February 14, 2005

EA-05-012

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

SUBJECT: THREE MILE ISLAND STATION, UNIT 1 - NRC INTEGRATED INSPECTION REPORT, 05000289/2004005 - EXERCISE OF ENFORCEMENT DISCRETION.

Dear Mr. Crane:

On December 31, 2004, the Nuclear Regulatory Commission (NRC) completed an inspection at Three Mile Island, Unit 1 (TMI) facility. The enclosed report documents the inspection findings that were discussed on January 12, 2005, with Mr. Rusty West and other members of his staff.

This inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, the NRC has determined that two Severity Level IV violations of NRC requirements occurred. Additionally, three NRC identified issues and one self revealing issue were evaluated under the risk significance determination process as having very low safety significance (Green), and also involved violations of NRC requirements. However, because of the very low safety significance of each issue and because they were entered into your corrective action program, the NRC is treating all six violations as non-cited violations (NCV) consistent with Section VI.A of the NRC Enforcement Policy. Additionally, a licensee identified violation, which was determined to be of very low safety significance, is listed in Section 4OA7 of this report. If you contest any of the NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis of your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector at Three Mile Island.

Additionally, the NRC reviewed a design modification deficiency associated with the high pressure injection system. Although this issue constitutes a violation of NRC requirements, the NRC is exercising enforcement discretion in accordance with Section VII.B.3 of the Enforcement Policy. Discretion is warranted because: (1) the initial design modification error occurred more than 14 years ago and is not linked to present performance or engineering design processes, (2) the issue was licensee-identified during licensee initiated maintenance activities, (3) the licensee implemented timely and effective corrective action and delineated

appropriate long-term corrective actions to review and identify any similar design deficiencies, and (4) the design deficiency was not likely to be identified by routine licensee efforts. Based on those facts, I have been authorized, after consultation with the Director, Office of Enforcement, and the Region I Administrator, to exercise enforcement discretion and refrain from issuing enforcement action. An evaluation was performed and we have determined that this was an issue of very low safety significance.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARs) component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

We appreciate your cooperation. Please contact me at 610-337-5229 if you have any questions regarding this letter.

Sincerely,

/RA/

A. Randolph Blough, Director
Division of Reactor Projects

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

Enclosure: Inspection Report 05000289/2004005
w/Attachment: Supplemental Information

cc w/encl:
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Site Vice President - TMI Unit 1, AmerGen
Plant Manager - TMI Unit 1, AmerGen
Regulatory Assurance Manager - TMI Unit 1, AmerGen
Vice President - Mid-Atlantic Fleet, AmerGen
Vice President - Operations Support, AmerGen
Vice President - Licensing and Regulatory Affairs, AmerGen
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U.S. NUCLEAR REGULATORY COMMISSION

REGION 1

Docket No:	05000289
License No:	DPR-50
Report No:	050000289/2004005
Licensee:	AmerGen Energy Company, LLC (AmerGen)
Facility:	Three Mile Island Station, Unit 1
Location:	PO Box 480 Middletown, PA 17057
Dates:	October 1, 2004 - December 31, 2004
Inspectors:	David M. Kern, Senior Resident Inspector Javier M. Brand, Resident Inspector Richard S. Barkley, Senior Project Engineer, DRP Shriram G. Iyer, Reactor Engineer, DRP Glenn Meyer, Senior Reactor Inspector, DRS Nancy McNamara, Emergency Preparedness Inspector, DRS Ronald L. Nimitz, Senior Health Physicist, DRS Robert M. Berryman, Resident Inspector, Indian Point 3
Approved by:	Peter W. Eselgroth, Chief Projects Branch 7 Division of Reactor Projects (DRP)

CONTENTS

SUMMARY OF FINDINGS

IR 05000289/2004005; 10/01/2004 - 12/31/2004; AmerGen Energy Company, LLC; Three Mile Island, Unit 1; Personnel Performance During Non-routine Plant Evolutions, Performance Indicator Verification, Identification and Resolution of Problems, and Event Follow-up.

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

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Severity Level IV. A non-cited violation of 10 CFR 50.73 was identified for untimely submittal of a licensee event report (LER). In March 2004, station personnel had all necessary information available to identify that both trains of high pressure injection (HPI) had been inoperable for a brief period in 2003. The issue was not reported until December 2004, following identification by the inspectors. A contributing cause of this finding is a shortcoming in problem identification in the cross-cutting area of PI&R in that station personnel did not consider unavailability of the emergency power supply to the second HPI train and associated technical specification requirements when determining reportability of this condition. Additionally, the original operability determination did not correctly address seismic qualification of HPI support systems until identified by the inspectors. Corrective actions included submittal of the condition report, training for station personnel, and entering the issue into the corrective action program as issue report 267630. (Section 4OA1.1)

- Green. A self-revealing Green NCV was identified for not maintaining control of materials as required by 10 CFR 50, Appendix B, Criterion VIII, "Identification and Control of Materials, Parts, and Components." Use of incorrect material (brass) for an instrument line cap near main steam (MS) pressure instrument MS-PI-22 resulted in a steam leak, a plant transient, and subsequent isolation of safety-related components. Not identifying the visible difference in materials is considered a cross-cutting issue in the area of problem identification, because technicians and operators missed several opportunities to identify the problem prior to the steam leak. Corrective actions included replacement of the fitting with stainless steel per design specifications, extent of condition evaluations, and issue entry to the corrective action program as issue report 281003.

  This issue is more than minor because it affected the Mitigating System cornerstone objective by reducing availability of mitigating systems when operators isolated mitigating system components (one steam supply train to

EFW turbine pump, turbine bypass valves, an atmospheric steam dump valve) in order to isolate the steam leak. The finding had very low safety significance due to the short duration of train inoperability during the leak isolation procedure. In each case, the single train loss of safety function existed for much less than the TS allowed outage time. (Section 4OA3.2)

- Green. The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for not identifying a degraded main steam isolation valve snubber (MS-225) during extent of condition review walkdowns following a steam leak in the intermediate building. Specifically, the inspectors identified that the snubber hydraulic oil reservoir was empty when conducting inspections after plant personnel had performed area walkdowns after the steam leak. A contributing cause of this finding is related to the cross-cutting area of problem identification, because system engineers did not identify the empty hydraulic snubber reservoir during inspections intended to look for this type of condition. Corrective actions included replacement of the degraded snubber and extent of condition walkdowns of all similar safety-related snubbers located in the intermediate building.

  This issue is considered more than minor because it affected the mitigating system cornerstone by reducing the reliability of the 'B' main steam isolation valve [MSIV], a mitigating system component used during a loss of the normal heat sink or a steam generator tube rupture. Additionally, this issue resulted in the snubber being declared inoperable, thereby affecting its availability during replacement activities. This finding is of very low safety significance because the loss of hydraulic snubber fluid did not result in a failed snubber, nor did it cause the 'B' MSIV to become inoperable. (Section 4OA3.2)

Cornerstone: Barrier Integrity

- Green. The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for not investigating and repairing a degraded control building air return ventilation fan AH-E-19B in a timely manner. Elevated fan vibrations were identified in December 2001, but not sufficiently evaluated until September 2004, following concerns raised by the inspectors. This untimely response resulted in a cracked hub where the bolt holes penetrate the hub and attach to the motor. A contributing cause of this finding is related to the cross-cutting area of problem identification and resolution, because engineers and component maintenance optimization personnel missed several opportunities to evaluate, and prevent or correct the degraded condition based on prior internal and external operating experience with similar fans. Corrective actions include complete replacement of the fan/motor assembly and entering this issue into the corrective action program as issue reports 258108 and 197544.

  This issue is considered more than minor because it affected the control room envelope Barrier Integrity cornerstone since the cracked fan hub could cause a partial loss of control building ventilation. This finding is of very low safety significance since the condition did not result in an actual failure of the control room ventilation system. (Section 4OA2.2)

- Green. A self-revealing, non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions" occurred on February 6, 2004, when the reactor had an unplanned power increase from full power, in which reactor power increased 0.9 percent over 17 minutes. The power increase resulted when the input signal for calculated reactor power was removed from the integrated control system with reactor power control in automatic. A contributing cause of this finding is related to the cross-cutting area of problem identification and resolution, because problems with computer-calculated reactor power had occurred previously, but corrective actions to address the problem were untimely, and corrective actions to address the consequences of the problem were ineffective. Additionally operators were slow to identify and respond to the overpower condition.

  This finding is more than minor because it potentially affected the reactivity control attribute of the barrier integrity cornerstone objective of providing reasonable assurance that physical barriers (i.e., fuel cladding) protect the public from radionuclide releases caused by overpower events. Specifically, the integrated control system escalated reactor power automatically upon loss of an input signal during scheduled maintenance. This finding is considered to be of very low safety significance, because all mitigating systems remained functional and other barriers would not have been affected. (Section 4OA2.3)

Cornerstone: Emergency Preparedness

- Severity Level IV. A non-cited violation of 10 CFR 50.54(q) was identified for not properly maintaining the TMI Radiological Emergency Plan (the Plan) up-to-date to address a modification made within the owner controlled area. Specifically, plant modifications which blocked the south gate access bridge resulted in a decrease in effectiveness in the Plan without prior NRC approval. Corrective actions included discussions with the local railroad company to establish a memorandum of understanding, establishment of a shift night order, training for emergency directors, reassessment of south gate accessibility, and entry of the issue into the licensee's corrective action program as issue reports 260849, 260697, 266937, 269032, 282239 and 282851.

  A contributing cause of this finding is related to the cross-cutting area of problem identification and resolution, because (1) the 10 CFR 50.54(q) evaluation did not identify the potential that a train (or crossing gate) malfunction could occur and cause delays in accessing or leaving the site, despite several such occurrences; (2) evaluation of the issue following three train (or crossing gate) malfunctions in October 2004 was cursory in that it did not take positive actions to verify contingency actions were identified, understood, and trained upon; and (3) substantive corrective actions such as establishing a memorandum of understanding with the railroad and establishing written guidance shift manager/emergency director guidance for this contingency were not developed until repeatedly questioned by the inspectors. This finding was of very low safety significance, because it did not constitute a loss of a planning standard function required by 10 CFR 50.47(b)(2) or (b)(3). (Section 1R14)

B. Licensee-Identified Findings

A violation of very low significance, regarding the effluent release program, which was identified by the licensee has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. The violation and corrective actions are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

AmerGen Energy Company, LLC (AmerGen), operated Three Mile Island, Unit 1 (TMI) between 99.5 to 100 percent power throughout the inspection period, except for the following.

- On November 27, power was reduced to 80 percent to repair a packing steam leak on a non safety-related heater drain system valve. The plant was returned to 99.5 percent power on the same day.

- On December 3, operators performed an unplanned power reduction to approximately 65 percent to repair a steam leak in a 24 inch non safety-related heater drain system pipe (see Section 1R14). The plant was returned to 99.5 percent power on December 7.

- On December 9, operators performed an unplanned power reduction to 22.5 percent to isolate and repair a main steam system leak in the intermediate building (see Section 4OA3.2). The plant was returned to 99.5 percent power on December 10.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope (1 Sample)

The inspectors walked down risk significant plant areas for several days in November and December 2004 and assessed AmerGen's protection for cold weather conditions. The inspectors were sensitive to outside instrument line conditions and the potential for unheated ventilation. The walkdown included the emergency feedwater system, the condensate storage tanks, the turbine driven pump steam supply exhaust piping, the borated water and sodium hydroxide storage tanks, and the cooling water intake and screen pump house. The inspectors referenced the nuclear oversight "Winter Readiness Report," NOSPA-TM-034Q and reviewed various action requests generated between January and November 2004 to determine whether AmerGen was identifying and resolving cold weather equipment problems. The inspectors also reviewed implementation of AmerGen administrative procedure OP-AA-108-109, "Seasonal Readiness," Rev. 1, for cold weather conditions. Additional documents reviewed during the inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

Partial System Walkdown (3 Samples)

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

- On October 4, the inspectors walked down the 'A' emergency diesel generator (EDG) EG-Y-1A and the 'A' and 'B' EDGs switch gear rooms while the 'B' EDG (EG-Y-1B) was out of service for planned maintenance.

- On November 16, the inspectors walked down the 'A' and 'C' makeup system pump trains (MU-P-1A and 1C) and their corresponding switch gear room cabinets while the 'B' makeup pump (MU-P-1B) was out of service for planned maintenance. The inspectors also walked down associated portions of the system in the control room, interviewed operators, and reviewed the applicable clearance tag (# 04501820).

