April 16, 2002

Mr. John Skolds
President and CNO
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
5th Floor
Warrenville, IL 60555

SUBJECT: THREE MILE ISLAND STATION, UNIT 1 - NRC INSPECTION REPORT 50-289/02-003

Dear Mr. Skolds:

On March 22, 2002, the NRC completed a team inspection at the Three Mile Island Unit 1 Nuclear facility. The enclosed report presents the results of that inspection. The preliminary results of this inspection were discussed on March 22, 2002, with Mr. Williams and other members of your staff.

The inspection was an examination of activities conducted under your license as they relate to the identification and resolution of problems, and compliance with the Commission's rules and regulations, and with the conditions of your operating license at Three Mile Island Nuclear Station, Unit 1. Within these areas, the inspection consisted of a selected examination of procedures and representative records, observations of activities, and interviews with personnel.

On the basis of the sample selected for review, the NRC concluded the implementation of the corrective action program at Three Mile Island Unit 1 was adequate. Problems were generally being identified, evaluated and corrected in a timely fashion based on the risk significance of the issue. However, some instances were identified where lower risk significant equipment problems were not entered into the corrective action program for resolution. Additionally, a few evaluations of equipment problems required additional detail during the inspection to ensure the equipment remained functional. There was one finding of very low safety significance (Green) identified in the report associated with problem evaluation.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (The Public Electronic Reading Room).

Sincerely,
/RA/
David C. Lew, Chief
Performance Evaluation Branch
Division of Reactor Safety

Docket No: 50-289

Mr. Skolds

License No: DPR-50

Enclosure: NRC Inspection Report 50-289/02-003
Attachment 1: Supplemental Information

cc w/encl:
Amergen Energy Company - Correspondence Control Desk
Vice President TMI Unit 1
Manager, Regulatory Assurance
Plant Manager
Director-Licensing
Licensing and Regulatory Affairs- Vice President, Exelon Corporation
TMI-Alert (TMIA)
D. Allard, PADER
M. Schoppman, Framatome
FEMA, Region III

Distribution w/encl:
Region I Docket Room (with concurrences)
J. Orr, DRP - NRC Resident Inspector
H. Miller, RA
J. Wiggins, DRA
J. Rogge, DRP
N. Perry, DRP
T. Haverkamp, DRP
T. Bergman, OEDO
E. Adensam, NRR
T. Colburn, PM, NRR
(H. Pastis)/P. Tam, Backup PM, NRR

DOCUMENT NAME: G:\SYSTEMS\KAUFMAN\TMI Insp Rpt 2002-003.wpd
After declaring this document "An Official Agency Record" it **will** be released to the Public.
To receive a copy of this document, indicate in the box: "**C**" = Copy without attachment/enclosure "**E**" = Copy with attachment/enclosure "**N**" = No copy

OFFICE	RI/DRS		RI/DRS		RI/DRP		DI/DRS			
NAME	PKaufman		JTrapp		JRogge		DLew			
DATE	04/03/02		04/03/02		04/14/02		04/14/02			

OFFICIAL RECORD COPY

U.S. NUCLEAR REGULATORY COMMISSION

REGION 1

Docket No:	50-289
License No:	DPR-50
Report No:	50-289/02-003
Licensee:	AmerGen Energy Company, LLC (AmerGen)
Facility:	Three Mile Island Station, Unit 1
Location:	P.O. Box 480 Middletown, PA 17057
Dates:	March 4 - 08, 2002 March 18 - 22, 2002
Inspectors:	Paul Kaufman, Senior Reactor Inspector, Team Leader Mel Gray, Reactor Inspector Craig Smith, Resident Inspector
Approved by:	David C. Lew, Chief Performance Evaluation Branch Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000289/02-03, on 03/04 - 22/2002; AmerGen Energy Company, LLC; Three Mile Island (TMI) Unit 1; Biennial baseline inspection of identification and resolution of problems. One green finding was identified regarding problem evaluation.

The inspection was conducted by two region-based inspectors and one resident inspector. One Green finding of very low safety significance was identified during this inspection; however, no violation of NRC requirements was identified in this regard. The finding was evaluated using the significance determination process. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using IMC 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply are indicated by "No Color" or by the severity level of the applicable violation.

