UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

April 25, 2008

Mr. Charles G. Pardee
Chief Nuclear Officer (CNO) and Senior Vice President
Exelon Generation Company, LLC
Chief Nuclear Officer (CNO)
AmerGen Energy Company, LLC
200 Exelon Way
Kennett Square, PA 19348

SUBJECT: THREE MILE ISLAND STATION, UNIT 1 – NRC INTEGRATED INSPECTION REPORT 5000289/2008002

Dear Mr. Pardee:

On March 31, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Three Mile Island, Unit 1 (TMI) facility. The enclosed inspection report documents the inspection results, which were discussed April 18, 2008, with Mr. Bill Noll and other members of your staff.

The 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.

On the basis of the results of this inspection, no findings of significance were identified.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice", a copy of this letter, its enclosure, and your response (if any) 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 610-337-5200 if you have any questions regarding this letter.

Sincerely,

/RA/

Ronald R. Bellamy, Ph.D., Chief
Projects Branch 6
Division of Reactor Projects

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

Enclosure: Inspection Report 05000289/2008002
w/Attachment: Supplemental Information

cc w/encl:
Executive Vice President and Chief Operating Officer, Exelon Generation
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
Senior Vice President – Mid-Atlantic Operations, AmerGen
Senior Vice President – Operations Support, AmerGen
Vice President – Licensing and Regulatory Affairs, AmerGen
Director Licensing – AmerGen
Manager Licensing – TMI, AmerGen
J. Fewell, Esq., Associate General Counsel, Exelon Nuclear
Correspondence Control Desk – AmerGen
Chairman, Board of County Commissioners of Dauphin County
Chairman, Board of Supervisors of Londonderry township
R. Janati, Director, Bureau of Radiation Protection, State of PA
J. Johnsrud, National Energy Committee
E. Epstein, TMI-Alert (TMIA)
D. Allard, PADEP
J. Powers, Director, PA Office of Homeland Security
R. French, Director, PA Emergency Management Agency

Mr. Charles G. Pardee
Chief Nuclear Officer (CNO) and Senior Vice President
Exelon Generation Company, LLC
Chief Nuclear Officer (CNO)
AmerGen Energy Company, LLC
200 Exelon Way
Kennett Square, PA 19348

SUBJECT: THREE MILE ISLAND STATION, UNIT 1 – NRC INTEGRATED INSPECTION REPORT 5000289/2008002

Dear Mr. Pardee:

On March 31, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Three Mile Island, Unit 1 (TMI) facility. The enclosed inspection report documents the inspection results, which were discussed April 18, 2008, with Mr. Bill Noll and other members of your staff.

The 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.

On the basis of the results of this inspection, no findings of significance were identified.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice", a copy of this letter, its enclosure, and your response (if any) 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 610-337-5200 if you have any questions regarding this letter.

Sincerely,

Ronald R. Bellamy, Ph.D., Chief **/RA/**
Projects Branch 6
Division of Reactor Projects

Distribution w/encl: **(VIA EMAIL)**
S. Collins, RA
M. Dapas, DRA
D. Lew, DRP
J. Clifford, DRP
R. Bellamy, DRP
S. Barber, DRP
A. Rosebrook, DRP
D. Kern, DRP, Senior Resident Inspector
J. Brand, DRP, Resident Inspector
C. LaRegina, DRP, Resident OA
S. Williams, RI, OEDO
H. Chernoff, NRR
J. Lubinski, NRR
P. Bamford, PM, NRR
G. Miller, NRR
J. Lubinski, NRR
ROPreportsResource@nrc.gov
Region 1 Docket Room (with concurrences)

ML081160408

SUNSI Review Complete AAR (Reviewer's Initials)
DOCUMENT NAME: G:\DRP\BRANCH6a\+++Three Mile Island\TMI Inspection Reports\TMI 08- 002.doc
After declaring this document "An Official Agency Record" it **will** be released to the Public.

To receive a copy of this document, indicate in the box: "C"= Copy without attachment/enclosure **"E"=**Copy with attachment/enclosure, **"N"=**No copy

OFFICE	RI/DRP		RI/DRP		RI/DRP		RI/DRS	
NAME	DKern/ AAR for		ARosebrook/ AAR		SBarber/ SB		RBellamy/RRB	
DATE	4 /24 /08		4/24 /08		4/25 /08		4/ 25 /08	

OFFICIAL RECORD COPY

U.S. NUCLEAR REGULATORY COMMISSION
REGION 1

Docket No:	05000289
License No:	DPR-50
Report No:	05000289/2008002
Licensee:	AmerGen Energy Company, LLC (AmerGen)
Facility:	Three Mile Island Station, Unit 1
Location:	PO Box 480 Middletown, PA 17057
Dates:	January 1 – March 31, 2008
Inspectors:	David M. Kern, Senior Resident Inspector Javier M. Brand, Resident Inspector Jeffrey Bream, Reactor Engineer Danté Johnson, Physical Security Inspector Kevin Mangan, Senior Reactor Inspector Ronald M. Nimitz, Senior Health Physicist
Approved by:	Ronald R. Bellamy, Ph.D., Chief Projects Branch 6 Division of Reactor Projects (DRP)

TABLE OF CONTENTS

SUMMARY OF FINDINGS

IR 05000289/2008002; 1/1/2008 – 3/31/2008; AmerGen Energy Company, LLC; Three Mile Island, Unit 1; Routine integrated report.