- On December 10, the inspectors walked down portions of the two motor driven emergency feedwater (EFW) pumps (EF-P-2A and 2B) and associated components, while the turbine driven EFW pump (EF-P-1) was being tested following the December 9 steam leak in the intermediate building. The inspectors also interviewed the system engineer and operators.

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 following documents were used for this inspection.

- Drawing 302-353, "Diesel Generator Services-Lube Oil, Fuel Oil, Air Start, " Rev. 11
- Drawing 302-354, "Diesel Generator Jacket & Air Cooler-Coolant System, Gear Box Lube Oil System," Rev. 12
- Drawing 302-011, "Main Steam Flow Diagram," Rev. 64
- Drawing 302-082, "Emergency Feedwater Flow Diagram," Rev. 22

Complete System Walkdown (1 Sample)

The inspectors performed a complete system walkdown on the following system:

- Main Steam (MS) System following station response to the main steam leak in the intermediate building discussed in Section 4OA3.2.

The inspectors conducted a detailed review of the alignment and condition of the system. The inspectors reviewed the applicable flow diagram drawing 302-011, "Main Steam," Rev. 64. In addition, the inspectors reviewed and evaluated the open work

orders and corrective action program condition reports for impact on system operation. The inspectors also verified system parameters were within the required band for current plant conditions as determined by TMI operating logs and procedures.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q)

a. Inspection Scope (8 Samples)

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

- Zone AB-FZ-6a, Auxiliary Building Elevation 305 - Room Containing MCC EG–CCESV-1B
- Zone AB-FZ-2a, 2b & 2c, Auxiliary Building Elevation 281 - Rooms Containing Makeup Pumps 1A, 1B, & 1C, respectively
- Zone FH-FZ-2, Fuel Handling Building, Elevation 305 and above
- Zone FH-FZ-4, Fuel Handling Building, Elevation 305 and above
- Zone CB-FZ-5, Control Building Elevation 380, Mezzanine Area
- Zone CB-FZ-5a, Control Building Elevation 380, North Heating and Ventilation Equipment Area
- Zone CB-FZ-5b, Control Building Elevation 380, South Heating and Ventilation Equipment Area
- The inspectors reviewed issue report (IR) 261758, which evaluated a minor deficiency identified by the inspectors regarding a low system pressure reading in the control tower fire protection deluge system (FS-PI-515E). The inspectors interviewed plant operators and the fire protection system engineer, and verified proper corrective actions were implemented.

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 fire damper material condition. The following documents were reviewed during the inspection:

- Surveillance Procedure 1303-12.23, “Fire Damper Inspection,” Rev. 25
- TMI-1 Fire Hazards Analysis Report, Rev. 21

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope (2 Samples)

The inspectors evaluated Maintenance Rule (MR) implementation for the issues listed below. Specific attributes reviewed included MR scoping, characterization of failed structures, systems, and components (SSCs), MR risk categorization of SSCs, SSC performance criteria or goals, and appropriateness of corrective actions. The inspectors verified that the issues were addressed as required by 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Rev. 2, and AmerGen procedure ER-AA-310, "Implementation of The Maintenance Rule," Rev. 2. Additional documents reviewed during the inspection are listed in the Attachment.

- Evaluated overall maintenance effectiveness of the heating and ventilation systems for the Reactor Building, Control Building and Auxiliary Buildings. The inspectors reviewed resolution of selected material deficiencies identified in issue reports during the period November 1, 2001 to December 2, 2004. Ventilation system issues included room temperatures below normal due to heater malfunctions, various fan vibration concerns and problems maintaining a negative pressure in the auxiliary building due to material deficiencies.

- IR 248505 described a failure of a heat sink protection system (HSPS) switch L1046/L1047. This switch is one of two of the "A" train steam generator startup level input selector switches for the emergency feedwater (EFW) flow control valve EFV-30A. The inspectors evaluated AmerGen's response to this failure from a maintenance rule perspective and verified that the EFW system function was not affected due to available component redundancy and that the issue was properly categorized as not a maintenance rule functional failure.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope (4 Samples)

The inspectors reviewed the scheduling and control of maintenance activities in order to evaluate the effect on plant risk. This review was against criteria contained in AmerGen Administrative Procedure 1082.1, "TMI Risk Management Program," Rev. 4. The inspectors reviewed the routine planned maintenance, restoration actions, and/or emergent work for the following equipment removed from service:

- On October 4 to 8, yellow risk assessment of scheduled maintenance outage on the 'B' emergency diesel generator (EDG). The inspectors also interviewed

operators, the work week manager, and the EDG system engineer (on-line risk evaluation #800).

- On November 16, yellow risk assessment of scheduled maintenance outage on the ‘B’ makeup pump (MU-P-1B), and engineering safeguards actuation system testing. The inspectors also interviewed operators, the work week manager, and the makeup system engineer (on-line risk evaluations #534 and #1088).

- On October 29, electricians replaced cell number 4 on the 'B' 125 volt direct current battery due to a degraded individual cell voltage condition. Equipment configuration during the replacement required planned entry into an 8-hour technical specification (TS) limiting condition for operation. The inspectors interviewed the work week manager and an electrical supervisor and reviewed selected maintenance procedures to verify station risk was effectively managed.

- On December 1, operators identified a steam leak on a 24 inch heater drain system pipe in the turbine building. System isolation to support repairing the leak required an unusual system lineup and a plant power reduction to 65 percent power. Station personnel evaluated station operating history, industry operating experience of steam leaks, and electrical distribution grid stability which was affected by other nuclear power plants shutting down on December 3 for unrelated issues. The unit reduced power for the leak repair on December 3. Several non-urgent maintenance activities were deferred during the repair period to reduce distractions and maintain a green on-line maintenance plant risk profile (on-line risk evaluation #1115).

b. Findings

No findings of significance were identified.

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

a. Inspection Scope (3 Samples)

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

- On October 6, the TMI north gate access was blocked by a train for 1.5 hours. Additionally, on October 15 and 31, the proximity of a train or electronic problems caused the railroad crossing arms to lower and close off the north gate access for 1.5 to 2 hours. The inspectors expressed concern to licensee management regarding the potential impact of this issue on the organization's ability to implement portions of the TMI Radiological Emergency Plan. The inspectors reviewed this issue against the requirements of 10 CFR 50.47(b)(2), (b)(3), (b)(11)and (b)(12), “Emergency Plans;” 10 CFR 50, Appendix E, Section IV, Section E, "Emergency Facilities and Equipment;" 10 CFR 50, Appendix E, Section V, "Implementing Procedures;" TS 6.8.1, “Procedures and Programs,”

and Station personnel initiated numerous issue reports (IR 260849, 260697, 266937, 269032 and 282239) and interim compensatory measures in response to these issues.

C On November 18, the inspectors evaluated plant personnel performance and controls in place for non-routine diving evolutions to install an isolation pipe plug to implement repairs of the 30 inch cooling tower de-icing makeup line. The repairs were required due to an inadvertent puncture of the line during implementation of plant upgrades. The inspectors attended the pre-evolution brief, interviewed the applicable project manager and system engineer, and observed portions of the job activities. The inspectors also reviewed engineering change request (ECR) 04-845, “Flume Elbow Plugging For 30" De-Ice Makeup Line,” Rev. 2, and Exelon procedures HU-AA-1212, “Technical Task Risk/Rigor Assessment, Pre-Job Brief, Independent Third Party Review, And Post-Job Brief,” Rev. 0, and MA-AA-716-015, “Control Of Diving,” Rev. 3.

- On December 1, operators identified a steam leak from beneath insulation on a 24 inch feedwater heater drain line near the common suction to all three heater drain pumps. Station personnel promptly quarantined the area for personnel safety, mounted a camera to remotely monitor for any change in leak condition, staffed the outage control center, and evaluated related TMI and industry operating experience. The inspectors reviewed the licensee's response plan which was created in accordance with P-AA-106-106-1006, “Operational and Technical Decision Making Process,” Rev. 1. On December 3, operators initiated a power reduction to 65 percent to isolate the affected portion of the heater drain system to support repairs and investigation of extent of condition. This required an unusual heater drain system alignment and careful monitoring of heater drain system parameters. The inspectors inspected the alignment which included a temporary modification (ECR TM 04-01017, “Gag Shut HD-V-4,” Rev. 0) which gagged shut heater drain receiver return valve to the main condenser. Engineers determined the steam leak was caused by historical pressure events (water hammer) on the secondary system which stressed pipe welds in the vicinity of two box support hangers (HDH-2 and HDH-181). The heater drain pipe leak emerged in the vicinity of HDH-2. The pipe leak and support hangers were repaired, and the unit returned to full power on December 6.

b. Findings

Introduction. The inspectors identified a non-cited violation (NCV) of 10 CFR 50.54(q) for failure to properly maintain the TMI Radiological Emergency Plan (the Plan) up-to-date to address a modification made within the owner controlled area. Specifically, plant modifications resulted in a decrease in effectiveness (DIE) in the Plan without prior NRC approval. This finding was of very low safety significance, because it did not constitute a loss of a planning standard function required by 10 CFR 50.47(b)(2) or (b)(3).

Description. On September 16, 2004, as part of a plant modification, large concrete blocks were installed, blocking the TMI south access bridge. Procedure EP-AA-1009,

"Radiological Emergency Plan Annex for TMI Station," Rev. 3 states that the north and south ends of TMI have access bridges which connect TMI to Highway 441. Prior to installing the blocks, both the north and south access bridges had been available for site access/egress and were discussed in emergency plan implementing procedures (EPIP). After installation, the south gate access bridge became inaccessible and no equipment or contingency measures were established to promptly remove the blocks to restore availability of the south access bridge should it be needed for emergency response.

In support of the plant modification, station personnel performed a 10 CFR 50.54(q) review (review number 04-24) and concluded that the modifications did not cause a DIE of the Plan. This review stated that the Plan did not specify a certain number of required exit points or their location. The review further states that EPIP EP-MA-113-100, "Assembly and Site Evacuation," Rev. 3 referred to site evacuation via the south gate which required a revision to address the existing condition, since EPIP EP-MA-113-100 designates the south access gate as an evacuation option.

Although gate blockage is not a common occurrence, the inspectors confirmed that trains had occasionally blocked the north gate access in the distant past as well as during this inspection period. Given this unusual situation, the inspectors determined that the 10 CFR 50.54(q) review was inadequate because it was based on continuous availability of the north gate access for site access and egress. The review did not document consideration of an activity that had the potential to block north gate access (i.e., a train malfunction), even temporarily. In addition, the change made to EPIP EP-MA-113-100, was a DIE of the Plan because Exelon Nuclear did not have the capability onsite to promptly restore access at the south gate to support site evacuation or emergency response. The inspectors determined that the constraints on south gate access without corresponding procedure revisions, written agreement with the railroad, and ERO augmentation timeline evaluation for a possible blocked north gate represented a DIE of the Plan.

Section 2.4 of the Plan states that an emergency may require augmentation of the ERO with assistance from additional organizations such as local law enforcement, fire department, hospitals, and ambulance services with short notice. Agreements with these organizations may take the form of contracts, letters of agreement, memorandum of understanding and formal emergency plans. A list of the site-specific letters of agreement are contained in Appendix 2 of the TMI Station Annex Plan. The inspectors determined that no written agreement existed between the licensee and Norfolk Southern Railroad, for using assistance to control and/or stop train traffic during emergency response.

Analysis. The inspectors concluded that the licensee did not effectively evaluate and implement provisions that ensured the Plan was maintained up to date as changes were made to the station, as required by 10 CFR 50.54(q). The 10 CFR 50.54(q) Plan evaluation (EPlan review number 04-24) assumed the north gate access would remain available and did not consider impact on the Plan if the north gate access became blocked (e.g. by a train malfunction). The potential for a train malfunction to block the north gate access is a condition that the licensee should have evaluated. 10 CFR 50.47(b)(2) requires in part that the Plan must assure timely augmentation of

emergency response capabilities is available. The modification which blocked the south gate access bridge could cause the response time needed to augment the ERO and implement offsite support augmentation to increase. Additionally, the change made to procedure EP-MA-113-100 did not support the use of the south access gate as stated because removal of the concrete blocks could not be implemented in a timely manner if required. Finally, 10 CFR 50.47(b)(3) requires in part that the Plan must include arrangements for requesting and effectively using assistance resources to control/stop train traffic for continuous access to the north gate during emergency conditions.

