to the BWST to restore its level back to the normal operating band.

AmerGen's investigation into this event determined the root cause to be deficient human performance. Plant operators failed to meet the requirements of AmerGen administrative procedure OP-MA-109-101, "Clearance and Tagging," for system isolation. Specifically, OP-MA-109-101 requires that when a mechanical device or gag

is installed on a valve to maintain it closed for use as a system isolation boundary, the function of that device shall be tested prior to its use. Further, OP-MA-109-101 requires that the motive force used to maintain the boundary valve in the closed position be restored following installation of the mechanical device, providing an additional means to control valve position. During the event on August 26, 2003, plant operators failed to verify the functionality of the mechanical gag and did not restore the motive air force to the valve operator. The combination of errors, a loose-fitting mechanical gag and loss of closing air pressure to the valve operator allowed the isolation valves to drift open, establishing a pathway for BWST inventory to gravity drain to the spent fuel pool through interconnected system piping.

Analysis. The performance deficiency associated with this event was a human performance error which led to the inadvertent draindown of the BWST. The finding was more than minor because, if left uncorrected, it could have resulted in a more significant safety concern, namely less than required BWST inventory to support emergency core cooling system operability. The inspectors evaluated the safety significance of the finding using IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." The finding was determined to be of very low safety significance (Green) using the Phase I screening worksheet of IMC 0609, Appendix A, Attachment 1. The finding affected both the high pressure and low pressure safety injection functions under the mitigating systems cornerstone. The finding was not a design deficiency, did not represent an actual loss of safety function for greater than the technical specification allowed outage time, and did not involve the loss of equipment designed to mitigate an external event.

Enforcement. Technical specification 6.8.1.a requires written procedures be established, implemented, and maintained covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2, dated February 1978. Regulatory Guide 1.33, Appendix A, Item 1.c requires procedures be implemented for equipment control (e.g., locking and tagging). Contrary to the above, on August 26, 2003, plant operators failed to follow written procedures for establishing an isolation boundary for work on the "A" spent fuel pool cooling train, resulting in the inadvertent draindown of the BWST to the spent fuel pool, and subsequent unplanned entry into the technical specification limiting condition for operation for BWST inventory. Because this human performance-related procedure error was of very low safety significance and has been entered into the corrective action system condition report (CR) 173187, this violation is being treated as a non-cited violation, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000289/2003004-01, Inadequate Clearance Application Results in Inadvertent Borated Water Storage Tank Draindown.

2. End of Cycle Power Maneuvers

a. Inspection Scope

The inspectors reviewed portions of planned activities involving operators' end-of-cycle maneuver to extend full power operation by reducing reactor coolant system (RCS) average temperature (Tave). The inspectors verified control room operator actions and plant response were consistent with the guidance provided in operating procedure 1102-

4, “Power Operation.” In addition, the inspectors reviewed CR 176886, issued by TMI to evaluate unexpected steam generator alarms and turbine control valve position response during the Tave reduction activities. The inspectors also performed control room walkdowns and interviewed the applicable system engineer.

b. Findings

No findings of significance were identified.

3. Plant Operation During Hurricane Isabel

a. Inspection Scope

Hurricane Isabel caused high winds, rain, and elevated river level in the vicinity of Three Mile Island Power Station during the period September 18-21, 2003. Sustained winds reached approximately 40 miles per hour (mph), with gusts over 65 mph. River level peaked about 4 feet above normal. The adverse weather increased the likelihood of a plant transient, a loss of offsite power, and degradation of mitigating systems (river water cooling). Station personnel implemented several adverse weather precautions and procedures in advance of the storm (see Section 1R01). Additionally, plant manning was augmented by partially staffing the outage control center and establishing contingencies to partially staff the Technical Support Center and the Emergency Offsite Facility if a Hurricane Watch was declared. Contingencies to maintain station security during the challenging weather conditions were also discussed. Personnel were assigned to monitor weather forecasts and river conditions, and conduct additional plant walkdowns during the storm. 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 during the storm to verify operators implemented appropriate actions to mitigate the effects of the storm. The inspectors also implemented portions of NRC Region I, Incident Response Supplement Procedure 2651, “Hurricane / Severe Weather / Natural Phenomenon Response.”