The report covered a 13-week period of inspection by resident inspectors and announced inspections by regional inspectors. No findings of significance were identified. 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

No findings of significance were identified.

B. Licensee Identified Violations

None.

REPORT DETAILS

Summary of Plant Status

Three Mile Island, Unit 1 (TMI) operated at approximately 100 percent rated thermal power for the entire inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 1 site sample)

a. Inspection Scope

Winter storms, including heavy rains and winds, elevated the Susquehanna River level above flood stage and affected river conditions from March 5 to 11, 2008. The inspectors reviewed procedures, conducted interviews, and performed various inspections to verify that operator actions to address adverse river conditions maintained the readiness of the various river water systems. Operators closely monitored National Weather Service flood projections and entered procedure 1202-32, Flood, Rev. 65 when the 36-hour forecast projected river level to reach flood stage (286.1 feet at the intake screen house (issue report (IR) 745543). The inspectors walked down the intake screen house which houses the fire protection system pumps and safety related cooling water pumps for the decay heat removal system, nuclear service water system, and reactor river water system. Additionally, after river level receded below flood stage, the inspectors walked down the flood dike which surrounds the entire power plant in accordance with procedure 3301-SA1, Dike Inspection, Rev. 12 to determine whether the flood barrier had been damaged or needed repair (IRs 734215, 747638). The inspectors evaluated the adequacy of various emergency and surveillance procedures associated with river water and intake systems to assess AmerGen's protection from storms and adverse river conditions.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

Partial System Walkdowns (71111.04Q – 3 samples)

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

- On February 12, 2008, the inspectors walked down portions of the 'A' decay heat removal and reactor building spray systems while the plant was in an unplanned orange risk condition due to an unexpected electrical breaker fault which made the 'B' decay river water pump inoperable.

- On February 21, the inspectors walked down portions of the 'B' reactor building spray system while the plant was in a 48 hour limiting condition of operation for scheduled 'A' emergency safeguards and actuation load sequence testing.

- On February 27 and 28, the inspectors walked down portions of the remote safe shutdown panel, while engineers and technicians were performing inspections of the engineered safeguards and actuation system relays.

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. Additional documents reviewed are listed in the attachment.

Complete System Walkdown (71111.04S – 1 sample)

On March 3 and 4, 2008, the inspectors performed one complete system walkdown sample on the 'B' and 'C' makeup and purification system trains, while the 'A' system train was in a scheduled maintenance outage. The inspectors conducted a detailed review of the alignment and condition of the system using the applicable one-line diagram 302-560, Makeup and Purification, Rev. 44. In addition, the inspectors reviewed and evaluated the corrective action program reports for impact on system operation, interviewed the system engineer, and interviewed control room operators.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope (71111.05Q – 8 samples)

The inspectors conducted fire protection inspections for several plant fire zones, selected based on the presence of equipment important to safety within their boundaries. The inspectors conducted plant walkdowns and verified the areas were as described in the TMI Fire Hazard Analysis Report, and that fire protection features were being properly controlled per surveillance procedure 1038, Administrative Controls-Fire Protection Program, Rev. 69. 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 in accordance with procedure OP-MA-201-007, Fire Protection System Impairment Control, Rev. 5. In addition, the inspectors verified that applicable clearances between fire doors and floors met the criteria of Attachment 1 of Engineering Technical Evaluation CC-AA-309-101, Engineering Technical Evaluations, Rev. 9. Fire zones and areas inspected included:

- Fire Zone AB-FZ-2A, Auxiliary Building Elevation 281', Makeup and Purification Pump A;
- Fire Zone AB-FZ-2B, Auxiliary Building Elevation 281', Makeup and Purification Pump B;
- Fire Zone AB-FZ-3C, Auxiliary Building Elevation 281', Makeup and Purification Pump C;
- Fire Zone DG-FA-1, Diesel Generator Building Elevation 305', Diesel Generator A;
- Fire Zone DG-FA-2, Diesel Generator Building Elevation 305', Diesel Generator B;
- Fire Zone TB-FA-1, Turbine Building Elevation 305'

- Fire Zone TB-FA-1, Turbine Building Elevation 322'
- Fire Zone TB-FA-1, Turbine Building Elevation 355'

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11Q – 1 sample)

a. Inspection Scope

On March 18, 2008, the inspectors observed licensed operator requalification training at the control room simulator for the 'E' operator crew. The inspectors observed the operators' simulator drill performance and compared it to the criteria listed in TMI Operational Simulator Scenario Number 12, Condenser Vacuum Leak, Stuck Rod, Loss of Offsite Power with Diesel and Emergency Feedwater Failures, Rev. 12. The inspectors reviewed the operators' ability to correctly evaluate the simulator training scenario and implement the emergency plan. The inspectors observed supervisory oversight, command and control, communication practices, and crew assignments to ensure they were consistent with normal control room activities. The inspectors observed operator response during the simulator drill transients. The inspectors evaluated training instructor effectiveness in recognizing and correcting individual and operating crew errors. The inspectors attended the post-drill critiques in order to evaluate the effectiveness of problem identification. The inspectors verified that emergency plan classification and notification training opportunities were tracked and evaluated for success in accordance with criteria established in Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Performance Indicator Guideline, Rev. 5. Additional documents reviewed are listed in the attachment.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q – 2 samples)

a. Inspection Scope

The inspectors evaluated the listed samples for Maintenance Rule (MR) implementation by ensuring appropriate 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. Additionally, extent of condition follow-up, operability, and functional failure determinations were reviewed to verify they were appropriate. 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; Nuclear Management and Resources Council (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. 6. The inspectors verified that appropriate corrective actions were initiated and documented in IRs, and that engineers properly categorized failures as maintenance rule functional failures and maintenance preventable functional failures, when applicable.