This finding was more than minor because it resulted in a DIE of the Plan's ability to implement the requirements of 10 CFR 50.47(b)(2) and (b)(3). The inspectors determined that the finding had very low safety significance because the issue did not constitute a loss of a planning standard function required by 10 CFR 50.47(b)(2) and (b)(3). Additionally, licensee response to the issue was untimely despite station personnel self initiating several IRs to evaluate the gate blockage issue. Subsequently, the licensee initiated actions and implemented measures to ensure the availability of effective site access in the event of an emergency condition.

Enforcement. 10 CFR 50.54(q) requires in part that licensees maintain in effect emergency plans which meet the standards in 10 CFR 50.47(b) and make changes to these plans without commission approval only if the changes do not decrease the effectiveness of the plans. 10 CFR 50.47(b)(2) requires in part that the Plan must assure timely augmentation of response capabilities is available. 10 CFR 50.47(b)(3) requires in part that the Plan must include arrangements for requesting and effectively using assistance resources. Contrary to the above, on September 16, 2004, AmerGen implemented a plant modification, which decreased the effectiveness of the Plan, without prior NRC approval. This issue is addressed through the traditional enforcement process because it has the potential to impact the NRC's ability to perform its regulatory function. This Severity Level IV violation is being treated as a Non-Cited Violation (NCV), consistent with the criteria in Section VI.A.I of the NRC Enforcement Policy and is in the licensee's corrective action program as IRs 260849, 260697, 266937, 269032, and 282239. **NCV 05000289/2004005-01**, **Plant Modification Decreased Effectiveness of Emergency Plan Without Prior NRC Approval, Deficient 10 CFR 50.54(q) Evaluation.**

1R15 Operability Evaluations (71111.15)

a. Inspection Scope (4 Samples)

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

- In mid-October 2004, technicians identified that station battery pilot cell B-4 had degraded and performed a series of individual cell charges in accordance with action request C2006175. The inspectors reviewed maintenance records to assess battery health following the battery charges. Cell B-4 was subsequently replaced on October 29.

- On November 3 to 5, the inspectors reviewed the aggregate effects and past operability impact for several deficiencies identified by technicians and operators during a scheduled 'B' EDG maintenance outage. The inspectors also reviewed minor deficiencies identified during the subsequent post-outage, post-maintenance test. The inspectors interviewed the EDG system engineer, performed a field walkdown of the 'B' EDG, and reviewed IR 262352, which documented the lessons learned from the 'B' EDG outage activities. The issues and documents reviewed are listed in the attachment. No operability concerns were identified.

- IR 254732, which evaluated elevated noise levels in the 'A' EDG cooling fan AH-E-29A. The inspectors also reviewed IR 258348, which documented heavily soiled and breached filter elements found during trouble shooting activities to determine the source of the elevated noise. The inspectors performed several field walkdowns and inspections of the trouble shooting and maintenance activities. The evaluation determined that due to elevated airborne debris caused by construction activities, the filters had become clogged and some of the filter elements had fallen off their holding mechanism. The elevated noise was most likely due to a whistle effect caused by air flow past the hole created by the fallen filter elements. The evaluation also determined that there was no damage to the fan, motor, belts or any other components, and that the as-found filter conditions did not affect the operability of the safety-related fan.

- IR 281370 which evaluated a degraded condition identified by the inspectors on December 10, regarding an empty hydraulic reservoir for snubber (MS-225) associated with the motor operator for the safety-related 'B' main steam isolation valve MSIV. The inspectors verified that an extent of condition for similar snubbers was performed. In addition, the inspectors verified that functional testing performed per TMI surveillance procedure 1303-9.9, "Hydraulic Snubber Functional Testing and Seal Replacement," Rev. 17, demonstrated that operability of the snubber was not affected by the loss of the hydraulic fluid. (See Sections 1R22 and 4OA3)

The inspectors verified the degraded conditions were properly characterized, the operability of the affected systems was properly justified, and no unrecognized increase in plant risk resulted from the equipment issues. The inspectors performed several field walkdowns, interviewed plant engineers and technicians, and consulted with regional NRC specialists. The inspectors also referenced IMC Part 9900, "Operable/Operability-Ensuring the Functional Capability of a System Component" and AmerGen procedure LS-AA-105, "Operability Determination," Rev. 1 to determine acceptability of AmerGen's operability evaluations. Documents reviewed during the inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds (71111.16)

a. Inspection Scope (1 Sample)

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

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope (5 Samples)

The inspectors reviewed and/or observed several post-maintenance tests (PMTs) to ensure: (1) the PMT was appropriate for the scope of the maintenance work completed; (2) the acceptance criteria were clear and demonstrated operability of the component; and, (3) the PMT was performed in accordance with procedures. Additional documents reviewed during the inspection are listed in the Attachment. The following PMTs were observed and/or evaluated:

- On October 4, the 'B' EDG was taken out of service for a planned maintenance outage. The PMT was completed satisfactorily on October 8, per surveillance test procedure 1303-4.16, "Emergency Power System," Rev. 103.

- On October 29, cell B-4 of the 125 volt DC station battery was replaced due to degraded cell voltage. The replacement was performed using AR C2006074 which included PMT using procedure 1301-5.8.2, "Station Battery 1B Quarterly," Rev. 0.

- On November 16 - 17, the 'D' Bus, 4160 volt vacuum breaker for the 'B' makeup pump (MU-P-1B) was replaced with a new Siemens vacuum breaker. The new breaker PMT was completed satisfactorily on November 17, per surveillance test procedure 1107-2A, "Emergency Electrical-4KV and 480 Volt," Rev. 9.

- On November 18 - 30, the inspectors performed a documentation review of the PMT of the 'B' makeup pump (MU-P-1B) following a scheduled maintenance outage. The inspectors performed field walkdowns during and after the maintenance activities, interviewed the system engineer and the surveillance program coordinator, and reviewed applicable vibration data for the last 12 months of operation. The PMT was completed satisfactorily on November 18,

per surveillance test procedure OP-TM-211-201, “IST Of MU Pumps And Valves,” Rev. 1.

- On December 12 and 13, the inspectors performed a documentation review of maintenance activities to refurbish a replacement snubber for the 'B' MSIV snubber (MS-225). In addition, the inspectors reviewed the data for the completed functional test performed prior to the replacement snubber installation per TMI surveillance procedure 1303-9.9, ”Hydraulic Snubber Functional Testing and Seal Replacement,” Rev. 17.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope (7 Samples)

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

- On July 22 to November 30, the inspectors reviewed AmerGen’s program for periodic inspection of motor operator valves (MOVs) limit switch compartment ‘T’ drains at TMI. The inspectors focused on MOVs installed in harsh environment areas to determine if ‘T’ drains were installed as required and whether AmerGen included a program to inspect the condition of the ‘T’ drains. The inspectors reviewed completed electrical technician inspections per MA-AA-723-301, “Periodic Inspection of Limitorque Model SMB/SD/SBD-000 Through 5 Motor Operated Valves,” Rev. 1 to verify that the ‘T’ drains were not obstructed by debris or paint, and that they were properly installed at the low point of the limit switch compartment. The inspectors also reviewed IR 267293, which evaluated a missing ‘T’ drain for reactor coolant drain tank vent valve WDG-V-3. The following documents were also reviewed for this inspection:

  - TMI-1 Nuclear Generating Station Environmental Qualification #T1-103, Rev. 5
  - Table A-1, ”Matrix Of Description /Function & Process Fluid Temperature,” which describes post accident function requirements for the 21 MOVs installed inside containment

- On December 12, the inspectors observed a functional test performed on the ‘B’ MSIV snubber (MS-225), per TMI surveillance procedure 1303-9.9, ”Hydraulic Snubber Functional Testing and Seal Replacement,” Rev. 17. The functional test was performed to demonstrate operability of the snubber after the inspectors identified that the snubber hydraulic fluid reservoir was empty (see Section

4OA3.2). The inspectors reviewed the procedure, performed field walkdowns, and interviewed the system engineer and the snubber test specialist.

- On December 22, the inspectors performed a walkdown of all safety-related snubbers installed in the intermediate building. This inspection was performed to assess the extent of condition of snubbers similar to the 'B' MSIV snubber (MS-225) after it was identified to have an empty hydraulic reservoir. The inspectors used TMI surveillance procedure 1301-9.9, "Hydraulic Snubber Visual Inspection," Rev. 47 to perform the inspection, and reviewed previously completed visual surveillance inspections performed by operators for comparison.

- The inspectors reviewed action request 2068178 which documented the results of a boroscope inspection of the TMI spent fuel pool leakage detection system (tell tail drains). The boroscope and video tape inspection included all of the 38 tell tale drains and was performed on September 22 and 23. Most of the drain lines have several elbows, and due to limitations of the boroscope equipment available, the inspection probe could only cover the drain lines past the first elbow. Engineering evaluation of the test results and review of video tape concluded that there are no significant leaks in the spent fuel pool liner that would endanger the environment. In addition, the inspectors performed a complete walkdown of the exposed walls of the spent fuel pool and verified that there are no visible thru-wall leakage.

- The inspectors reviewed surveillance procedure 1107-3, "Diesel Generator," Rev. 110 to assess periodic testing performed on the ONAN diesels which are used as backup drivers for the air start compressors for each of the two EDGs. The inspectors learned that while each diesel is periodically run unloaded, no routine surveillance testing was conducted to verify that the diesel can be promptly connected to its respective air compressor. The inspectors interviewed the system engineer and operators, and verified that proper corrective actions were implemented to address this issue (IR 281431).

- The inspectors reviewed AmerGen's process for inspection and surveillance of electrical cable vaults. The inspectors focused on safety-related electrical vaults that had the potential of having standing water and submerged cabling. The inspectors also reviewed IR 253913 which evaluated a minor deficiency identified by the inspectors regarding the lack of an extent of condition review for two electrical vaults that were found full of water by technicians during cable pulls on April 7 (IR 213875). The inspectors verified that at TMI, electrical cables are designed for submergence, and that a process is in place for a biennial inspection of electrical vaults. Additional documents reviewed for this inspection are listed in the attachment.

- On December 22, surveillance testing of the heat sink protection system was performed per 1303-11.36, "HSPS-Reactor Building Pressure Channel Test," Rev. 17. The inspectors performed field walkdowns and interviewed technicians and control room operators.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope (2 Samples)

The inspectors reviewed the following temporary modifications (TMs) and associated implementing documents to verify the plant design basis and the system or component operability was maintained. Procedures CC-AA-112, "Temporary Configuration Changes," Rev. 8 and CC-TM-112-1001, "Temporary Configuration Change Implementation," Rev. 1 specified requirements for development and installation of TMs. Additional documents reviewed are listed in the attachment. The inspectors reviewed the following TMs:

- TM 03-00940, "FWP Speed Signal Temp Mod," Rev. 0, which was implemented to restore accurate main feedwater pump speed indication in the control room.