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

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

- Lower than normal air pressure to “B” and “C” emergency feedwater flow control valves on June 30, 2003
- “A” reactor protection system RCS flow indication anomalies on July 4, 2003
- “A” reactor river water pump outlet valve position indication anomaly during post-maintenance testing on August 7, 2003

- Instrument air system with “B” instrument air compressor out of service and station instrument air compressor degraded performance on August 28, 2003
- “B” emergency diesel generator (EDG) exhaust manifold lubricating oil buildup ignition on September 11, 2003. The inspectors reviewed CR 175247, performed field walkdowns of both EDGs and interviewed the system engineer.

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 referenced Inspection Manual Part 9900, “Operable/Operability - Ensuring the Functional Capability of a System Component,” and AmerGen procedure LS-AA-105, “Operability Determination,” to determine acceptability of AmerGen’s operability evaluations.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed post-maintenance tests performed in conjunction with the following six maintenance activities:

- Integrated control system master control module replacement on July 31, 2003
- “A” atmospheric steam dump valve preventive maintenance on August 8, 2003
- “A” reactor river water pump minimum flow recirculation valve preventive maintenance on August 8, 2003
- “B” spent fuel pool cooling water system outage on August 11, 2003
- “A” building spray system fill and vent following preventive maintenance on August 13, 2003
- “B” instrument air compressor unplanned corrective maintenance on August 26, 2003

The inspectors verified that the post-maintenance test procedures, activities, and results were adequate to verify operability and functional capability as described in NRC Inspection Procedure 71111.19, “Post-Maintenance Testing,” prior to the affected systems being returned to service. The inspectors also walked down the maintenance locations and verified that maintenance was properly authorized by senior reactor operators and conducted in accordance with procedures.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed portions and reviewed results of the following six surveillance tests:

- Heat sink protection system loss of feedwater subsystem on July 2, 2003
- "B" decay river water pump in-service test on July 24, 2003
- Power range nuclear instrument calibration check on July 25, 2003
- "A" reactor river water pump in-service test on August 7, 2003
- "A" decay heat removal pump in-service test on August 13, 2003
- Turbine driven emergency feedwater pump in-service test on August 20, 2003

The inspectors verified that test results were within procedure requirements, technical specification requirements, and in-service testing program requirements as applicable.

b. Findings

No findings of significance were identified.

1R23 Temporary Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed a temporary modification (TMM-10), installed on the steam admission line to the turbine driven emergency feedwater pump to evaluate functionality of the stem line moisture drain trap. The inspectors reviewed the installation documentation and affect on system operability and availability.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

On August 27, 2003, the inspectors observed an emergency preparedness drill. The drill exercised the capability of the Emergency Operations Facility to respond to simultaneous events at two nuclear power plant sites. The inspectors observed participant performance at the TMI technical support center. The inspectors evaluated the opportunities for emergency action level classification and notification presented in the drill scenario. The inspectors verified AmerGen correctly evaluated the drill participants' classifications and notifications in accordance with TMI's emergency plan implementing documents. The inspectors observed portions of the technical support center drill critique.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control To Radiologically Significant Areas (71121.01)

a. Inspection Scope

The inspectors reviewed the effectiveness of access controls to radiologically significant areas. The inspectors toured accessible areas of the radiological controlled area and physically inspected and challenged three locked High Radiation Area access points to determine if access controls were sufficient to preclude unauthorized entry. In addition, the inspectors made independent radiation level measurements within accessible radiologically controlled areas and reviewed radiation measurement data to verify areas expected to exhibit radiation levels in excess of 100 mR/hr, were posted and controlled as High Radiation Areas. The review was against requirements contained in 10 CFR 20 and applicable Technical Specifications.

b. Findings

No findings of significance were identified.

Cornerstone: Public Radiation Safety

2PS2 Radioactive Material Processing and Transportation (71122.02)

1. Inspection Planning and In-Office Review

a. Inspection Scope

The inspectors reviewed the solid radioactive waste system description provided in the Updated Final Safety Analysis Report (UFSAR). The inspectors also reviewed the Three Mile Island Combined Annual Radioactive Effluent Release Report, dated April 30, 2003, relative to types and quantities of radioactive waste shipped offsite and relative to changes to the Process Control Program (PCP).

b. Findings

No findings of significance were identified.