Identification and Resolution of Problems

Based on the sample selected for review, the NRC concluded the implementation of the corrective action program at Three Mile Island Unit 1 was adequate. The licensee was generally identifying problems and entering them into the corrective action program at an appropriate threshold. Problems were evaluated and corrected in a timely fashion based on the risk significance of the issue. However, some instances were identified where lower risk significant equipment problems were not entered into the corrective action program for resolution.

The licensee's evaluations were generally of sufficient detail to reasonably identify the problem causes and provide for effective corrective actions. The evaluations of significant problems were of sufficient depth to identify likely root or apparent causes, and address the potential extent of the circumstances contributing to the problem. Corrective actions were specified to address the causes of problems. However, instances were identified where evaluations were not sufficiently detailed to assess the impact of equipment deficiencies or delayed maintenance on plant systems. One instance, regarding an incomplete evaluation of the impact of inoperable service water traveling screen control instruments, was determined to be a finding of very low safety significance (Green).

Cornerstone: Mitigating Systems

- Green. A finding of very low safety significance was identified in regard to an evaluation that did not fully identify the impact of inoperable differential pressure instruments used to control service water traveling screen operation. The inoperable instruments precluded the operation of the traveling screens in fast speed, which could have impacted the reliability of the screen river debris removal function. While no violation of NRC requirements was identified in regard to this non-safety related equipment, the screen operation supports safety related cooling systems and affects the mitigating system cornerstone. The issue was of very low safety significance because the condition did not result in an actual loss of adequate debris removal function. (Section 4OA2.b)

Report Details

4. OTHER ACTIVITIES [OA]

4OA2 Identification and Resolution of Problems (71152)

.1 Effectiveness of Problem Identification

a. Inspection Scope

The licensee implemented a corrective action program as the primary process for identifying and resolving problems. The team noted that since the last NRC problem identification inspection in December 2000, the licensee had transitioned to the Exelon company wide corrective action program (CAP). Under the previous program, problems were entered as CAPs. Under the current Exelon program, problems are entered as condition reports (CRs). The team also noted that the Exelon CAP uses the work control process to identify and evaluate lower level equipment problems. The licensee entered equipment problems into this program as Action Requests (ARs).

The team reviewed the CAPs, CRs and ARs listed in Attachment 1 to determine if the licensee was identifying and entering problems into the program at an appropriate threshold. The items selected covered the period from December 2000 to the present. The items selected also covered the seven cornerstones of safety identified in the NRC Reactor Oversight Process (ROP).

The team also reviewed items from the licensee's operating, maintenance, engineering, and self-assessment processes to determine if personnel appropriately initiated CAPs, CRs or ARs when problems were identified via these processes. Specifically, the team reviewed a sample of work orders, self-assessments, control room out-of-service logs, equipment status tag logs, operator logs, design modifications, temporary modifications, and system health reports. The team also walked down selected plant areas and interviewed licensee personnel to identify other processes that may exist where problems and issues could be identified. Additionally, the team attended daily management meetings and a Nuclear Safety Review Board meeting to determine problem identification thresholds.

b. Findings

Based on the sample selected, the team determined that the licensee was generally identifying problems and entering them into the corrective action program at an appropriate threshold. The team determined that problems identified from the range of licensee processes were entered into the corrective action program for resolution. These included equipment problems identified during maintenance, surveillance test deficiencies, and personnel and programmatic issues. Based on the samples reviewed, the team concluded the licensee appropriately identified higher level problems in CAPs or CRs, and lower level equipment problems in ARs.

Notwithstanding, the team identified the following instances where deficient conditions associated with some lower risk significant equipment was not appropriately identified and entered into the corrective action process for timely resolution.

Hydraulic Snubbers

During a plant tour with an auxiliary operator in the first week of the inspection, the team observed an absorbent cloth, soaked with hydraulic fluid, on the floor in the intermediate building. The licensee subsequently determined hydraulic fluid was leaking from overhead snubber MS-224 that supported a main steam line. The appropriate technical specification action statement was entered and the problem was corrected expeditiously. The licensee also identified other snubbers with minor leakage and addressed them. The licensee evaluated the snubbers and concluded they remained operable. However, the team noted that the MS-224 snubber leak had not been identified in an AR, CR, or in auxiliary operator logs when the cloth was initially placed to absorb the leak. The licensee initiated CR#97999 to address the equipment problems and CR#98427 to address the problem identification deficiency.