- IR 735277 describes the failure of DR-P-1B to start from the control room. AmerGen identified the failure as a Maintenance Rule Functional Failure. Since the cause of the failure was attributed to an isolated manufacturing defect, AmerGen determined that it was not a Maintenance Preventable Functional Failure. As such, the 10 CFR 50.65 a(2) determination remains valid.

- The inspectors reviewed the TMI hydrogen monitoring system to ensure it was being effectively controlled and maintained such that the system remained capable of performing its intended function. This inspection sample was based on an NRC maintenance rule finding identified in March 2007, at another nuclear power plant regarding ineffective controls of the performance and condition of the hydrogen monitoring system.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 5 samples)

a. Inspection Scope

The inspectors reviewed the scheduling, control, and restoration during the following maintenance activities to evaluate their effect on plant risk. This review was against criteria contained in AmerGen Administrative Procedure 1082.1, TMI Risk Management Program, Rev. 7 and WC-AA-101, On-Line Work Control Process, Rev. 14.

- From December 27, 2007 thru January 4, 2008, the TMI sodium hydroxide (NaOH) chemical used to achieve a uniform pH in containment post accident was changed to trisodium phosphate per modification ECR 07-174. The online maintenance risk profile remained green during this evolution (Risk Document 1254, Rev. 3).

- On January 22, 2008, emergency feedwater valve EFW-V-30B was taken out of service for scheduled overhaul of the air actuator. The condition elevated the online maintenance risk profile to yellow (Risk Document 1020, Rev. 4).

- On February 12, the 'B' decay river water pump (DR-P-1B) failed to start due to a faulted starting relay (IRs 735277 and 735778). The condition elevated the online maintenance risk profile to orange (Risk Document 1195, Rev. 3).

- On February 12, the 'C' makeup pump auxiliary lubricating oil pump (MU-P-2C) did not auto start as expected during a scheduled surveillance test due to a failed pressure switch (IR-735063). This condition did not affect operability of MU-P-1C. On February 13, after DR-P-1B was returned to service and the on-line risk had been returned to green, technicians replaced the failed pressure switch. This work elevated the online maintenance risk profile to yellow (Risk Document 1066, Rev. 2).

- On February 27, a contact for a reactor building emergency cooling and isolation relay 63X-RB6B was replaced due to intermittent indication. The online maintenance risk profile remained green during this evolution (Risk Document 551, Rev. 8).

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 – 3 samples)

a. Inspection Scope

The inspectors verified that degraded conditions in question were properly characterized, operability of the affected systems was properly evaluated in relation to Technical Specification (TS) requirements, applicable extent of condition reviews were performed, and no unrecognized increase in plant risk resulted from the equipment issues. The inspectors referenced NRC Inspection Manual Chapter (IMC) Part 9900, Operability Determinations & Functionality Assessments For Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety and AmerGen procedure OP-AA-108-115, Operability Determinations, Rev. 5, to determine acceptability of the operability evaluations. The inspectors reviewed operability evaluations for the following degraded equipment issues:

- On December 4, 2007, NS-P-1A breaker operating mechanism became bound during breaker inspection (WO-R2039072). This condition occurred after the breaker had been cycled satisfactorily eight times. An analysis performed by the manufacturer determined that this condition affected only the manual closure of the breaker which is used for maintenance and would not come into play during normal auto electrical operation of the breaker. Therefore, NS-P-1A operability was not impacted (IRs 707261 and 730312).

- On December 11, SF-P-1A inadvertently tripped during surveillance testing per 1303-4.19, HPI/LPI Analog Channel test, Rev. 26. Engineers determined the cause was a misaligned contact in ESAS load shed relay 63Z1B-RC2A. Operability of SF-P-1A was not affected because the relay function to trip the pump upon an ESAS actuation was not affected (IR-710133).

- On January 2, 2008, operators and technicians identified that the reactor building emergency cooling and isolation system channel RB2A failed to actuate during performance of ESAS surveillance testing. Engineers determined that this condition only affected the test circuit and not the safety portion of the circuit (IRs-717254 and 725846).

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18 – 1 sample)

a. Inspection Scope

The inspectors reviewed the following modification to determine whether it was designed and/or implemented as required by CC-AA-102, Design Input and Configuration Change Impact Screening, Rev. 14 and CC-AA-103, Configuration Change Control, Rev. 17. The inspectors verified the modification supported plant operation as described in the

Updated Final Safety Analysis Report (UFSAR) and complied with associated TS requirements. The inspectors reviewed the function of the changed component, the change description and scope, and the associated 10 CFR 50.59 screening evaluation.