2. Radioactive Waste System Walkdown

a. Inspection Scope

The inspectors walked down accessible portions of the station's radioactive liquid and solid waste collection, processing, and storage systems locations to determine if

systems and facilities were consistent with the descriptions provided in the UFSAR and to determine if the general material condition of facilities and systems was acceptable. Areas reviewed included the Unit 1 Auxiliary Building, Interim Solid Waste Storage Building, and exterior storage areas. The inspectors reviewed the following matters:

- the status of any non-operational or abandoned radioactive waste process equipment and the adequacy of administrative and physical controls for those systems
- changes made to radioactive waste processing systems and potential radiological impact
- current processes for transferring radioactive waste resin and sludge to shipping containers, mixing of waste, and collection of representative samples of the waste (as appropriate)
- radioactive waste and material storage and handling practices
- sources of radioactive waste at the station, processing (as appropriate), and handling of the waste

The inspectors reviewed the material condition of the facility via direct observation of facilities and equipment during tours, review of recent video taped inspections of areas, and review of completed radiological surveys. Areas reviewed included tank cubicles, evaporators, and waste storage areas.

The review was against criteria contained in the station's UFSAR, 10 CFR 20, 10 CFR 61, the PCP, and applicable station procedures.

b. Findings

No findings of significance were identified.

3. Waste Characterization and Classification

a. Inspection Scope

The inspectors reviewed the following matters:

- radio-chemical sample analysis results for radioactive waste streams
- the development of scaling factors for difficult to detect and measure radionuclides, including transuranics
- methods and practices to detect changes in waste streams
- classification and characterization of waste relative to 10 CFR 61.55 and 10 CFR 61.56
- implementation of applicable NRC Branch Technical Positions on waste classification, concentration averaging, waste stream determination, and sampling frequency
- current waste streams and their processing relative to descriptions contained in the UFSAR and the station's approved PCP

- revisions of the PCP and the UFSAR to reflect changes (as appropriate)
- TMI-1, 10 CFR 61, Annual Update dated July 7, 2000
- TMI-1, 10 CFR 61, Annual Update dated December 13, 2001
- AmerGen/Exelon Process Control Program for Radioactive Waste dated January 11, 2002

The review was against criteria contained in 10 CFR 20, 10 CFR 61, 10 CFR 71, the UFSAR, the PCP, applicable NRC Branch Technical Positions, and licensee procedures.

b. Findings

No findings of significance were identified.

4. Shipment Preparation, Records, and Documentation

a. Inspection Scope

The inspectors selected and reviewed the records associated with eight shipments of radioactive material which included four non-excepted shipments. The shipments were Nos. RS-02-013, RS-02-019, RS-02-063, RS-02-072, RS-02-073, RS-02-087, RS-02-0125, and RS-03-060. The following aspects of the radioactive waste packaging and shipping activities were reviewed.

- implementation of applicable shipping requirements including completion of waste manifests
- implementation of the specifications in the applicable Certificates of Compliance, as appropriate, for the approved shipping casks including limits on package contents or approved vendor procedures
- classification and characterization of waste relative to 10 CFR 61.55 and 61.56
- implementation of recent NRC and DOT shipping requirements rule changes
- implementation of 10 CFR 20 Appendix G
- implementation of specific radioactive material shipping requirements
- packaging of shipments
- labeling of shipping containers
- placarding of transport vehicles
- conduct of vehicle checks
- provision of driver emergency instructions
- completion of shipping paper/disposal manifest
- evaluation of package against package performance standard
- conformance with procedures for cask loading, closure and use requirements (including consistency with cask vendor approved procedures)

The review was against criteria contained in 10 CFR 20; 10 CFR 61; 10 CFR71; applicable Department of Transportation requirements, as contained in 49 CFR 170-189 for the above areas; station procedures; applicable disposal facility licenses; and

applicable Certificates of Compliance or vendor procedures for various shipping casks, as appropriate.

b. Findings

No findings of significance were identified.

5. Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed assessments of the radioactive waste handling, processing, storage, and shipping programs. Also, reviewed were assessments of the PCP.