- Temporary leak repair performed to repair a body to bonnet leak for MS valve MS-V-8A per work order C2009319 and action request A2103713. The inspectors performed field walkdowns of the steam leak, and reviewed procedure CC-AA-404, "Application Selection, Evaluation And Control Of Temporary Leak Repairs," Rev. 5. The inspectors verified that an engineering evaluation was performed and concluded that the evaluation had implemented adequate controls and analyses to implement the seal injection repair. Additionally, the inspectors verified that AmerGen properly considered the seal injection a temporary modification, and that plans were implemented to perform required permanent repairs during the next refueling outage.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness [EP]

1EP2 Alert and Notification System (ANS) (71114.02)

a. Inspection Scope (1 Sample)

An onsite review of the licensee's ANS was conducted to ensure prompt notification of the public for taking protective actions. The inspection included a review of the 2003/2004 siren test and maintenance records and the following procedures: (1) EP-MA-121-1002, "Exelon East Alert Notification System (ANS) Program," Rev. 1; (2) EP-MA-121-1004, "Exelon East ANS Corrective Maintenance," Rev.1; and (3) EP-MA-121-1006, "Exelon East ANS Siren Monitoring Troubleshooting and Testing," Rev. 0. The inspectors interviewed the siren program manager and reviewed the 2003/2004 associated IRs to determine if the failures were being immediately assessed and if

inoperable sirens were being expediently repaired. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 02. The applicable planning standard, 10 CFR 50.47(b)(5) and its related 10 CFR 50, Appendix E requirements were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP3 Emergency Response Organization (ERO) Augmentation (71114.03)

a. Inspection Scope (1 Sample)

An onsite review of TMI's ERO augmentation staffing requirements and the process for notifying the ERO was conducted to ensure the readiness of key staff for responding to an event and timely facility activation. The inspectors reviewed the 2003/2004 communication pager test records and associated IRs. Also, the emergency plan qualification records for key ERO positions were reviewed to ensure qualifications were current. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 03. The applicable planning standard, 10 CFR 50.47(b)(2) and its related 10 CFR 50, Appendix E requirements were used as reference criteria.

b. Findings

The NRC inspectors identified that approximately 70 percent of the TMI ERO had not met their annual qualification requirements as specified in Section 2.3 of the TMI Annex Emergency Plan (E-Plan). The inspectors determined that ERO qualifications appeared to have expired in June 2004. The emergency preparedness (EP) staff followed a corporate training procedure which defined annual training as "anytime within the calendar year," and thus believed that training was due by the end of 2004. However, the TMI Annex Emergency Plan defined annual training as 12 ± 3 months, indicating that for many responders training had been due in June 2004. Notwithstanding this inconsistency in procedural specifications, the licensee immediately initiated corrective measures. Specifically, the licensee completed the training of two of the four ERO responder teams by the end of the inspection (e.g. November 18, 2004). Training for the remaining two teams was updated by the end of November 2004. The licensee is completing a review which may demonstrate that ERO annual training was met for these teams. The issue was entered into the corrective action system (IR 274740). This matter is considered unresolved pending further NRC review of AmerGen's Emergency Plan records and the corporate training procedure to determine the acceptability of AmerGen's interpretation of this annual training requirement. **(URI 05000289/2004005-02) Emergency Response Organization Qualifications Expired Due to Untimely Training**

1EP4 Emergency Action Level (EAL) Revision Review (71114.04)

a. Inspection Scope (1 Sample)

A regional in-office review was conducted of licensee-submitted revisions to the emergency plan, implementing procedures, and EALs which were received by the NRC during the period of October - December 2004. The review included plan aspects related to the risk significant planning standards (RSPS), such as classifications, notifications, and protective action recommendations. A cursory review was conducted for non-RSPS portions. During the onsite inspection, the inspectors reviewed a portion of AmerGen's 10 CFR 50.54(q) reviews for determining if the pertinent changes had decreased the effectiveness of the E-Plan. These changes were reviewed against 10 CFR 50.47(b) and the requirements of Appendix E and they are subject to future inspections to ensure that the combination of these changes continues to meet NRC regulations. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 04. The applicable requirements in 10 CFR 50.54(q) were used as reference criteria.

b. Findings

No findings of significance were identified.

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies (71114.05)

a. Inspection Scope (1 Sample)

The inspectors reviewed IRs initiated by AmerGen from drills, tests, self-assessments, and actual events and the associated corrective actions to determine the significance of the issues and to determine if repeat problems were occurring. In addition, the inspectors reviewed three self-assessment reports to assess the licensee's ability to be self-critical for avoiding complacency and making program improvements. A list of self-assessment reports and IRs are contained in the Attachment. Also, the 2003/2004 audit reports were reviewed to assess TMI's ability to identify issues, assess repetitive issues and the effectiveness of corrective actions through their independent audit process. Finally, apparent cause evaluation reports were reviewed to assess AmerGen's capability to determine and evaluate the root causes of significant issues for preventing recurrence. This inspection was conducted according to NRC Inspection Procedure 71114, Attachment 05. The applicable planning standard, 10 CFR 50.47(b)(14) and its related 10 CFR 50, Appendix E requirements were used as reference criteria.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety [OS]

2OS1 Access Control To Radiologically Significant Areas (71121.01)

a. Inspection Scope (19 Samples)

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 technical specifications, and applicable station procedures.

Inspection Planning

The inspectors reviewed Occupational Exposure Cornerstone performance indicators (PIs), as appropriate, for follow-up. (See Section 4OA1.2)

Plant Walkdowns and Radiation Work Permit (RWP) Reviews

The inspectors made tours of radiologically controlled areas in Unit 1 and made independent ambient radiation surveys to verify if controls (e.g., postings, barricading, and surveys, as appropriate) were acceptable. The inspectors also toured onsite radioactive materials storage areas. The inspectors reviewed the use and operation of continuous air monitors within the radiological controlled area. The inspectors reviewed the use of engineering controls and shielding during tours, as applicable.

The inspectors selectively reviewed RWPs used to access radiological work areas to verify, as appropriate, application of high radiation area controls, dosimeter alarm set points, and to determine if workers received briefings. The inspectors also reviewed controls for areas with the potential to result in intakes of airborne radioactivity. Permits reviewed include entry into Unit 1 reactor containment at power and repair of the miscellaneous waste evaporator. The inspectors selectively reviewed the implementation of radiological controls procedures and RWPs.

The inspectors reviewed and discussed external and internal dose assessments since the previous inspection to identify unplanned external and internal occupational doses or potential performance indicator occurrences. The inspectors also reviewed personnel contamination events.

The inspectors toured the spent fuel pool area and selectively reviewed physical and programmatic controls for non-fuel materials stored within spent fuel pools or other storage locations.

High Risk Significant, High Dose Rate HRA and VHRA Controls

The inspectors reviewed high and very high radiation area (HRA and VHRA) posting and controls, as appropriate, discussed the status of applicable procedures, and

physically challenged the locked access points to three locked HRA access points. The inspectors also conducted a locked HRA access key inventory. An inventory was also conducted of secondary keys for locked HRA access. The inspectors discussed HRA Controls with radiation protection management, supervisory, and technical personnel.

Job-In-Progress Reviews Worker/Radiation Protection Technician Performance

The inspectors toured the radiological controlled area and observed radiation workers and radiation protection personnel, as appropriate, and reviewed radiological controls, use of dosimetry and use of protective clothing. The inspectors reviewed radiological survey data posted for worker use. The adequacy of access controls to HRAs was observed during tours of the radiological controlled areas.

Problem Identification and Resolution

The inspectors selectively reviewed corrective action reports in the area of access controls to determine if access control issues were entered into the corrective action program for resolution. The inspectors evaluated the corrective action database for 2004 to identify repetitive deficiencies or significant individual deficiencies. The review also included evaluation of data to determine if any problems involved undetected PI events. Also, the reviews evaluated the frequency of radiological problem reports associated with worker or radiation protection technician performance. Additional documents reviewed during the inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02)

a. Inspection Scope (4 samples)

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). The review was against the criteria contained in 10 CFR 20, applicable industry standards, and station procedures.

Inspection Planning

The inspectors reviewed pertinent information regarding plant collective exposure history, current exposure trends, and ongoing or planned activities in order to assess current performance and exposure challenges. The inspectors determined the plant's three year rolling average collective exposure. The inspectors discussed 2005 exposure goals.

Verification of Dose Estimates and Exposure Tracking

The inspectors compared the results achieved (dose and dose rate reductions, person-rem expended) with the estimated occupational doses established in the initial ALARA plans for selected work activities. Tasks reviewed included ALARA planning for reactor building entries in September 2004 and work activities associated with the miscellaneous waste evaporator. The inspectors reviewed station ALARA committee meeting minutes relative to this latter emergent work.

Source-Term Reduction and Control

The inspectors reviewed AmerGen's ongoing activities associated with source term reduction. The review included system hot spot flushing plans and the TMI Unit 1 Exposure Reduction Plan (2005-2007).

Problem Identification and Resolutions

The inspectors reviewed corrective action assignment reports in the ALARA area since the last inspection to determine if ALARA program issues were entered into the corrective action program. The review included self-assessments, audits and corrective action reports related to the ALARA program to determine if follow-up activities were being conducted. Additional documents reviewed during the inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation and Protective Equipment (71121.03)

a. Inspection Scope (3 samples)

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 technical specifications, and applicable station procedures.

Radiation Monitoring Instrumentation

The inspectors reviewed the use, calibration, and functional testing of the onsite whole body counting equipment.

Problem Identification and Resolution

The inspectors reviewed audits and self-assessments in the area of instruments and protective equipment to determine if identified issues in this area were entered into the corrective action program. The inspectors reviewed IRs and action requests to evaluate

AmerGen's threshold for identifying, evaluating, and resolving problems in this area. Additional documents reviewed during the inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification (71151)

1. Mitigating Systems Cornerstone (2 samples)

a. Inspection Scope

The inspectors reviewed selected station records to verify NRC PIs had been accurately reported to the NRC as required by Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," Rev. 2. The PIs listed below were verified for the period from October 2003 to September 2004.

Safety System Unavailability

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

The inspectors reviewed operator logs, licensee event reports, 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. During this inspection, the inspectors identified a period of time during which both trains of high pressure injection (HPI) were inoperable contrary to technical specifications. The event is discussed further in Section 4OA3.1.

b. Findings

Introduction: The inspectors identified an NCV for untimely submittal of a licensee event report (LER) per 10CFR 50.73, to document inoperability of both trains of HPI, a condition not permitted by technical specifications.

Description: In January 2004, electricians identified that the breakers for the two auxiliary oil pumps to the 'B' HPI pump motor cooler were missing spacers and thus were not seismically qualified (IRs 196827, 197045). Engineers determined the root cause was a human performance error while implementing an engineering design modification to the 'B' HPI pump auxiliary oil pump breakers in February 1990. This error was not something that is likely to be identified through routine inspection, testing, or maintenance. It did not represent a current performance issue. Engineers concluded the 'B' HPI pump had remained operable despite the missing spacers in the auxiliary oil pump breakers. The 'B' HPI pump is one of three HPI pumps and is usually aligned as the spare pump. Station personnel promptly corrected the breaker deficiency, restoring

full qualification to the 'B' HPI pump. The other two HPI pump designs for these breakers do not involve spacers.

The inspectors questioned the basis for the licensee's determination of past operability. The inspectors stated that the breakers for the auxiliary oil pumps were not seismically qualified and therefore the 'B' HPI pump appeared to have been inoperable. Troubleshooting activities in response to observed power interruptions to the auxiliary oil pump in January 2004 (work order C2007038) confirmed that the missing spacers allowed movement in the breakers during normal plant operations that were sufficient to interrupt power. Additionally, the inspectors identified an associated error in the licensee tracking program for HPI availability. In March, the licensee reperformed the past operability/reportability assessment performed for IR 197045 and agreed with the inspectors' assessment that the 'B' HPI pump was inoperable. The HPI availability data was subsequently corrected (IR 212206).

In October 2004, while reviewing HPI unavailability, the inspectors identified that on February 5, 2003, both trains of HPI had been inoperable for approximately 4.75 hours. The 'B' HPI pump had been assumed operable during surveillance testing of the EDG in the redundant 'A' train. However, unknown at the time, the 'B' HPI pump was inoperable due to seismic qualification deficiencies. This is a condition prohibited by TSs in that both trains of HPI were inoperable and the licensee didn't begin a plant shutdown within one hour as required by TS 3.0.1. This condition could also have prevented fulfillment of the HPI post-seismic event safety functions of reactivity control and reactor coolant system inventory control. The event itself did not represent a current performance issue, had very low safety significance, and is discussed further in Section 4OA3.1. However, from February to October 2004, the licensee failed to identify and report the event, despite having and reviewing all of the pertinent information.

Analysis: The inspectors determined that failure to report the inoperability of both HPI trains within the time period specified in 10 CFR 50.73 was a performance issue. Failure to report such a safety event in a timely manner has the potential to impact the NRC's ability to perform its regulatory function and is to be addressed through traditional enforcement. Management review has concluded that this issue is a severity level IV violation consistent with Supplement I.D of the NRC Enforcement Policy.

Enforcement: 10 CFR 50.73 requires licensees to submit LERs for events described therein, within 60 days after the discovery of the event. On March 24, 2004, station personnel recognized that the 'B' HPI pump had been inoperable since 1990, and had all necessary information to assess reportability of this condition. Contrary to the above, station personnel did not report this event, which caused both trains of HPI to be briefly inoperable in February 2003, until December 17, 2004. The licensee determined the apparent cause of the event to be deficient standards, policies, controls, and training for determining past operability. The inspectors determined that this finding was a cross-cutting issue in the area of problem identification, because engineers did not sufficiently question operability of the support systems when evaluating reportability of this event. This Severity Level IV violation is being treated as a Non-Cited Violation (NCV), consistent with Section VI.A of the NRC Enforcement Policy and is in the licensee's

corrective action program as IR 267630. **NCV 05000289/2004005-03, Untimely Licensee Event Report for Both Trains of High Pressure Injection Inoperable**.

2. Occupational Exposure Control Effectiveness (1 sample)

a. Inspection Scope

The implementation of the Occupational Exposure Control Effectiveness PI Program was reviewed. Specifically, the inspectors reviewed corrective action program records for occurrences involving HRAs, VHRAs, and unplanned personnel radiation exposures since the last inspection in this area. The review was against the applicable criteria specified in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Rev. 2.

b. Findings

No findings of significance were identified.