- Engineering Change Request (ECR) # 06-595, Decay River Strainer, Rev. 0 was installed to replace the funnel type strainer media with a flat metal disc media to reduce the potential for clogging by filamentous algae. This algae caused excessive strainer clogging in May 2006 due to a bloom associated with lower than usual river levels. The inspectors also reviewed IR-588605 which evaluated a higher than expected differential pressure result during post installation testing of the new media. Engineers determined that the higher differential pressure was due to improper design of the media (lesser number of holes). The evaluation also determined that this media did not affect operability of the strainer and decay river system. The inspectors verified corrective actions including revision to the ECR to specify the correct number of holes for the media. In addition, actions to replace the existing media with the proper design are scheduled for May 2008.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19 – 7 samples)

a. Inspection Scope

The inspectors reviewed and/or observed the following post-maintenance test (PMT) activities 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.

- On December 12, 2007, operators performed post maintenance testing in accordance with 1303-4.19, HPI/LPI Analog Channel Test, Interim Change 24193, following replacement of a misaligned contact that caused an inadvertent trip of SF-P-1A (Ref: Section 71111.15). The inspectors reviewed the PMT scope adequacy and results to ensure the PMT addressed the results of additional relay failure analysis performed in January 2008.

- On January 23, 2008 operators performed post maintenance testing in accordance with OP-TM-424-212, IST of EF-V-30s and EF-V-52s, Rev.2, following replacement of the actuator for EFW-V-30B.

- On January 24, operators performed post maintenance testing in accordance with 1303-4.13, RB Emergency Cooling and Isolation System Analog Test, Rev. 40, and Interim Change 24192, following replacement of multiple components to address a relay (T2/RB2A) failure to de-energize (IR-725846).

- On February 13, operators performed post maintenance testing of DR-P-1B in accordance with Work Order C2016938 following replacement of a faulted X-relay within electrical circuit breaker DR-P-1B-BK.

- Control building chiller AH-C-4B was degraded, due to developing insufficient oil pressure upon starting from a standby condition. Technicians implemented a complex troubleshooting plan including oil samples, auxiliary oil pump voltage and current readings, replacement of the auxiliary pump and motor, and borescope inspection of the auxiliary oil system and compressor work order C2016844. Post maintenance tests were performed from February 15 to March 11, using C2016844 and E-108, Control Building Chiller AH-C-4A/B Weekly, Quarterly, and Annual Inspection, Interim Change 19851.

- On February 27, operators performed post maintenance testing of ESAS relay 63X-RB6B, in accordance with procedure 1303-4.14, RB 30 PSIG Analog Channels, Interim Change 24839, following replacement of a contact that was providing intermittent indication.

- On March 27, CM-V-3 open and close strokes were successfully verified using procedure 1300-3Q.5, Quarterly Inservice Testing of CM-V-1/2/3/4 Valves During Normal Plant Operations, Rev. 1 following troubleshooting to address excessive valve closure stroke time.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope (3 Inservice Testing Samples and 2 Routine Surveillance Samples)

The inspectors observed and/or reviewed the following operational surveillance tests to verify adequacy of the test to demonstrate the operability of the required system or component safety function. Inspection activities included review of previous surveillance history to identify previous problems and trends, observation of pre-evolution briefings, and initiation/resolution of related IRs for selected surveillances.

- From December 27, 2007 to January 2, 2008, procedure OP-TM-214-211, Verification of TSP, Rev. 0
- On January 2, 2008, 1303-4.13, RB Emergency Cooling and Isolation System Analog Test, Rev. 40 and Interim Change 24192.
- On February 6, procedure OP-TM-211-248, Boric Acid Injection System Functional Test, Rev. 0
- On February 12, procedure OP-TM-211-208, IST Of MU-P-1C, Rev. 2
- On February 12, procedure OP-TM-211-251, Leakage Exam Of MU System, Interim Change 23462

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope (1 Training Evolution Sample)

The inspectors observed an emergency event training evolution conducted on March 18, 2008, at the Unit 1 control room simulator to evaluate emergency procedure implementation, event classification, and event notification. The event scenario involved multiple safety-related component failures and plant conditions warranting simulated Unusual Event and Alert emergency event declarations. The inspectors observed the drill critique to determine whether the licensee critically evaluated drill performance to identify deficiencies and weaknesses. Additionally, the inspectors verified the Drill/Exercise performance indicators were properly evaluated consistent with NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Rev. 5. Additional documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone:Occupational Radiation Safety

20S1 Access Controls (71121.01 – 4 samples)

a. Inspection Scope

The inspectors reviewed selected activities and associated documentation in the below listed areas. The evaluation of AmerGen's performance in these areas was against criteria contained in 10 CFR 20, applicable TSs, and applicable AmerGen procedures.

Plant Walkdowns, Radiation Work Permit Reviews, Job Reviews

The inspectors walked down selected radiological controlled areas and reviewed housekeeping, material conditions, posting, barricading, and access controls to radiological areas. The inspectors toured areas of the Auxiliary Building, Spent Fuel Area, outdoor areas, and radioactive waste processing area. The inspectors conducted selective independent radiation surveys, and verified the adequacy of: selected radiological boundaries and postings; that engineering controls were in place; that air samplers were properly located; and that TS locked High Radiation Areas (HRA) were properly secured and posted.