During the second week of the inspection, the team walked down the same area after the floor had been mopped, and identified six instances where snubber fluid leaks were apparent on the floor. The team determined some of these leaks were from additional snubbers not previously evaluated, and further determined licensee personnel had not identified these problems in either ARs, CRs, or daily auxiliary operator logs. The licensee addressed these leaks in their corrective action program. The team concluded that the leaks were a minor issue since the hydraulic fluid reservoirs in each snubber provided sufficient fluid for the snubbers to perform their safety function. However the repetitive snubber fluid leaks had not been identified by licensee personnel and entered into the corrective action program until questioned during the inspection.

Service Water Rake and Traveling Screen Differential Pressure Instruments

The team identified that the non-safety related differential pressure instruments associated with the service water traveling screens had been inoperable for several years without being entered into the corrective action program for evaluation. These instruments provide alarm and control signals to help ensure the traveling screens remain capable of removing river debris in the river water supply to various safety related cooling pumps. The licensee initiated CR#94968 in February 2002 after NRC resident inspectors questioned the licensee in this regard.

Decay Heat Pump Mechanical Seal

The team identified that the “A” decay heat pump had a minor seal leak. However, the leak was not documented even though weekly auxiliary operator logs directed that seal leakage, which has the potential for bypass leakage during postulated accident conditions, be noted. The licensee initiated CR#98098 to address this issue.

Floor Drain Loop Seal

The team identified the floor drain loop seal was empty in the “B” decay heat pump vault. This loop seal is designed to be water filled to prevent the potential for airborne radioactivity to enter the vault from connected auxiliary building sumps and drains. The licensee added water to the loop seal and initiated CR#98082 to address this repetitive problem.

.2 Prioritization and Evaluation of Issues

a. Inspection Scope

The team reviewed CAPs and CRs listed in Attachment 1 to determine whether the licensee adequately prioritized and evaluated the problems. Under the Exelon corrective action program, each problem is assigned a significance level, with Level 1 identifying a problem that has a major plant impact, and Level 5 being an improvement item. No Level 1 problems had been identified since the Exelon process was implemented on August 6, 2002. The licensee also assigned an investigation class to each problem: Class A requiring a root cause analysis; Class B an apparent cause analysis; Class C a common cause analysis; and, Class D being closed to trend or a directed action.

The team selected CRs to cover the range of licensee evaluations. The team selected a sample of items to cover the seven cornerstones of safety identified in the NRC’s Reactor Oversight Process (ROP). The sample selection was made considering risk insights from the Three Mile Island Unit 1 Individual Plant Examinations (IPE). Additionally, the team selected a sample of CAPs and CRs associated with previous NRC Non-Cited Violations (NCVs) and Licensee Event Reports (LERs) for review. Finally, the team reviewed a sample of evaluations completed within ARs for equipment issues.

The team reviewed each problem report to determine whether the evaluations were sufficiently detailed to identify likely problem causes and provide for effective corrective actions. The team also reviewed the licensee’s assessment of equipment operability, reportability requirements, and the potential extent of the problem.

b. Findings

Overall, the team concluded the licensee’s evaluation of problems were of sufficient detail to reasonably identify the problem causes and provide for corrective actions to prevent recurrence. The licensee evaluations of significant problems (significance level 2 and 3 CRs) were of greater depth to identify root or apparent causes and address the potential extent of the circumstances contributing to the problem. Also, the team observed that the licensee’s management review board provided additional oversight of evaluations associated with more significant problems to ensure the root cause analyses were effective. The licensee’s evaluations of less significant problems generally were evaluated in adequate detail, either in CRs or AR evaluations. For the samples

reviewed, the team concluded the licensee properly assessed the equipment operability, and addressed reportability requirements.

Notwithstanding, the team identified a few instances where the evaluation of some lower risk significant equipment problems required additional detail to ensure the equipment remained functional. One instance regarding the service water traveling screen control instruments was determined to be a finding of very low safety significance (Green).

Service Water Rake and Traveling Screen Differential Pressure Instruments

A finding of very low safety significance (green) was identified in regard to an evaluation that did not fully identify the impact of inoperable differential pressure instruments used to control service water rake and traveling screen operation. No violation of NRC requirements was identified in regard to this non-safety related equipment.