The following documents were reviewed:

- Radioactive Material Packaging and Transportation Assessment dated May 22, 2003
- Plant Health Committee System Presentation - Liquid Radwaste Disposal System dated June 2002
- NOS Field Observation - Radiological Protection/Radwaste dated December 2001
- Quality Assurance program Approval dated May 5, 2003
- 2003-2004 Audit Schedule dated March 20, 2003

The review was against criteria contained in the UFSAR, applicable station audit and surveillance procedures, and Technical Specification 6.5, Review and Audit.

b. Findings

No findings of significance were identified.

3. SAFEGUARDS

Cornerstone: Physical Protection

3PP2 Access Control (71130.02)

a. Inspection Scope

The inspectors observed the receipt search of the reactor vessel head performed at the Harrisburg International Airport on September 9, 2003. The reactor vessel head was fabricated in France and flown into the Harrisburg International Airport. The head was transported to Three Mile Island and passed through the controlled portion of the Three Mile Island owner-controlled area to get to a lay down area at the south end of the island for storage until needed. Prior to entry into the controlled portion of the owner-controlled

area, a search of the reactor head was required. The search was performed at the airport prior to the head being tarped and transported to Three Mile Island. The search was conducted by the Pennsylvania State Police and the Harrisburg Airport police using K-9 explosive detection dogs and observed by licensee security representatives. After the head had been searched and tarped, state police escorted it to the site.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

Mitigating Systems Cornerstone

- High Pressure Safety Injection Safety System Unavailability (SSU)
- Auxiliary Feedwater SSU

The inspectors referenced NEI 99-02, Revision 2, "Regulatory Assessment Performance Indicator Guideline," and reviewed data submitted by AmerGen for the mitigating systems cornerstone high pressure safety injection and auxiliary feedwater safety system unavailability. The inspectors reviewed operating logs, maintenance rule records, licensee event reports, and the corrective action program database to verify the accuracy and completeness of the reported data. Records were reviewed for the last two calendar quarters of 2002 and the first two calendar quarters of 2003.

4OA2 Identification and Resolution of Problems (71152)

The inspectors performed two detailed annual sample reviews and devoted 10 to 15 percent of their inspection time in each baseline inspection procedure assessing AmerGen's problem identification and resolution appropriate to each inspection area.

1. Annual Sample Review

a. Inspection Scope

Inadequate Corrective Actions for Safety-Related Inverter

On December 1, 2001, a loss of vital bus "B" occurred when the inverter preferred alternating current (ac) power source power input switched over to the dc backup source several times. After the seventh transfer back to the ac source input, the "B" inverter failed. The vital bus "B" was lost due to a blown fuse in the input bridge circuit of inverter "B."

As documented in NRC Inspection Reports 05000289/2001008 and 05000289/2002001, the NRC reviewed and assessed the AmerGen's recovery efforts of "B" vital bus corrective actions including the short term immediate corrective actions (2001008). The later inspection (2002001) reviewed the significance of the risk issues associated with this event and determined that this condition was a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." However, because of the very low safety significance of this finding, and because AmerGen had entered the issue into its corrective action process (CR 90391), this violation was treated as a non-cited violation (NCV 05000289/2001008-01).

During this inspection the inspectors reviewed and assessed the adequacy of the AmerGen's corrective actions implemented with the timeliness of issuance of this condition report and the root cause analysis and related performance issues associated with the inverter failure event. The inspectors reviewed the design change modifications implemented, updated vendor manual/design drawings, and maintenance/operating procedure changes. In addition, the newly established guidelines for review of design changes and the procurement staff expectations from engineering and procurement personnel in response to this inverter issue are identified in the root cause analysis.

The inspectors also reviewed the inverter performance monitoring system data for a six-month period to assure the inverters performed their intended design function. The inspectors also walked down the alternating current (ac) and direct current (dc) electrical distribution applicable system components. Specific attention was given to the added new step down transformers, the reset switch on each inverter panel, the ac and dc system voltage conditions, and the material condition to assure plant inverters and ac and dc electrical distribution systems were performing within the revised design limits and new procedural guidelines.