The inspectors selectively reviewed the applied radiological controls for personnel entry into the Unit 1 reactor building containment at power on March 3, 2008, and movement of concentrated radioactive waste on March 6, 2008. The reviews included evaluation of the adequacy of all applied radiological controls including radiation work permits, procedure adherence, radiological surveys, job coverage, airborne radioactivity sampling and controls, and contamination controls. The reviews included, where applicable, barrier integrity and the application of engineering controls for potential airborne radioactivity areas and radioactive source-term, and radiation levels present. The inspectors attended the briefing for workers involved in radioactive waste handling.

The inspectors also reviewed and discussed electronic dosimeter and thermoluminescent dosimeter results to identify anomalies and licensee actions, as applicable.

The inspectors reviewed and discussed internal dose assessments for 2007 to identify any apparent actual occupational internal doses greater than 50 millirem committed effective dose equivalent. The inspectors assessed the adequacy of evaluations for selected dose assessments and included selected review of the program for evaluation of potential intakes associated with hard-to-detect radionuclides (e.g., airborne transuranics).

High Risk Significant, High Dose Rate HRA and Very High Radiation Area Controls

The inspectors conducted a selective review of HRA controls (e.g., adequate posting and locking of entrances). The inspectors verified that locked HRAs were properly secured and posted and that surrounding area dose rates met regulatory criteria. The inspectors reviewed and observed controls used for ongoing work such as waste transfer. The inspectors verified procedure adherence by observation, attendance at briefings, and questioning radiation protection personnel and workers.

Radiation Worker/Radiation Protection Technician Performance and Radiation Protection Technician Proficiency

The inspectors evaluated radiation protection technician performance and proficiency relative to control of hazards and work activities, as applicable. In addition, the inspectors reviewed issue reports to identify problems with worker or radiation protection technician performance.

Problem Identification and Resolution

The inspectors selectively reviewed self-assessments and audits since the previous inspection to determine if identified problems were entered into the corrective action program for resolution. The inspectors evaluated the corrective action program database for repetitive deficiencies or significant individual deficiencies to determine if self-assessment activities were identifying and addressing the deficiencies.

The review included an evaluation of data to determine if any problems involved performance indicator (PI) events with dose rates greater that 25 R/hr at 30 centimeters, greater than 500 R/hr at 1 meter or unintended exposures greater than 100 millirem total effective dose equivalent, 5 rem shallow dose equivalent, or 1.5 rem lens dose equivalent. The inspectors also reviewed the corrective action database for non-PI radiological incidents to determine if follow-up activities were being conducted in an effective and timely manner consistent with radiological risk.

The inspectors reviewed selected issue reports since the last inspection which involved potential radiation worker or radiation protection personnel errors to determine if there was an observable pattern traceable to a similar cause. The review included an evaluation of corrective actions, as appropriate. (Section 4OA2)

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02 - 2 samples)

a. Inspection Scope

The inspectors conducted the following activities to determine if AmerGen was properly implementing operational, engineering, and administrative controls to maintain personnel occupational radiation exposure as low as is reasonably achievable (ALARA). Implementation of these controls was reviewed against the criteria contained in 10 CFR 20, applicable industry standards, and applicable AmerGen procedures.

Inspection Planning, Radiological Work Planning

The inspectors determined the plant's current 3-year rolling average collective exposure. The inspectors evaluated site specific trends in collective exposures (using NUREG-0713 and plant historical data). The inspectors discussed proposed occupational radiation exposure estimates for 2008.

Job Site Inspections and ALARA Controls

The inspectors observed ongoing work activities (e.g., radioactive waste handling) to evaluate implementation of ALARA controls for the activities. The inspectors reviewed exposures of individuals from selected work groups to identify significant exposure variations which may exist among workers.

Verification of Dose Estimates and Exposure Tracking

The inspectors reviewed Station ALARA Committee and sub-committee meeting minutes for the fall 2007 outage and post-outage to date. The inspectors compared aggregate exposure sustained per work activity, with initial estimates, to evaluate effectiveness of ALARA actions and accuracy of dose estimates. The inspectors compared results achieved with the intended dose established for the work tasks reviewed.

Source-Term Reduction and Control

The inspectors reviewed and discussed AmerGen's understanding of the Unit 1 plant source-term, including knowledge of input mechanisms to reduce the source term, and the source-term control strategy in place. The inspectors reviewed reactor coolant chemistry data to evaluate the effectiveness of post shutdown source-term reduction efforts including strategies employed such as system flushes, installation of temporary shielding, and chemistry controls. The inspectors reviewed efforts to reduce Unit 1 reactor cavity and spent fuel pool radionuclide concentrations in support of ongoing work activities.

Radiation Worker/Radiation Protection Technician Performance

The inspectors selectively observed radiation worker and radiation protection technician performance in the area of ALARA practices during transfer of radioactive materials on March 6, 2008. The inspectors selectively questioned workers and radiation protection personnel in the field to evaluate their understanding of ambient radiological conditions. The inspectors evaluated performance to determine whether the training/skill level was sufficient with respect to the radiological hazards involved.