The team reviewed CR#94968 and the associated assessment regarding inoperable differential pressure (dp) instruments for the service water bar rake and traveling screens. These dp instruments or bubblers, measure the differential pressure across the bar rakes and traveling screens, and provide alarms in the control room when a high differential pressure is sensed. High differential pressure would be indicative of a bar or screen blockage. The service water rakes and screens remove debris from the river intake to ensure a reliable supply of cooling water is maintained to the safety related nuclear services river water pumps, decay heat river water pumps, and reactor building emergency cooling water pumps. While the rake and screen control circuitry is categorized as risk significant in the licensee's maintenance rule program, the circuitry is not safety related.

The licensee's evaluation indicated that the bubbler corroded copper tubing had previously been replaced by plastic tubing, however, the tubing lengths may need adjustment to ensure proper bubbler operation. The evaluation referenced an open AR to accomplish this work in the near term. The evaluation further described the two automatic modes of rake and screen operation, one being operation on high differential pressure sensed by the bubblers, and the other being operation on a timer. The licensee concluded that, with the inoperable bubblers, the rake and screen function to remove river debris was maintained, since the components operated automatically on a timer. Furthermore, in the event of significant river debris, the rakes and traveling screens would procedurally be placed in manual mode to operate continuously.

The team reviewed design documents and determined that the bubblers provide a control function in the manual mode not described in the licensee's evaluation. In manual mode, with the screens operating continuously, the bubblers provide a signal on high screen differential pressure to increase the traveling screen speed. This would provide additional debris removal capability and decrease mechanical stress on the screen baskets. The screen speed decreases to slow speed when the differential pressure returns to normal. In response to the team's questions, the licensee operated the rakes and screens to confirm this design feature. The licensee determined that with the rakes in automatic and the screens in manual mode, the traveling screen would only operate in slow speed. The licensee revised their evaluation to address this design function and, based on uneventful historical operation of the system in the last several

years during increased river debris conditions, concluded the service water rake and screen function remained operable.

This issue could have a credible impact on safety, since failure to identify and evaluate the bubbler control function in the screen manual mode of operation could have impacted the reliability of the screen river debris removal function. This issue affects the mitigating systems cornerstone since the screen operation supports safety related cooling systems needed to mitigate accident conditions. However, the failure to fully evaluate operation of the traveling screens in manual mode with the bubblers inoperable was considered to have a very low safety significance in accordance with the Phase 1 of the NRC's significance determination process (SDP), because the condition did not result in an actual loss of adequate debris removal function. A traveling screen operation, on either a timer or in continuous manual operation, has provided sufficient river debris removal to maintain safety related cooling systems operable. The licensee is evaluating this problem and tracking corrective actions in CR#94968.

Station Blackout (SBO) Diesel Generator Battery

The team determined the SBO batteries were installed in 1991 and had not been periodically load tested to verify battery capacity. These batteries are required to start the SBO diesel engine during station blackout conditions. The licensee had initiated an AR to track deferral of this test. The team reviewed the deferral and concluded it did not evaluate SBO battery capacity considering their time in-service and lack of periodic load test results. The licensee initiated CR#100339 to assess battery capacity, and concluded that the batteries would support an SBO diesel engine start based on sizing and aging margins provided in the design and periodic checks of battery condition.

.3 Effectiveness of Corrective Actions

a. Inspection Scope

The team reviewed the corrective actions associated with the CAPs, CRs, and other documents listed in Attachment 1 to determine whether the corrective actions addressed the identified causes and were scheduled or completed in a timely fashion. The team also reviewed the corrective actions to determine if there were risk significant items that had not been properly resolved that could adversely affect plant safety.

b. Findings

The team determined that the licensee specified corrective actions to address the causes of problems identified in their evaluations. The team also determined that the licensee appropriately scheduled and tracked these corrective actions to completion. Since the licensee's program allowed actions to be closed to ARs or work orders, the team verified, for the sample of CAPs and CRs reviewed, that associated ARs or work orders tracked the corrective actions to a timely closure. While the licensee's program did not explicitly apply risk significance criteria to prioritize corrective actions, the team determined that actions needed to ensure equipment operability were completed in an expedited fashion commensurate with the equipment's safety function.

.4 Assessment of Safety-Conscious Work Environment

a. Inspection Scope

During the inspection, the team considered whether there were indications that workers were hesitant to identify safety problems.

b. Findings

No findings were identified.