Review of Corrective Actions Associated with Heat Actuated Detector Placement

The inspectors selected CRs 112699 and 113079 for detailed review. CR 112699 identified installation issues with spacing and location of the heat actuated detectors in the relay room. The heat actuated detectors were not installed in accordance with the National Fire Protection Association (NFPA) 72E-1974, Standard on Automatic Fire Detectors, for beam construction. This issue was discussed in NRC inspection report 05000289/2002011 and dispositioned as a "Green" finding. CR 113079 identified an issue in which six ionization smoke detectors (non-credited) located in the relay room were not being periodically tested by AmerGen's fire protection administrative procedure. The inspectors reviewed these CRs to ensure that the full extent of these issues was identified, that appropriate evaluations were performed, that appropriate extent of condition reviews was performed, and that appropriate corrective actions were specified and prioritized. For corrective actions not completed, the inspectors verified an appropriate plan was in place to disposition the issue. The inspectors also verified that the reviewed CRs were generated and reviewed in accordance with AmerGen's corrective action program procedure.

The inspectors reviewed the corrective actions which included evaluations of the as-built configurations of heat actuated detectors and ionization smoke detectors in the relay room and revisions to the appropriate documents to periodically test the ionization smoke detectors.

The inspectors toured the relay room to verify the installed configuration of detection and to assess the material condition of the system and its related components. Additionally, the inspector interviewed fire protection engineering personnel to determine their familiarity with the issues inspected and to gain insights to how the issues were and would be resolved.

b. Findings

No findings of significance were identified.

The inspector found that the corrective actions associated with the reviewed CRs were appropriate and acceptable upon completion. The apparent cause evaluations were detailed and thorough. AmerGen appropriately conducted extent of condition reviews and generic reviews for the identified issues. Additionally, AmerGen had evaluated issues associated with the heat actuated detectors locations and determined that the installation does meet the installation guidance in NFPA 72E-1999. Additional defense-in-depth features, such as a duct-mounted ionization smoke detector and ceiling-mounted ionization smoke detectors, would provide early warning of a fire in the relay room. AmerGen also established plans to begin periodic testing of the six ionization smoke detectors in the relay room starting in January 2004.

2. Cross-References to Problem Identification & Resolution Findings Documented Elsewhere

Section 1R14 of the report describes a human performance error by plant operators that resulted in the inadvertent draindown of the borated water storage tank (BWST) and unplanned entry into the technical specification limiting condition for operation for BWST inventory with the plant operating at 100 percent power. The human performance error involved plant operators' failure to follow procedures for application of a clearance isolation boundary for planned maintenance activities.

4OA3 Event Followup (71153)

1. Unusual Event - Transformer Fire in Turbine Building, Unit 2

a. Inspection Scope

On July 2, 2003 at 10:35 a.m., operators received indications of a fire associated with Bus 2-31 switchgear in Unit 2. This equipment is located within the protected area, but not in a radiologically contaminated area. The fire brigade responded and determined the fire emanated from a 13,200 Volt, Post Cast, Dry Type transformer. Operators declared an Unusual Event, at 10:56 a.m. based on a fire within the protected area

which could not be extinguished within 15 minutes. With offsite assistance, the fire was extinguished at 11:25 a.m. and the event was terminated at 12:44 p.m.

The inspectors conducted an onsite event follow-up inspection to ascertain the cause of the fire, the extent of damage, and assess the effectiveness of the licensee's response to the fire. The review was against criteria contained in 10 CFR 50.48(f), Post-Defueling Monitored Storage Safety Analysis Report (SAR), Offsite Dose Calculation Manual (ODCM), Regulatory Guide 1.191, "Fire Protection Program for Nuclear Power Plants During Decommissioning and Permanent Shutdown," and site procedures. The inspectors conducted plant tours, interviews, and record reviews (including CR 166089) to assess whether the installed fire detection and suppression systems were effectively maintained and capable of performing their intended function required by the SAR. The inspectors also reviewed the April 2003 Nuclear Electric Insurance Limited Audit Report and the licensee's August 2002 Fire Protection Audit Report to verify the Unit 2 fire detection and suppression systems were properly maintained and tested. The inspectors confirmed that no radiological release or spread of contamination occurred as a result of the fire.

b. Findings

No findings of significance were identified.

2. (Closed) Licensee Event Report 05000289/2003001-00, Control Room Habitability Boundary Ventilation Access Panel Found Open Due to Latching Mechanism Not Properly Closed

On June 24, 2003, the NRC inspectors found an access panel in the control building ventilation system open, not in its normal position. This condition resulted in not meeting the design basis requirement of maintaining positive pressure inside the control building envelope following a design basis accident. Plant operators immediately closed the access panel restoring the control building envelope boundary to its design configuration. The licensee event report (LER) was reviewed by the inspectors and no findings of significance were identified. The inspectors determined no performance deficiency existed as a result of this event. AmerGen documented its analysis of the event and its immediate and planned corrective actions in its corrective action process (CR 164648).