Problem Identification and Resolution

The inspectors selectively reviewed issue reports in this area since the last inspection to determine if AmerGen was including ALARA deficiencies and issues in its corrective action program. (See Section 4OA2)

The review included self-assessments, audits, and corrective action reports related to the ALARA program since the last inspection to determine if the follow-up activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation and Protective Equipment (71121.03 – 1 sample)

a. Inspection Scope

The inspectors reviewed selected activities and associated documentation in the below listed areas. The evaluation of AmerGen's performance in these areas was against criteria contained in 10 CFR 20, applicable TSs, and applicable station procedures.

Self-Contained Breathing Apparatus

The inspectors reviewed the functional testing and inspection of self-contained breathing apparatus (SCBA) to ensure equipment was being properly maintained and inspected in accordance with the manufacturer's recommendations and applicable regulatory requirements. The functional testing of three SCBA units, ready for use in the Unit 1 Control Room, was reviewed (Kit Nos. 1, 2, 3). The inspectors also visually inspected the SCBA kits and additional mask units. The components of the three kits were also checked against approved component lists published by the SCBA manufacturer and the National Institute for Occupational Safety and Health. The inspectors reviewed periodic testing of the SCBA units' components (i.e., hydro testing of tank, maintenance and testing of regulators, low pressure alarms) and reviewed conformance of the SCBAs with published certification lists.

Problem Identification and Resolution

The inspectors reviewed issue reports in this area since the last inspection to determine if AmerGen was including instrument deficiencies and issues in its corrective action program (Section 4OA2). The review included self-assessments, audits, and corrective action reports.

b. Findings

No findings of significance were identified.

Cornerstone: Public Radiation Safety

2PS2 Radioactive Material Processing and Transportation (71122.02 – 1 sample)

a. Inspection Scope

The inspectors selectively reviewed the packaging and shipment preparation of a non-exempt radioactive material shipment (RS-08-029-1). Matters reviewed included: packaging and vehicle radiation dose rates; placarding of vehicle; completion of applicable shipping papers; qualification of personnel overseeing and processing shipment; emergency instructions; general truck and trailer condition; closure and use requirements.

The inspectors also selectively reviewed training provided for station personnel relative to 49 CFR 172, and NRC Bulletin 79 -19.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151 – 3 samples)

a. Inspection Scope

Cornerstone: Initiating Events

The inspectors reviewed selected station records to verify NRC PIs had been accurately reported to the NRC as specified in NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Rev. 5. The three PI samples listed below were verified for the period January to December 2007.

- Unplanned Scrams per 7000 Critical Hours
- Unplanned Scrams with Complications
- Unplanned Power Changes per 7000 Critical Hours

The inspectors reviewed operator logs, licensee event reports, monthly station operating reports, corrective action program database documents, calculation methods, definition of terms, and use of clarifying notes. The inspectors also verified accuracy of the number of reported critical hours used in the calculations.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Review of Issue Reports and Cross-References to Problem Identification and Resolution Issues Reviewed Elsewhere

The inspectors performed a daily screening of items entered into the licensee's corrective action program. This review was accomplished by reviewing a list of daily IRs, reviewing selected IRs, attending daily screening meetings, and accessing the licensee's computerized corrective action program database.

.2 Annual Sample: Access Control Deficiencies

a. Inspection Scope (1 sample)

The inspectors reviewed AmerGen's actions in response to issue reports generated as a result of multiple issues associated with access control deficiencies. The inspectors also reviewed AmerGen's procedures on searching personnel and process facility operations. In addition, the inspectors interviewed applicable members of AmerGen's staff including site security officers and a corporate security system engineer.

b. Findings

No findings of significance were identified. The inspectors reviewed issue reports documenting issues related to four access control deficiencies identified in 2007. In each case, the actions taken to address the issues were appropriate. The inspectors verified that the site has provided adequate training and guidance on process facility operations to the security staff.

.3 Problem Identification and Resolution for Radiological Protection Activities

a. Inspection Scope

The inspectors reviewed issue reports and self-assessments to determine if identified problems were entered into the corrective action program for resolution. The inspectors selectively reviewed the reports to evaluate AmerGen's threshold for identifying, evaluating, and resolving problems (Apparent Cause 698893, NOS Audit 07-4Q,). The review included a check of possible repetitive issues, such as worker or technician errors (Issue Nos. 706402, 706624, 707298, 707789, 712475, 715167, 722282, 723723, 726821, 727146, 7377511, 740021, 689317, 695488, 689423, 689435, 689562, 696907, 692640, 707288, 744382, and 745372).

This review was against criteria contained in 10 CFR 20, Technical Specifications, and station procedures.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

.1 Temporary Instruction 2515/166 – Pressurized Water Reactor Containment Sump Blockage (NRC Generic Letter 2004-02)

a. Inspection Scope

The inspectors performed an inspection in accordance with Temporary Instruction (TI) 2515/166, Pressurized Water Reactor Containment Sump Blockage, Rev. 1. The TI was developed to support the NRC review of licensee activities in response to NRC Generic Letter (GL) 2004-02, Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized Water Reactors. Specifically, the inspectors verified that the implementation of the modifications and procedure changes was consistent with the actions committed to in AmerGen's supplemental response to GL 2004-02, dated December 28, 2007. The supplemental response provided the remaining information

regarding the actions and methodologies used at TMI to resolve the issues in the GL, which included the downstream effects and chemical effects analyses.