3. RETS/ODCM Radiological Effluent Occurrences (1 sample)

a Inspection Scope

The implementation of the Radiological and Effluent Technical Specification/Offsite Dose Calculation Manual (RETS/ODCM) PI was reviewed. Specifically, the inspectors reviewed corrective action program records and projected monthly and quarterly dose assessment results due to radioactive liquid and gaseous effluent releases for the fourth quarter 2003 to October 25, 2004. The review was against the applicable criteria specified in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Rev. 2.

b. Findings

No findings of significance were identified.

4. Emergency Preparedness Cornerstone (3 Samples)

a. Inspection Scope

The inspectors reviewed the licensee's procedure for developing the data for the EP PIs which are: (1) Drill and Exercise Performance (DEP); (2) ERO Drill Participation; and, (3) ANS Reliability. The inspectors reviewed documentation from drills in 2003 and 2004, and ANS testing results to verify the accuracy of the reported data. Data generated since the December 2003 EP PI verification was reviewed during this inspection. The review of these performance indicators was conducted in accordance with NRC Inspection Procedure 71151. The acceptance criteria used for the review were 10 CFR 50.9 and NEI 99-02, "Regulatory Assessment Performance Indicator Guidelines," Rev. 2.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

1. Annual Sample- Control Building Emergency Re-circulation Fan AH-E-18A Vibration

a. Inspection Scope

The inspectors reviewed IR 259297, which evaluated elevated vibration readings identified on October 2 in the control building emergency re-circulation fan AH-E-18A. This event was selected based on its potential for impacting the control room envelope Barrier Integrity cornerstone. The evaluation determined that although the vibration levels were at the alert range, the limits established were conservative, and the values remained constant after several months of operation. In addition, no unusual noises were being emitted. The evaluation also concluded that the condition did not indicate bearing defects or bearing stress issues based on evaluation of the vibration spectrum data. The inspectors verified that air flows were normal and that the fan is currently performing its design function.

b. Findings

No findings of significance were identified

2. Annual Sample- Control Building Emergency Ventilation Return Fan AH-E-19B Elevated Noise

a. Inspection Scope

The inspectors performed a detailed review of action request A2021842 which documented elevated noise levels emanating from the control building return fan/motor AH-E-19B. This event was selected based on potential risk significance, since on-line repair would require entry into a short duration TS shutdown limiting condition of operation. The inspectors performed several system walkdowns and interviewed the ventilation system engineer and the component maintenance optimization (CMO) group supervisor to evaluate licensee resolution of this degraded condition. Additional documents reviewed during the inspection are listed in the Attachment.

b. Findings

Introduction. The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVI, “Corrective Action,” for not investigating and repairing a degraded control building air return ventilation fan (AH-E-19B) in a timely manner. A contributing cause of this finding is related to the cross-cutting area of problem identification and resolution.

Description. On December 12, 2001, operators identified that ventilation fan AH-E-19B had elevated noise levels while in service. This fan is part of a two independent train

system designed to maintain the control building ventilation envelope. Specifically, the system is designed to maintain a slightly positive pressure in the control room, to provide a ventilation rate sufficient for healthful human occupancy, and to filter and maintain the inside building ambient conditions within the desired limits of temperature, maximum humidity, and radiation. Per TMI UFSAR Section 9.8.1.3, the return fans AH-E-19A and B are required for the control room ventilation system to perform its design safety function. Consequently, AR A2021842 was initiated to document and evaluate the condition. In April 2002, actions were initiated to perform an inspection. However, the inspection was not performed until August 2003, after operators noted further elevated noise from the fan/motor which indicated continued degradation.

The CMO group gathered a one-time only ultrasonic and thermography reading and recommended the fan be placed in a non-preferred status until bearing replacement was completed. This meant that the fan was operable but degraded, and that during normal plant conditions, operators would only run the fan during the monthly 10 hours TS surveillance test and when the “A” fan was out for maintenance. The fan continued to meet its required design flow conditions during the surveillance tests. Based on personal experience, the CMO supervisor determined that bearings with identified defects will typically last five to six months of continuous operation before failure. The fan bearings were greased, and actions were initiated (per IR 174666) to replace the fan/motor during the October 2003 refueling outage.

On April 2, 2004, while interviewing the system engineer, the inspectors determined that the work had been postponed twice due to parts problems, including deferral from the October 2003 refueling outage. On April 5, in response to the inspectors concerns, actions were initiated to replace the fan and motor during the week of September 29, 2004. However, the inspectors were concerned that no plans were in place to do an evaluation of the degraded fan after replacement to determine the cause of the high noise. Station management was notified, and once again in response to the inspectors concerns, the system engineer added an activity to the work order (WO C2006336) to perform a post replacement inspection and evaluation of the fan/motor.

On September 29, during post replacement inspections of the degraded AH-E-19B fan/motor, mechanical maintenance technicians identified two six-inch cracks in the aluminum fan hub where the bolt holes penetrate the hub and attach to the motor. The cracks appear to penetrate 100 percent through the body of the hub. During interviews with the CMO supervisor and system engineer, the inspectors learned for the first time, that two similar fans AH-E-14A (September 18, 2000) and AH-E-20A (January 26, 2004) had experienced similar cracked hub conditions. AH-E-14A and AH-E-20A are used in non safety-related applications. The inspectors also learned that prior industry experience had identified similar problems with this type of fan, but this information had not led to further actions by engineers.

A laboratory analysis performed on the degraded AH-E-14A fan on December 19, 2004, determined that the failure of the aluminum hub was due to intergranular attack caused by a hydrogen embrittlement mechanism. The report also stated that relative humidities in excess of 50 percent and high bolt loading stresses would be sufficient to cause the cracking. The report recommended care during assembly and disassembly to ensure

bolt torque not be exceeded to prevent overstressing of the hub which could also induce cracks. The report also recommended that a visual inspection program to look for cracks be developed, or as an alternate, vibration monitoring be performed to assess the presence of growing cracks. There are a total of 14 similar axial flow fans used at TMI. Only four of these fans are used for safety-related applications (AH-E-19 A and B, and AH-E-95 A and B). All four of these fans serve the safety-related control building ventilation system. Although only one of the four safety-related fans has experienced the degraded hub condition, the inspectors determined that plant personnel actions to investigate and repair the degraded AH-E-19B were not made in a timely manner. In addition, plant personnel missed several opportunities to identify and prevent the degraded condition based on prior internal and external operating experience with similar fans.

Analysis. The untimely response to investigate and repair a degraded control building ventilation exhaust fan AH-E-19B, resulting in a cracked hub, is a performance deficiency. A contributing cause of this finding is related to the cross-cutting area of problem identification and resolution, because engineers and component maintenance optimization personnel missed several opportunities to identify, prevent, and/or correct the degraded condition based on prior internal and external operating experience with similar fans.

This issue is considered more than minor because it affected the control room envelope Barrier Integrity cornerstone since the fan hub crack could cause a partial loss of control building ventilation. Using NRC Manual Chapter 0609, “Significance Determination Process,” Appendix A, Phase 1, this finding was determined to be of very low safety significance (Green) since the condition did not result in an actual failure of the control room ventilation system. The inspectors verified that corrective actions are planned (IRs 258108 and 197544) to complete investigations to determine the cause of the cracked hub, evaluate for past operability and reportability, and include an extent of condition review.

Enforcement. 10 CFR 50, Appendix B, Criterion XVI “Corrective Action,” requires in part that measures be established to assure that conditions adverse to quality are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure the cause of the condition is determined and corrective actions taken to preclude repetition. The condition, the cause, and the corrective action taken shall be documented and reported to appropriate levels of management. Contrary to the above, station personnel did not take timely corrective actions to investigate a degraded control building ventilation exhaust fan (AH-E-19B), until prompted by the inspectors. In addition, plant personnel missed several opportunities to prevent and/or correct this degraded condition, based on internal and external operating experience with similar fans. Because this issue was of very low safety significance and has been entered into the corrective action program (IR 197544), this violation is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy: **NCV 05000289/2004005-04, Failure To Timely Investigate And Repair a Degraded Control Building Ventilation Exhaust Fan AH-E-19B**.

3. Annual Sample - Unplanned Reactor Power Increase

a. Inspection Scope

The inspectors reviewed the AmerGen evaluations and corrective actions for a February 6, 2004, event, in which reactor power increased 0.9 percent from full power over 17 minutes. This event was selected based on the safety significance of reactor reactivity control. The review included deficiency reports (IR 200195, 144127, and 219648) associated with malfunctions of computer-calculated reactor power and computer traces of reactor power during the event. The reports were reviewed to ensure that the full extent of the issues were identified, an appropriate evaluation was performed, and appropriate corrective actions were specified and prioritized. Additional documents reviewed for this inspection are listed in the Attachment.

b. Findings

Introduction. A self-revealing, Green finding occurred on February 6, 2004, when the reactor had an unplanned power increase from full power, in which reactor power increased 0.9 percent over 17 minutes. The power increase resulted when the input signal for calculated reactor power was removed from the integrated control system (ICS) with reactor power control in automatic. A contributing cause of this finding is related to the cross-cutting area of problem identification and resolution, because problems with computer-calculated reactor power had occurred previously, but corrective actions to address the problem were untimely, and corrective actions to address the consequences of the problem were ineffective. This represented a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, “Corrective Action.”

Description. The February 6, 2004, unplanned power increase occurred when the input signal for calculated reactor power was removed from the integrated control system (ICS) with reactor power control in automatic. The increase was stopped by a reactor operator (RO) taking the controls to manual following a turbine load set alarm. The controls had withdrawn control rods four times during the power increase. Operators subsequently manually inserted control rods to return reactor power to full power.

Problems with computer-calculated reactor power had occurred previously, but corrective actions to address the consequences of the problem were ineffective. During a February 2003 calibration on a reactor coolant flow transmitter, AmerGen had found that the calculated reactor power in the Nuclear Application Software (NAS) of the plant computer did not function properly and the computer locked up. This problem was reported under IR 144127, and the resolution was to revise the transmitter calibration procedures for channels A and B to remove the NAS from service and to place reactor controls, i.e., the Unit Load Demand of ICS, in manual prior to transmitter calibration. Channels C and D did not input into NAS and their calibration procedures were not changed. This approach proved to be ineffective; the February 2004 work package for a channel D transmitter needlessly included instructions to remove NAS from service, but did not include the specific steps for taking reactor control out of automatic, such as existed in the A and B channel calibration procedures.

Corrective actions to address the problem (NAS malfunctions) were untimely, in that little had been done to resolve the NAS malfunctions a year later when the unplanned power increase occurred. Further, when reviewed in December 2004, changes to address the NAS malfunctions were still being evaluated.

Also, the higher priority which could have existed if the NAS malfunctions were tracked as an operator work-around did not occur. The operator work-around program procedure (OP-AA-102-103) specified that "If compensatory actions have been proceduralized, but were not intended as part of the equipment operating design, the issue should be considered an operator work-around." Although the inspectors concluded that this criterion applied to the NAS malfunction, the malfunction had not been categorized as an operator work-around by AmerGen.

The inspectors reviewed the root cause evaluation and corrective actions for the February 2004 unplanned power change, which were documented under AR 200195, and found the corrective actions to be generally effective and thorough, with the exception that the missed opportunity to promptly and effectively address the problem discovered in February 2003 was overlooked. Corrective actions addressed poor decision-making by the Control Room Supervisor and the Shift Manager to allow the NAS downpower during shift turnover, less than adequate response by licensed ROs to the indications of rising reactor power, knowledge deficiencies by licensed operators, and work planning errors.

Analysis. The inspectors concluded that ineffective short term corrective actions and untimely longer term corrective actions for malfunctions of computer-calculated reactor power enabled an unplanned power increase from full power a year later, and that this represented a performance deficiency.

The inspectors determined that this finding is more than minor, because it potentially affected the barrier integrity cornerstone objective of providing reasonable assurance that physical barriers (i.e., fuel cladding) protect the public from radionuclide releases caused by overpower events. The specific attribute of configuration control regarding reactor reactivity control was affected in that the ICS escalated reactor power automatically upon loss of an input signal during scheduled maintenance. Also, the finding was associated with the cross-cutting area of problem resolution, because problem evaluation and corrective actions were untimely and did not prevent recurrence of an unplanned reactivity excursion.