4OA6 Meetings, Including Exit

On October 2, 2003, 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. Due to the type of security inspection conducted, no formal exit meeting was held; however, the inspectors did notify the licensee representatives of the preliminary findings at the conclusion of the inspection. 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

K. Bartes, Plant Operations Director
J. Byrne, Vice President TMI-2, GPU Nuclear Inc.
G. Chick, Director, Maintenance
L. Clewett, Director, Site Engineering
E. Curry, Unit 2 Supervisor
G. Gellrich, Plant Manager
L. Mendel, Radiological Control Technician
D. Merchant, Director, Radiation Health and Safety
M. Paul, Manager, Training
G. Rombold, Manager, Regulatory Assurance
D. Smith, Post Defueled Monitored Storage Manager
L. Terrazas, Fire Protection Program Engineer
W. Vuxta, Group Radiological Control Supervisor
B. Williams, Vice President, TMI Unit I

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

2003004-01	NCV	Inadvertent Borated Water Storage Tank Draindown (Section 1R14)

Closed

2003001-00	LER	Control Room Habitability Boundary Ventilation Access Panel Found Open Due to Latching Mechanisms Not Properly Closed (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Section 4OA3, Event Followup

1104-45Q, Rev. 13, TMI-2 Fire Protection System
1202-01, Rev. 64, TMI Unit-1 Emergency Procedure, Fire
2104-40C, Rev. 0, TMI-2 Turbine Building Sump Transfer to IWTS
2107-1, Rev. 28, TMI-2 Electrical Distribution, pages 16-20
2107-1A, Rev. 2, Restoration of TMI-2 Equipment Following Loss of 13.2kV
6610-ADM-4250.10, Rev. 14 Radiological Controls/Chemistry Actions when RMS Malfunctions
AR 00166089, Unit 2 Bus 2-31 Fire

AR 00166499, Stones Clogged fire nozzle during fire on 7/2/03
AR 1728537, Thermography Program Task
Air Monitoring System-AMS-4 Daily Operational Check dated June 30 - July 9, 2003
Gamma Spectrum Analyses for U2 Turbine Building Particulate Air Samples
IC-168, Rev. 10, Unit-2 Fire Detection Functional Test
Nuclear Electric Insurance Limited Audit Report dated April 8-11, 2003
Operations Log dated July 2, 2003
OP-AA-201-002, Rev. 1, Attachment 1, Fire Event Report
P&ID Number 206-201, Rev. 7, Flow Diagram of 13.2kV System
P&ID Number 206-202, Rev. 8, Flow Diagram of 480 V Unit Substation
P&ID Number 302-231, Rev. 93, Fire Service Water Flow Diagram
Protectowire Linear Heat Detector Specifications
Radiological Protection Log dated July 2, 2003
Radiological Survey Sheets 03-04460 through 03-04463
Triennial Fire Protection Audit dated August 12-16, 2002
Turbine Building Fire Area Drawings

LIST OF ACRONYMS

ac	Alternating Current
ADAMS	Agencywide Documents and Management System
AmerGen	AmerGen Energy Company, LLC
BWST	Borated Water Storage Tank
CFR	Code of Federal Regulations
CR	Condition Report
dc	Direct Current
DH	Decay Heat
DRP	Division of Reactor Projects
EDG	Emergency Diesel Generator
IMC	Inspection Manual Chapter
IR	Inspection Report
mph	Miles per Hour
NCV	Non-Cited Violation
NFPA	National Fire Protection Association
NRC	Nuclear Regulatory Commission
NUMARC	Nuclear Management and Resources Council
ODCM	Offsite Dose Calculation Manual
PCP	Process Control Program
RCS	Reactor Coolant System
SAR	Safety Analysis Report
SDP	Significance Determination Process
SSU	Safety System Unavailability
Tave	Average Temperature
TI	Temporary Instruction
TMI	Three Mile Island, Unit 1
UFSAR	Updated Final Safety Analysis Report