Additionally, the inspectors reviewed the TS and the UFSAR, to verify that required changes to the TS had been approved by the NRC and that the UFSAR had been or was in the process of being updated to reflect the plant changes. Portions of the TI were performed during the 2007 refueling outage to verify the containment sump modifications; the results of that inspection were documented in Inspection Report No. 05000289/2007005.

b. Evaluation of Inspection Requirements

The TI requires the inspectors to evaluate and answer the following questions:

1. Did the licensee implement the plant modifications and procedure changes committed to in their GL 2004-02 response?

   The inspectors verified that AmerGen implemented the plant modifications and procedure changes committed to in their GL 2004-02 responses. The inspection performed in 2007 verified the implementation of the sump screen modifications related to the GL. The inspectors verified that the modifications previously installed met the assumptions of AmerGen's completed analyses, which included the chemical effects analysis. The inspectors reviewed changes to AmerGen's emergency operating procedures and verified that the procedures ensured the assumptions described in the licensee supplemental response to the GL were valid. Finally, the inspectors verified the modifications to address downstream effects had been performed.

2. Has the licensee updated its licensing basis to reflect the corrective actions taken in response to GL 2004-02?

   The inspectors verified that AmerGen had either updated, or was in the process of updating, the licensing basis to reflect the actions taken in response to GL 2004-02. Specifically, the inspectors verified that changes to the facility or procedures as described in the UFSAR that were identified in the licensee's GL 2004-02 responses were reviewed and documented in accordance with 10 CFR 50.59. The inspectors also verified that changes to the technical specifications had been approved by the NRC, and that required changes to the UFSAR, describing the changes to the plant, were in the process of being updated.

The inspection requirements of the Temporary Instruction are complete and the TI is closed. The Office of Nuclear Reactor Regulation will perform a technical review of AmerGen's GL responses to ensure the licensee corrective actions adequately address Generic Safety Issue 191, Assessment of Debris Accumulation on Pressurized Water Reactor Sump Performance, and Generic Letter 2004-02. The NRC will document the results of this review in a separate letter to AmerGen.

.2 Radiological Review of Steam Generator Replacement Transportation Plans (50001)

a. Inspection Scope

The inspectors selectively reviewed the preliminary plans for transport to, and storage of, the replaced Unit 1 steam generators at the proposed storage facility. The inspectors reviewed projected public dose calculations.

The review was against criteria contained in 10 CFR 20, site TSs, and the Offsite Dose Calculation Manual.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On April 18, 2008, the resident inspectors presented the inspection results to Mr. Bill Noll and other members of the TMI staff who acknowledged the findings. The regional specialist inspection results were previously presented to members of AmerGen management. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION
KEY POINTS OF CONTACT

Licensee Personnel

D. Atherholt	Manager, Regulatory Assurance
C. Baker	Manager, Chemistry
B. Carsky	Director, Operations
T. Dougherty	Plant Manager
E. Eilola	Director, Site Engineering
R. Godwin	Training
J. Heischman	Director, Maintenance
W. Laudenbach	System Engineer
A. Miller	Regulatory Assurance
D. Mohre	Manager, Security
P. Mussleman	Security Supervisor
D. Neff	Manager, Emergency Preparedness
W. Noll	Site Vice President
T. Roberts	Radiation Protection
D. Trostle	Operations Security Analyst
L. Weir	Manager, Nuclear Oversight Services
C. Wend	Manager, Radiation Protection
R. West	Vice President, TMI Unit 1
H. Yeldell	Work Management

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened & Closed

NRC TI 2515/166	Pressurized Water Reactor Containment Sump Blockage (NRC Generic Letter 2004-02)

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

Procedures

1105-20, Remote Shutdown Systems, Rev. 14
1107-4, Electrical Distribution Panel Listing, Rev. 213
OP-TM-211-000, Makeup and Purification System, Rev. 16
OP-TM-212-000, Decay Heat Removal System, Rev. 11
OP-TM-214-000, Building Spray System, Rev. 8
OP-TM-533-000, Decay Heat River System, Rev. 9
OP-TM-541-000, Primary Component Cooling System, Rev. 6
OP-TM-543-000, Decay Heat Closed System, Rev. 7

Drawings

Dwg. 302-712, Reactor Building Spray, Rev. 49

Section 1R011: Licensed Operator Requalification Program

Procedures

OP-TM-AOP-014, Loss of 1E 4160V Bus, Rev. 3
OP-TM-AOP-020, Loss of Station Power, Rev. 12
OP-TM-AOP-041, Loss of Seal Injection, Rev. 2
OP-TM-AOP-062, Inoperable Rod, Rev. 1
OP-TM-EOP-001, Reactor Trip, Rev. 9
OP-TM-EOP-004, Lack of Primary to Secondary Heat Transfer, Rev. 5
OP-TM-EOP-009, HPI Cooling – Recovery from Solid Operations, Rev. 5
EP-AA-1009, Radiological Emergency Plan Annex for TMI Station, Rev. 10

Section 1R012: Maintenance Rule

Procedures

Alarm Response Procedure MAP NN-1-8, Main Annunciator Panel NN, Rev.4
Alarm Response Procedure, HM, Hydrogen Monitor Pane, Rev. 0
1105-18, Containment Hydrogen Monitor, Rev. 12
1104-62, Hydrogen Recombiner, Rev. 22
OP-TM-EOP-008, LOCA Cooldown, Rev. 6
IC-252, Channel Test of Reactor building Post LOCA Hydrogen Monitor, Rev. 0
IC-253, Reactor Building Post-LOCA Hydrogen Monitoring Calibration, Rev. 1