The safety significance of the finding was determined to be very low (Green). The finding was evaluated using the SDP Phase 1 screening worksheet for the barrier integrity cornerstone, and the finding screened to Green due to potentially degrading the fuel cladding barrier only, i.e., all mitigating systems were functional and other barriers (RCS and containment) were unaffected. The inspectors noted that the actual unplanned power increase began at 100.3 percent power and increased 0.9 percent over 17 minutes. As such, it met longstanding NRC guidance regarding regulatory treatment of small, brief, inadvertent excursions above full power. Specifically, issues are not considered of elevated significance if the excursion does not exceed 102

percent and if average power remains at or below 100 percent when averaged over a shift.

Enforcement. 10 CFR 50, Appendix B, Criterion XVI, “Corrective Action,” requires that conditions adverse to quality, such as malfunctions, are promptly identified and corrected. Contrary to this requirement, malfunctions of computer-calculated reactor power within NAS were identified in February 2003 but not promptly corrected, in that on February 6, 2004, removing NAS from service prior to a transmitter calibration caused an unplanned reactor power increase. However, because of the very low safety significance and because the issue was entered into AmerGen’s Corrective Action Program (CAP) via IR 200195, this finding is being treated as a non-cited violation, consistent with Section VI.A of the Enforcement Policy. **NCV 05000289/2004005-05; Failure to Promptly Correct Computer-calculated Reactor Power Malfunctions.**

4. Cross-References to PI&R Issues Documented Elsewhere

As required by Inspection Procedure 71152, "Identification and Resolution of Problems,” and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee’s corrective action program. This review was accomplished by reviewing hard copies of each condition report, attending daily screening meetings, and accessing the licensee’s computerized database.

Section 1R14 describes a finding for not properly evaluating the impact that a plant modification had on the TMI Radiological Emergency Plan. A contributing cause of this finding is related to the cross-cutting area of problem identification and resolution, because (1) the 10 CFR 50.54(q) evaluation did not identify the potential that a train (or crossing gate) malfunction could occur and cause delays in accessing or leaving the site, despite numerous such occurrences; (2) evaluation of the issue following three train (or crossing gate) malfunctions in October 2004 was cursory in that it did not take positive actions to verify contingency actions were identified, understood, and trained upon; (3) substantive corrective actions such as establishing a memorandum of understanding with the railroad and establishing written guidance shift manager/emergency director guidance for this contingency were not developed until repeatedly questioned by the inspectors.

Section 4OA1.1 describes the failure of station personnel to properly perform a past operability evaluation that caused them to fail to submit an LER to the NRC in a timely manner. The inspectors determined that this finding resulted from an insufficient depth of review by licensee personnel. A contributing cause of this finding is related to the cross-cutting area of problem identification because station personnel did not consider unavailability of the emergency power supply to the second HPI train and associated technical specification requirements when determining reportability of this condition. Additionally, the original operability determination was deficient in that it did not correctly address seismic qualification of HPI support systems until identified by the inspectors.

Section 4OA3.2 describes a finding for using incorrect material (brass) for a main steam system instrument line cap, which resulted in a steam leak, a plant transient,

subsequent isolation of safety-related components, and a corresponding increase in plant risk. Failure to identify the visible difference in materials is a contributing cause of this finding and is related to the cross-cutting area of problem identification, because technicians and operators missed several opportunities to identify the problem prior to the steam leak.

Section 4OA3.2 of the report describes a finding for not identifying a degraded main steam isolation valve snubber (MS-225) that could have been reasonably identified by plant personnel during extent of condition review walkdowns, following a steam leak in the intermediate building.

5. Semi-Annual PI&R Trend Review

a. Inspection Scope

The inspectors performed a semi-annual review of common cause issues in order to identify any unusual trends that might indicate the existence of a more significant safety issue. This review included an evaluation of repetitive issues identified via the corrective action process (CAP), self revealing issues, and issues evaluated using programs supplemental to the formal CAP such as the maintenance rule program and corrective maintenance program. The results of the trending review were compared with the results of normal baseline inspections.

b. Findings

No findings of significance were identified. The CAP was revised in June 2004 to improve inclusion of plant issues into the CAP process, and establish a new tier of CAP assessment called the station ownership committee. Additionally several peer assessments and self assessments were conducted to improve PI&R performance. Station-wide training on the self assessment lessons learned was conducted. After making adjustment for a mid-year revision to the CAP process, the inspectors determined that the 2004 IR initiation rate increased approximately 40 percent from the previous year (2003), both overall and for IRs initiated by non-management personnel. Examples of good problem identification were noted (e.g. IR 289346 which identified non safety-related equipment powered directly from the 'A' reactor protection system train, IR 272850 which identified corrective action closure deficiencies, and IR 282185 which identified that an on-line risk assessment had not been prepared for planned maintenance.) The increased IR initiation rate does not reflect degraded plant condition, but rather a lower threshold for station personnel to identify and resolve problems. The inspectors noted an overall improvement in maintenance rule equipment availability and reduction in maintenance work order backlogs during the 2004 assessment cycle.

Notwithstanding, the inspectors continued to identify instances of inconsistency in problem identification and resolution. Examples included deficient identification or evaluation of a degraded emergency diesel generator fuel injection line (IR 237638), recurring computer calculated reactor power malfunctions which caused reactivity events (IR 200195), installation of incorrect material causing a main steam leak inside the intermediate building (IR 281003), degraded main steam isolation valve snubber

MS-225 (IR 281370), emergency plan impact due to blockage of the north gate site access by train malfunctions (IR 260849), degraded control room emergency ventilation system (CREVS) fan AH-E-19B (IR 259235), untimely evaluation of elevated 'C' reactor river water pump vibrations (IR 210880), deficient control room simulator fidelity (IR 212636), assessment of fire impairments associated with planned maintenance on the 'B' CREVS train (IR 257288), and HPI train inoperability (IRs 197045 and 212206). In each case listed, evaluations were either untimely or were not thorough. Although, these deficiencies do not reflect an adverse trend, they reveal that station corrective actions address to problem identification and resolution deficiencies have not yet proven effective.

4OA3 Event Follow-up (71153) (2 Samples)

1. (Closed) LER 05000289/2004001, High Pressure Injection (HPI) Pump Seismic Qualification Impacted due to an Oversight in the Design Process When Power Supplies for the Auxiliary Oil Pumps Were Relocated

a. Inspection Scope

On February 5, 2003, both trains of HPI were inoperable for approximately 4.75 hours. The 'B' HPI pump had been assumed operable during surveillance testing of the emergency diesel generator in the redundant train. However, unknown at the time, the 'B' HPI pump was inoperable due to seismic qualification deficiencies with the HPI auxiliary oil pump supply breakers. This was a condition prohibited by technical specifications (TS) in that both trains of HPI were inoperable and the licensee didn't begin a plant shutdown within 1 hour as required by TS 3.0.1. This condition could also have prevented fulfillment of the HPI post seismic event safety functions of reactivity control and reactor coolant system inventory control. Additionally, the LER reported the issue as a violation of TS 3.7.2.c, which addresses maintaining redundant safety train equipment operable when an emergency diesel generator is inoperable. The inspectors identified the period during which both trains of HPI were inoperable during a records review as documented in Section 4OA1.1. The inspectors reviewed the maintenance records, condition reports, and the licensee event report (LER) associated with this event to evaluate the causal factors, corrective actions, and safety impact.

The root cause of the event was human performance error while implementing an engineering design modification to the 'B' HPI pump auxiliary oil pump breakers in February 1990. Engineers relocated the auxiliary oil pump motor controllers to different motor control centers (MCC), but failed to recognize that this modification required the addition of a 5/8 inch spacer between the MCC and the pump motor controllers. This design error made the 'B' HPI pump inoperable due to inadequate seismic qualification of these breakers. The 'B' HPI pump is usually aligned as a swing pump which is not credited as an available safety HPI train. Station personnel identified and corrected the breaker deficiency in January 2004. Engineers concluded that the event had minimal safety risk since the plant design does not postulate a seismic event and a concurrent loss of coolant accident (LOCA). Therefore, there is no design requirement for immediate HPI make-up injection capability following a seismic event. The likelihood of a concurrent seismic event and a LOCA during this 4.75 hour period was extremely

small. For a seismic event, procedures would direct operators to promptly exit the EDG surveillance and restore availability of the 'A' HPI pump for inventory control. Additionally, following a seismic event, the reactor control rods would remain available for reactivity control.

b. Findings

The inspectors determined the finding that two HPI trains had been inoperable for a 4.75 hour period had very low safety significance for the same reasons described in the LER and documented above. Additionally, the inspectors determined the safety significance associated with non-seismic qualification of the 'B' HPI auxiliary oil pumps for the 14 year period (1990 to 2004) was also very low. This assessment was based on material inspections in the plant, interviews of station personnel, and review of selected records which verified that (1) operators periodically perform surveillance testing and monitor performance of the 'B' HPI auxiliary oil pumps; (2) indications of HPI auxiliary oil pump operation are directly available to operators in the control room; (3) there was no recent history of failures or anomalies for these pumps other than for a brief period in January 2004 when the design deficiency was discovered and corrected (see Section 4OA1.1); (4) the 'B' HPI pump is not normally aligned as one of the two available HPI trains required by TS; and (5) the time periods during which the 'B' HPI pump was credited as one of the two TS required HPI trains were brief and did not exceed the 72 hour TS allowed outage time.

The root cause of the event and violations of TS 3.0.1 and TS 3.7.2.c documented in this LER was human performance error while implementing an engineering design modification in 1990. 10 CFR 50, Appendix B, Criterion III, “Design Control,” requires in part that measures be established to assure applicable regulatory requirements and the design basis are correctly translated into instructions. Design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design. Contrary to the above while implementing an engineering design modification in February 1990, design control measures failed to assure seismic qualification was maintained on the 'B' HPI pump auxiliary oil pump breakers. The inspectors further determined that (1) the degraded HPI auxiliary oil pump breaker condition was licensee identified through evaluation of an abnormal oil pressure indication, (2) the licensee initiated timely and effective corrective action to repair the two auxiliary oil pump breakers and extent of condition corrective actions were appropriate (IR 196827, 197045), (3) the breaker design deficiency was not likely to be identified by routine licensee efforts, and (4) the initial design error occurred approximately 15 years ago and is not linked to present performance or present engineering design processes. Accordingly, enforcement discretion for the violation described above is granted in accordance with Section VII.B.3 of the NRC Enforcement Policy and no violation will be issued. **Enforcement Action (EA) 05-012, Old Design Issue Results in Inoperable High Pressure Injection Pump**

2. Main Steam Leak in the Intermediate Building

a. Inspection Scope

On December 9, 2004, a steam leak occurred in the intermediate building due to a failed capped instrument line fitting. The leak size was a ½ inch diameter opening which did not have a significant effect on steam generator water level or reactor coolant system parameters. Operators implemented abnormal operating procedure 1203-24, "Steam Leak," Rev. 29, reduced power to 22.5 percent, isolated the leak, and returned the plant to full power following repairs. The inspectors monitored the organization's response to the steam leak from the outage control center and the control room to evaluate plant conditions and assess whether operator actions were appropriate to place the plant in a stable condition and minimize risk. Additionally, the inspectors reviewed records, interviewed station personnel, and performed inspections of equipment within the intermediate building following the steam leak. These activities were performed to verify the cause of the steam leak and evaluate corrective actions.

b. Findings

Use of Incorrect Material Causes Main Steam Leak and Plant Transient

Introduction. A self-revealing Green NCV was identified for failure to maintain control of materials as required by 10 CFR 50, Appendix B, Criterion VIII. Use of incorrect material for an instrument line cap near main steam (MS) pressure instrument MS-PI-22 resulted in a steam leak, a plant transient, subsequent isolation of safety-related components, and a corresponding increase in plant risk.

Description. The first indication of the steam leak was the actuation of fire detection alarms which sensed elevated heat in the intermediate building. Operators responded to the area and promptly reported the cause was a steam leak. Upon performing further investigation and leak isolation activities over a 3-hour period, operators determined that the leak came from a ½ inch pressure instrument fitting near MS-PI-22, located in the turbine driven emergency feedwater pump room within the intermediate building. Leak isolation activities required operators to isolate one train of several accident mitigating systems (one train of the steam supply to the turbine driven emergency feedwater pump, one train of main condenser bypass valves, and one atmospheric steam dump) which reduced availability of secondary heat removal equipment. Each component was restored within the TS permitted outage time, where applicable.

Operators determined that an instrument line cap had deformed and broken loose, resulting in the leak. The steam in this line is about 550 degrees Fahrenheit and 900 pounds per square inch. Station drawing B-308-541, "Miscellaneous Pressure Instruments," Rev. 4, Line Specification C-1, and Specification SP-9000-44-001, "Threaded Piping and Fitting Maintenance," Rev. 2 require the fitting cap to be stainless steel. The failed instrument fitting cap was made of brass, a softer material which was inappropriate for this high temperature and pressure application. Laboratory analysis of the failed fitting cap concluded that the failure was due to uniform dezincification, combined with stress assisted corrosion cracking.

The inspectors determined that the brass fitting was visibly different from MS instrument line fittings and caps used in the local vicinity of MS-PI-22. Technicians periodically remove and replace the instrument caps for maintenance such as pressure instrument calibration. Both operators and technicians had opportunities to identify the incorrect material prior to the steam leak.

Analysis. The inspectors determined that not ensuring that the correct material was installed in the MS system and not identifying the readily visible material deficiency represented a performance deficiency. This issue is more than minor because it affected the Mitigating System cornerstone objective by reducing availability of several mitigating systems when operators isolated mitigating system components (one train steam supply to the EFW turbine pump, one train of turbine bypass valves, one atmospheric steam dump) in order to isolate and repair the steam leak. The inspectors performed a Phase 1 SDP evaluation in accordance with Inspection Manual Chapter 609, Appendix A. The finding screened to Green (very low safety significance) due to the limited duration of train inoperability during the leak isolation procedure and no loss of system safety function.

Enforcement. 10 CFR 50, Appendix B, Criterion VIII, "Identification and Control of Materials, Parts, and Components," requires in part that measures be established for the identification and control of materials, parts, and components to prevent the use of incorrect or defective material, parts, and components. Contrary to the above station personnel failed to control the material installed on an instrument connection cap near MS-PI-22. Design specifications Line Specification C-1 and Specification SP-9000-44-001, "Threaded Piping and Fitting Maintenance," Rev. 2 require the fitting to be stainless steel. The actual installed fitting was brass. The exact date the incorrect material was installed could not be conclusively determined. The last documented maintenance which affected the instrument cap was May 12, 2003. On December 9, 2004, the defective instrument connection cap failed due to exposure to the high temperature and pressure main steam system application, resulting in a steam leak in the intermediate building. This violation is documented in AmerGen's corrective action program (IR 281003) and is being treated as a non-cited violation, consistent with Section VI.A.1 of the NRC Enforcement Policy: **NCV 05000289/2004005-06, Inadequate Configuration Control - Incorrect Material for MS-PI-22 Causes Main Steam Leak.**

Degraded Main Steam Snubber Not Identified

Introduction. A Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," was noted for not identifying a degraded main steam isolation valve snubber (MS-225), following a steam leak in the intermediate building. A contributing cause of this finding is related to the cross-cutting area of problem identification and resolution.

Description. On December 10, the inspectors identified that extent of condition review walkdowns performed by plant personnel following a steam leak in the intermediate building failed to recognize a degraded snubber for the 'B' MSIV. Specifically, the inspectors identified that the external hydraulic reservoir for snubber MS-225 was empty. The snubber is one of two snubbers associated with the motor operator for the

safety-related ‘B’ MSIV. Immediately following the December 9 steam leak, operations management personnel informed the inspectors that the MSIV actuators would be inspected during post-steam leak equipment qualification walkdowns. In response to the inspectors finding on December 19, the licensee could not confirm that anyone had inspected the MSIV actuators.

Walkdowns performed immediately by operations management and mechanical maintenance confirmed the inspectors’ observation. Operators immediately declared the snubber inoperable per TMI TS 3.16 and entered the required 72 hours limiting condition of operation to replace the degraded snubber. IR 281370 was initiated to document and evaluate this condition. On December 11, the degraded snubber was removed and replaced with a newly refurbished snubber. Plant operators performed a subsequent walkdown of all similar snubbers in the intermediate building (total of 31 snubbers) and verified that they were all in fully acceptable condition, and that the empty reservoir identified on MS-225 was an isolated case. Visual inspections of the degraded snubber performed by mechanical maintenance and the system engineer identified a 2-3/4 inch crack at the bottom of the plastic reservoir. The crack had a spider web and hairline cracks appearance typical of aging material conditions. The system engineer determined that this snubber had been refurbished on December 2, 2002 and was put in operation just over a year ago on October 31, 2003. Therefore, the loss of hydraulic fluid was not due to aging and was unexpected and premature.

Snubbers are designed to prevent unrestrained pipe motion under dynamic loads as might occur during an earthquake or severe transient, while allowing normal thermal motion during plant startup or shutdown. On December 12, a functional test performed on the degraded snubber determined that it remained operable and was able to perform its intended function. The engineering evaluation also concluded that due to sufficient redundancy provided by a second installed snubber and two additional supports, the 'B' MSIV and associated piping had remained operable.

Safety-related snubbers located in the intermediate building are exposed to generally high ambient temperatures. Due to elevated temperature in the vicinity of the MSIV snubbers (approximately 135 to 140 degrees Fahrenheit), operators do not inspect this area during routine plant tours. Consequently, AmerGen established a periodic visual inspection that operators perform every six months using procedure 1301-9.9, “Hydraulic snubber Visual inspection.” This year (2004), snubber MS-225 was inspected in May and November 2004 satisfactorily. This most likely indicates that either the periodic inspections failed to detect the existing leakage/low fluid level condition or the leak was caused by an event after November 2004 and not detected by engineers during post steam leak walkdowns. The inspectors determined that in either case, problem identification was deficient.

Subsequent investigations performed by engineering to determine the cause of leakage have been inconclusive, since the leak did not reappear during functional testing, nor after the snubber was taken back to the MSIV room and exposed to the high ~ 135 Fahrenheit ambient temperature. On December 22, the inspectors performed a complete walkdown of all snubbers in the intermediate building using AmerGen’s visual inspection procedure 1301-9.9 as guidance, and verified that all material conditions

including the hydraulic reservoirs were in proper working condition. In addition, the inspectors verified that engineers initiated actions to perform further analysis with vendor assistance to determine the cause of leakage.

Analysis. The oversight by plant personnel in not identifying a degraded safety-related snubber during extent of condition review walkdowns following a steam leak in the intermediate building is a performance deficiency. The inspectors determined a contributing cause of this finding is related to the cross-cutting area of problem identification, because station personnel did not identify the existing degraded snubber condition during specific inspections intended to verify the condition of the safety-related MSIV actuators.

This issue is considered more than minor because it reduced the reliability of a mitigating system component ('B' MSIV), and affected the availability of the safety-related snubber. Using NRC Manual Chapter 0609, "Significance Determination Process, "Appendix A," Phase 1, this finding was determined to be a very low safety significance (Green) since the loss of hydraulic snubber fluid did not result in a failed snubber, nor did it cause the 'B' MSIV to become inoperable.

Enforcement. 10 CFR 50, Appendix B, Criterion XVI "Corrective Action" requires in part that measures be established to assure that conditions adverse to quality are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. Contrary to the above, station personnel failed to identify and correct a degraded safety-related 'B' MSIV snubber during extent of condition review walkdowns following a steam leak in the intermediate building. Because this issue was of very low safety significance and has been entered into the corrective action program (IR 281370), this violation is being treated as an NCV consistent with Section VI.A of the NRC Enforcement Policy: **NCV 05000289/2004005-07, Degraded 'B' MSIV Snubber Not Identified and Corrected.**

4OA5 Other

Licensee Management Changes

On October 11, 2004, Mr. Glen Chick assumed the duties of TMI Plant Manager following the Exelon reassignment of Mr. George Gelrich. Mr. Chet Incorvati is currently acting in Mr. Chick's former position as Director, Maintenance. On November 24, 2004, Mr. Charlie Arnone replaced Mr. Len Clewett, as the TMI plant operations director. On December 2, Mr. David Mohre, Jr. replaced Mr. Ron Detweiler as the Manager of TMI's Nuclear Oversight.

4OA6 Management Meetings

Exit Meeting Summary

On January 12, 2005, the resident inspectors presented the inspection results to Mr. Rusty West and other members of his staff who acknowledged the findings. The regional specialist inspection results were previously presented to members of AmerGen management. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV.

- Technical specification 6.8.1 requires procedures be properly established, implemented, and maintained covering activities recommended in Appendix 'A' of Regulatory Guide 1.33, Rev, 2, February 1978. Regulatory Guide 1.33 requires procedures for the control of radioactive releases. AmerGen procedure 6610-ADM-4250.11, “Releasing Radioactive Gaseous Effluents - Waste Gas Tanks A/B/C,” Rev. 10, requires that data be entered into the waste gas release permit program to be used in calculation of projected radiation doses for releases of waste gas tanks. Contrary to this requirement, on February 5, 2004, a waste gas tank was released and the sample activity error values were entered into the release permit program, for purposes of dose projection calculation, instead of the actual waste gas activity concentration values. This effluent release program finding is more than minor in that incorrect data was used for release calculations. The finding is of very low safety significance because, although there was an impaired ability to assess dose, AmerGen did assess the dose which was determined to be well below 10 CFR 50 Appendix I and 10 CFR 20.1301(d) dose values. In addition, the release point was continuously monitored with automatic isolation capabilities for unexpected elevated release concentrations. This event was placed in AmerGen’s corrective action program (IRs 200571 and 270567).

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel
C. Baker, Acting Manager, Radiological Health and Safety
K. Bartes, Plant Operations Director
R. Brady, Emergency Preparedness Manager
T. Knisely, Security Manager
G. Chick, Plant Manager
L. Clewett, Director, Site Engineering
E. Fuhrer, Regulatory Assurance
J. Gallagher - SRO/STA
D Hass, Shift Manager
C. Incorvati, Acting Director, Maintenance
J. Karkoska, MAROG Emergency Preparedness Manager
H. Langley, EP Coordinator
D. Lawyer, Radiological Engineer
S. Mannix, MAROG EP, Sirens
D Mayhue, Operations
D. Merchant, Manager, Radiological Health and Safety
A. Miller, Regulatory Assurance
S. Queen, Chemistry Manager
G. Rombold, Regulatory Assurance
B. Williams, Vice President, TMI Unit 1
S. Wilkerson, Engineering Response Team Manager
S. Mannix, East Region Siren Systems Manager
T. Lighty, Systems Engineer
E. Eisen, Systems Engineer

Others
M. Murphy, Bureau of Radiation Protection, Pennsylvania

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

2004005-01	NCV	Plant Modification Decreased Effectiveness of Emergency Plan Without Prior NRC Approval, Deficient 10 CFR 50.54(q) Evaluation (Section 1R14)
2004005-03	NCV	Untimely Licensee Event Report for Both Trains of High Pressure Injection Being Inoperable (Section 4OA1.1)
2004005-04	NCV	Untimely Investigation And Repair of a Degraded Control Building Ventilation Exhaust Fan AH-E-19B (Section 4OA2.2)
2004005-05	NCV	Computer-calculated Reactor Power Malfunctions Not Promptly Corrected (Section 4OA2.3)

05-012	EA	Old Design Issue Results in Inoperable High Pressure Injection Pump (Section 4OA3.1)
2004005-06	NCV	Inadequate Configuration Control - Incorrect Material for MS-PI-22 Causes Main Steam Leak (Section 4OA3.2)
2004005-07	NCV	Degraded Main Steam Isolation Valve Snubber MS-225 Not Identified and Corrected (Section 4OA3.2)

Opened

2004005-02	URI	Emergency Response Organization Qualifications Expired Due to Untimely Training (Section IEP3)

Closed

2004001-00	LER	High Pressure Injection (HPI) Pump Seismic Qualification Impacted due to an Oversight in the Design Process When Power Supplies for the Auxiliary Oil Pumps Were Relocated (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Issue Reports

IR 100646	Auxiliary Building Ambient Temperature Less Than 60 Degrees
IR 099927	Auxiliary Building Temperature Is Too Low
IR 271798	Low Temperatures In Auxiliary Building
IR 146446	FS-T-1 Low Temperature
IR 134035	FS-T-1 Low Temperature
IR 198512	Condensate Storage Tank Cold Weather Procedure Improvements
IR 202414	Ice On Walkway To RM-A-8
IR 180432	Anti-Freeze Sample Results
IR 143128	Analysis Of TMI Anti-Freeze Samples
IR 202862	32 Out Of 79 TMI ANS Sirens Found To Be Susceptible To Icing
IR 189182	Excessive Icing On NDCTs During Plant Startup From T1R15
IR 188858	Overflow Of CW From “B” NDCT To The Ground Due To Icing