Other Documents

IR-736664, Response to NRC Question On Hydrogen Recombiners And Monitoring System
System Health Report, Containment hydrogen Monitoring, dated December 2007

Section 1EP6: Drill Evaluation

Procedures

1202-33, High Winds, Rev. 28
EP-AA-111, Emergency Classification and Protective Action Recommendations, Rev. 13
EP-AA-1009, Radiological Emergency Plan Annex for TMI Station, Rev. 10
OP-TM-EOP-001, Reactor Trip, Rev. 9
OP-TM-EOP-003, Excessive Primary to Secondary Heat Transfer, Rev. 5
OP-TM-EOP-004, Lack of Primary to Secondary Heat Transfer, Rev. 5
OP-TM-EOP-010, Abnormal Transients Guides, Rules, and Graphs, Rev. 9

Other Documents

Licensed Operator Drill Scenario No. 51, Low System Grid voltage, High Winds, Generator/Turbine Trip, ATWS, Stem Leak in Containment Causing Excessive Primary to Secondary Heat Transfer, Rev. 1

Section 2OS1, 2OS2, 2OS3, 2PS2: Occupational and Public Radiation Safety

Procedures

RP-TM-503-1001, Rev. 1, Volumetric Material Controls
RP-TM-460-1007, Rev. 5, Access to TMI -1 Reactor Building
RP-AA-400, Rev. 4, ALARA Program
RP-TM-605-1001, Rev. 1, TMI Waste Characterization
RP-TM-850, Rev. 0, Radiation Protection Emergency Equipment Readiness.
6610-OPS-4510.03, Rev. 2, Inspection and Maintenance of Respiratory Equipment

Other Documents

TMI Radiological Protection T1R17 Refueling Outage Report 2007
Primary Water Chemistry Sampling Results

Fuel Transfer Tube Radiation Surveys November 2005
Self-contained Breathing Apparatus Vendor Manual

Section 4OA2: Problem Identification & Resolution

Issue Reports

00565138, Improper Verification of Protected Area Badge
00670299, Security Explosive Detector Failed to Alarm During Testing
00652352, Access Not Verified Prior to P/A Entry Through MAF
00685064, Access Not Verified Prior to P/A Entry MAF
00699966, Improper Response to Explosive Detector Alarm

Procedures

SY-AA-101-112, Searching Personnel, Vehicles, Packages and Cargo, Rev. 12
SY-TM-1005, Processing Center Operations, Rev. 11

Other Documents

VM-TM-0946, Entry Scan Explosives Detector Model 85, Rev. 4
NRC Generic Letter 91-10, Explosives Searches at Protected Area Portals, July 8, 1991

Section 4OA5: Other

Procedures

OP-TM-214-901, RB Spray Operation, Rev. 3
OP-TM-EOP-010, Emergency Procedures Rules, Guides and Graphs, Rev. 9

Other Documents

C-1101-210-E610-011, LPI BS Pump NPSH Margin Available from the RB Sump Following a LBLOCA, Rev. 7
ECTM005-CALC-05, Hydraulic Analyses of the Reactor Building Recirculation Sump Strainer, Rev. 3
Inspection Report 05000289/2007005, Three Mile Island Station, Unit 1 - NRC Integrated Inspection Report
NRC Docket No. 50-289, Technical Specification Change Request No. 337 – Reactor Building Emergency Sump pH control System Buffer Change
PC 22736, Ops Procedures due to RB Sump Mod per ECR-06-0207, 06-0205 & 06-0206
PC 24164, EOP/EP Revisions for TSP Mod (ECR-07-00174) and GL 2004-02
Three Mile Island Unit 1 Supplemental Response to NRC Generic Letter 2004-02, “Potential Impact of Debris Blockage on Emergency Recirculation during Design Basis Accidents at Pressurized-Water Reactors,” dated December 28, 2007
TM 06-00256-000, Replace DH-V-19A/B Internals
TM-07-00743-000, Generic Letter 2004-02/GSI-191 Supplemental Response

LIST OF ACRONYMS

ADAMS	Agencywide Documents and Management System
ALARA	As Low As is Reasonably Achievable
AmerGen	AmerGen Energy Company, LLC
AR	Action Request
CFR	Code of Federal Regulations
DRP	Division of Reactor Projects
ECR	Engineering Change Request
ESAS	Engineered Safeguards and Actuation System
GL	Generic Letter
HRA	High Radiation Area
IMC	Inspection Manual Chapter
IR	Issue Report
LOCA	Loss of Coolant Accident
LPI	Low Pressure Injection
MAF	Main Access Facility
MR	Maintenance Rule
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
NUMARC	Nuclear Management and Resources Council
P/A	Protected Area
PADEP	Pennsylvania Department of Environmental Protection
PARS	Publicly Available Records
PI	Performance Indicator
PMT	Post-Maintenance Test
SCBA	Self Contained Breathing Apparatus
SSC	Structures, Systems, and Components
TI	Temporary Instruction
TMI	Three Mile Island, Unit 1
TS	Technical Specifications
UE	Unusual Event
UFSAR	Updated Final Safety Analysis Report