Section 1R12: Maintenance Effectiveness

Issue Reports

IR 116961	AH-E-29A Repeat Maintenance
IR 166931	Loss Of DG Room Ventilation Not Addressed In Eps
IR 254732	AH-E-29A Very Noisy (EG-Y-1A Ventilation System)
IR 211880	AH-E-29A Motor Has Indication Of Degradation
IR 267361	EG-Y-1B Room Ventilation Damper Controller Concerns
IR 100646	Auxiliary Building Ambient Air Temperature Less Than 60 Degrees
IR 099927	Auxiliary Building Temperature Is Too Low
IR 252199	Positive Pressure In The Auxiliary Building

IR 264489 Auxiliary Building Delta Pressure At Zero On AH-DPI-1747
IR 264505 AH-E-11 Suction Ductwork Access Door Open
IR 271798 Low Temperatures In Auxiliary Building
IR 244315 AH-E-2B Failed To Start
IR 244417 Auto Start Feature For AH-E-2A/B Should Be Disabled
IR 268512 Control Building Chiller AH-C-4A Trips On Low Temperature

Section 1R15: Operability Evaluations

Issue Reports
IR 126786 EG-Y-1B Increased Vibration During The 10/6/02 100% Loaded Run
IR 234456 EG-Y-1B Jacket Coolant Pressure High Above Spec
IR 245271 Increased Vibration On Standby Circulating Pump EG-P-3B
IR 250382 ONAN Diesel Air Compressor EG-P-1B Failure To Start
IR 259636 Problems Identified During EG-Y-1B Overspeed Test
IR 261065 EG-Y-1B Closing Fuse Insulator Holder Broken
IR 261488 EG-Y-1B Fuel Injectors On Opposite Control Side Not Installed Properly
IR 261747 EG-Y-1B Coolant Jacket Return Temperature Indicator (EG-TI-J504B), could not be calibrated
IR 261516 EG-Y-1B Speed Indication Indicated 300 RPM After Breaker Open
IR 261524 EG-Y-1B Jacket Coolant Temperature Delta Greater Than Limit Of 10 Degrees
IR 261528 EG-Y-1B High Thermocouple Temperatures During 1303-4.16
IR 261780 Minor Air Leaks At EG-V-1017B
IR 261970 Coolant Added to EG-Y-1B
IR 262352 Lessons Learned From 2004 EDG Outage
IR 262764 Leaking Gasket on Discharge Of EG-Y-1B Ring Catchers
IR 261936 Issues With EG-Y-1B PMT and Clearance Tags

Section 1R16: Operator Work-Arounds

Action Requests
A2029749 RM-A-5 Map 5 Sampler Found Running with no Apparent Reason
A2040922 Computer Point TA198 Indicates Failed
A2067210 POWDEX Indication on Consul Left are Incorrect
A2072404 Rx Head Temp in Alarm for No Apparent Reason
A2074797 CO-V-12 Closed Indicator Does Not Function
A2076192 Map Alarm G-3-6 Intermittent While Operating RC-V-41B
A2076257 Biro TC 13-C Surv 1302-21 (R2043120): Im-Spnd-52 Biro T/C
A2077412 RC4B-TE2 Compared to RC4B-TE3 is >1.75 Degree per 1301.1
A2077508 RC-P-1B High Standpipe Level Alarm During Cycle 15 Operation
A2077528 RC-P-1D Low Standpipe Level Alarm During Cycle 15 Operation
A2077998 LO-P-8B Running Due to Control Oil Pressure Drop
A2079461 L2754 RC-P-1A Standpipe Level LO Alarm
A2088175 Do Not Receive a Zero Speed Alarm
A2098312 Hole Drilled thru De-Icing Line During Security Tower Work
A2098899 Received H&V A-1-10 Spurious Alarms
A2101173 'B' Startup FW Flow Xmitter (SP7B-DPT) Output in Error
A2101525 RM-A-8 Map Found Running for No Apparent Reason

Procedures
OP-AA-102-103 Operator Work-around Program, Rev. 1
OP-AA-101-114 Operations Peer Group Performance Indicators, Rev. 5

Section 1R23: Temporary Plant Modifications
Action Request A2103713

Procedure - CC-AA-404, Maintenance Specification: Application Selection, Evaluation and Control of Temporary Leak Repairs, Rev 5

Work Order C2009319

Section 1R22: Surveillance Testing

Recurring Task Work Orders
R2030178 Inspect The Electrical Vaults For Standing Water, August 26, 2003
R2020916 Inspect The Electrical Vaults For Standing Water, December 24, 2003
R2012534 Inspect The Electrical Vaults For Standing Water, June 20, 2002
R2003187 Inspect The Electrical Vaults For Standing Water, December 13, 2001

Engineering Documents
Memorandum 3330-96-0020, "Pumping Of Electrical Manholes," Dated August 6, 1996
Engineering Evaluation Request EER- JO 132584, to determine if update to cable testing program is needed based on EPRI Study SAND096-0344
Plant Engineering Evaluation Request 95-0232, "Screen House Cables," Rev. 17
Cable Technology Laboratories, Inc. Report 96-046, "Assessment Of The Condition Of An Aged Armored Cable From TMI Nuclear Station," Dated January 17, 1996

Section 1EP3: Emergency Response Organization
Procedure TQ-AA-113, ERO Training and Qualification, Rev. 3
2004 TMI EP Position - Lesson Plan Matrix
2003/2004 Augmentation Call-in drill reports
Procedure No. EP-AA-122-1001, Conduct of Call-in Augmentation Drills, Rev. 3
Drive-In Augmentation Drill, dated October 1, 2003

Section 1EP4: Emergency Action Level Revision Review
Exelon Standardized Radiological Emergency Plan
TMI Annex Radiological Emergency Plan
Procedure No. EP-AA-120, Emergency Plan Administration, Rev. 4

Section 1EP5: Correction of Emergency Preparedness Weaknesses and Deficiencies
Nuclear Oversight Regulatory Audit Procedure, NO-AA-200-002, Rev. 3
Audit NOSA-TMI-04-03, Nuclear Oversight EP 50.54(t) Program Audit Report, 2003
Audit NOSA-TMI-03-04, Nuclear Oversight EP 50-54(t) Program Audit Report, 2004
LS-AA-126, Self Assessment Program, Rev. 3
LS-AA-126-1001, Focus Self Assessment, Rev. 1

Issue Reports

IR 167592	Self Assessment Report, EP License Operator Requalification Effectiveness
IR 167591	Self Assessment Report, ERO Effectiveness
IR 167591	Self Assessment Report, TMI Unit 11 EP Drill & Exercise Scenario
IR 156397	Offsite Letters-of-Agreement Not in Place for 2003
IR 273483	TQ-AA-113 Implementation Delay Creates ERO T&A Discrepancies
IR 163996	EP Document Control and Document Deficiencies
IR 207738	EP Pager Did Not Activate
IR 161529	Follow-up/Documentation of TMI Annual Siren Test
IR 226068	Offsite Warning Siren Failures - May 04 PI Reporting Month
IR 213907	EP Communication Test Procedure Deficiencies
IR 203497	Pagers Did Not Activate During Test
IR 174403	Demonstration Criteria Unsatisfactory for Simulator for Several Drills
IR 176398	Lack of Monitoring of EP Duty Roster Qualification Status
IR 147884	Six Facility Demonstration Criteria Not Met for 2/11/03
IR 227545	Potential for Scenario Compromise during E-plan Drill
IR 164250	E-Plan Training and Training Procedure Deficiencies
IR 154035	Error Found in Data Submitted for ERO Drill Participation
IR 164136	EP Onshift Roster Position Not Filled with Qualified Individual
IR 166097	Accuracy of Unusual Event Classification
IR 158944	Post Pager Test Issues
IR 213903	EP CAP Implementation & Documentation Deficiencies
IR 192225	Medical Emergency Drill Deficiencies
IR 158890	Field Monitoring Team Issues Noted During Graded Exercise
IR 133243	EP Drill Performance Weaknesses and Improvement Areas in OSC
IR 269700	Unannounced Pager Test Discrepancies, dated 10/06/04
IR 192899	Comments Raised During the Dual Station Drill

Section 2OS1: Access Control To Radiologically Significant Areas; Section 2OS2: ALARA Planning Controls; Section 2OS3: Radiation Monitoring Instrumentation And Protective Equipment

The review included a check of possible repetitive issues, such as radiation worker or radiation protection technician errors. (IRs 202949, 202947, 256462, 255398, 24266, 207064, 253196, 256988, 253177, 252239, 242267, 226071, 217142 and 214309). Also reviewed were recent audits and assessments as appropriate (Focused Area Self-Assessments 195051, 1195359, 217850-02; Audit TMI-0306; and, Quarterly Reports January 2004 -September 2004).

Section 4OA1: Performance Indicator Verification

Drill and Exercise Reports Issued in 2003/2004
EP Requalification Training LOR Drills for 2003/2004
2003/2004 ANS Testing Records
2003/2004 ERO Drill and Exercise Attendance Sheets

Section 4OA2: Identification and Resolution of Problems

Documents reviewed for Control Room Emergency Ventilation Return Fan AH-E-19B inspection:

IR 174666, "AH-E-19B Fan Uncertainty Impacts Work Schedule," dated 9/7/03
IR 212805, "AH-E-19B Repair Extended Past Recommended Date," dated 4/2/04
IR 223825, "AH-E-19B Vibration Data not Collected," dated 5/26/04
IR 258108, "The Old AH-E-19B Hub Found With Two 6" Cracks," dated 9/29/04
AmerGen Surveillance Procedure 1303-5.5, "Control Room Emergency Filtering System Operational Test," Rev. 30
TMI FSAR Sections 7.1.1.7, "Environment," and 9.8, "Ventilation Systems"
TMI TS Section 3.15, "Air Treatment Systems"
Abnormal operation procedure OP-TM-AOP-034, "Loss of Control Building Cooling," Rev. 2

Action Requests
144127
200195
219648

Procedures

1302-5.4 A/B/C/D	RPS Channel A/B/C/D Reactor Coolant Flux Flow Comparator, Rev. 2
OP-AA-300	Reactivity Management, Rev. 0
OP-AA-102-103	Operator Work-Around Program, Rev. 1
OP-TM-602-411	Halting NAS Calculations, Rev. 0

Work Order

C2005165	Replace RC14A-DPT-4 Transmitter

Training Module

11.2.01.503	Reactivity Excursion Involving NAS

LIST OF ACRONYMS

ADAMS	Agencywide Documents and Management System
ALARA	as low as is reasonably achievable
AmerGen	AmerGen Energy Company, LLC
ANS	Alert and Notification System
AR	Action Request
CAP	Corrective Action Program
CEO	Chief Executive Officer
CFR	Code of Federal Regulation
CMO	Component Maintenance Optimization
CREVS	Control Room Emergency Ventilation System
DEP	Drill and Exercise Performance
DIE	Decrease in Effectiveness
DRP	Division of Reactor Projects
DRS	Division of Reactor Systems
EAL	Emergency Action Level
ECR	Engineering Change Request
E-Plan	TMI Annex Emergency Plan
EDG	Emergency Diesel Generator
EFW	Emergency Feedwater
EP	Emergency Preparedness
ERO	Emergency Response Organization
HPI	High Pressure Injection
HRA	High Radiation Area
HSPS	Heat Sink Protection System
IMC	Inspection Manual Chapter
ICS	Integrated Control System
IR	Issue Report
LER	Licensee Event Report
LOCA	Loss Of Cooling Accident
LLC	Limited Liability Corporation
MCC	Motor Control Center
MOV	Motor Operated Valve
MOU	Memorandum Of Understanding
MR	Maintenance Rule
MS	Main Steam
MSIV	Main Steam Isolation Valve
MU	Makeup
NUREG	Nuclear Regulatory Guide
NAS	Nuclear Application Software
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
PAR	Publicly Available Records
PI	Performance Indicator
PI&R	Problem Identification And Resolution
PMT	Post-Maintenance Test

RCS	Reactor Coolant System
RETS/ODCM	Radiological Effluent Technical Specification/Offsite Dose Calculation Manual
RO	Reactor Operator
RSPS	Risk Significant Planning Standard
RWP	Radiation Work Permit
SDP	Significance Determination Process
SSC	Structures, Systems and Components
the Plan	TMI Radiological Emergency Plan
TM	Temporary Modification
TS	Technical Specifications
TM	Temporary Modification
TMI	Three Mile Island, Unit 1
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
VHRA	Very High Radiation Area