OA6 Management Meetings

.1 Exit Meeting Summary

On March 22, 2002, the team presented the inspection results to Mr. B. Williams and other members of the AmerGen management. Additionally, Mr. D. Lew of the NRC was present. AmerGen acknowledged the findings presented. AmerGen did not indicate that any of the information presented at the exit meetings was proprietary.

ATTACHMENT 1 SUPPLEMENTAL INFORMATION

a. Partial List of Persons Contacted

Key Points of Licensee Contact

B. Williams	Vice President, TMI
G. Gellrich	Plant Manager
J. Stanley	Engineering Director
S. Queen	Senior Manager Plant Engineering
S. Zeman	Plant Engineering
J. Piazza	Design Engineering
J. McElwain	Manager, Regulatory Assurance
A. Miller	Regulatory Assurance
E. Fuhrer	Regulatory Assurance
W. Lopkoff	Regulatory Assurance
D. Scott	Manager, Operations Services
D. McDermott	Director, Maintenance
B. Bernard	Manager, Work Control

Others

M. Murphy	Pennsylvania Department of Environmental Protection

b. List of Documents Reviewed

Procedures

LS-AA-125, Corrective Action Program (CAP) Procedure, Revision 2
LS-AA-125-1001, Root Cause Analysis Manual, Revision 1
LS-AA-125-1002, Common Cause Analysis Manual, Revision 1
LS-AA-125-1003, Apparent Cause Evaluation Manual, Revision 1
LS-AA-125-1004, Effectiveness Review Manual, Revision 1
LS-AA-125-1005, Coding and Trend Manual, Revision 2
LS-AA-125-1006, CAP Process Expectations Manual, Revision 1
1426, PIMS Work Order Process, Revision 1
1426.2, Corrective Maintenance Action Request Initiation and Processing, Revision 3

Quality Assurance Audit Reports and Station Department Self Assessments

SA-2001-1157, Engineering Implementation of PIMS
SA-2001-1201, 10 CFR 50.59 Implementation

Nuclear Safety Review Board Meeting Minutes

Nuclear Safety Review Board meeting minutes, December 17-18, 2001
Nuclear Safety Review Board meeting minutes, September 5-6, 2001
Nuclear Safety Review Board meeting minutes, May 1-2, 2001
Nuclear Safety Review Board meeting minutes, February 15-16, 2001

List of Documents Reviewed (Cont.)

Non-Cited Violations

NCV 2000-008-03	Failure to Establish Adequate Controls and Ensure Battery Room Temperatures were Maintained Above Design Basis
NCV 2001-007-02	Inadequate Corrective Actions for Emergency Feedwater Pump Maintenance
NCV 2001-003-01	Failure to Adequately Assess the Increase in Risk that Resulted from Proposed Maintenance on the "C" Traveling Screen and the "A" Bar Rake
NCV 2001-003-03	Failure to Obtain Proper Torque Value for Pump Maintenance
NCV 2001-004-02	Incorrect In-service Testing Reference Values Following Pump Maintenance
NCV 2001-010-02	Inadequate Pump Surveillance Acceptance Standards
NCV 2001-013-01	Inadequate Corrective Action for Auxiliary Building Temperature Found Below Design Basis Limit
NCV 2001-04-01	Failure to Initiate Corrective Actions for Breaker Problem
NCV 2001-05-01	Inadequate Procedure Adherence During Steam Admission Valve Testing

Condition Reports (CRs)

CR#00078375	CR#00098339	CR#00094069	CR#00089032	CR#00098642
CR#00081857	CR#00098921	CR#00074720	CR#00078844	CR#00094968
CR#00081000	CR#00099502	CR#00093322	CR#00094596	CR#00097999
CR#00082041	CR#00084683	CR#00079651	CR#00071048	CR#00098956
CR#00086594	CR#00078826	CR#00079689	CR#00072534	CR#00099047
CR#00081907	CR#00092697	CR#00089368	CR#00076375	CR#00098427
CR#00087988	CR#00098275	CR#00080682	CR#00077695	CR#00099230
CR#00079002	CR#00081396	CR#00078674	CR#00088428	CR#00099964
CR#00074812	CR#00088243	CR#00092110	CR#00094603	CR#00071446
CR#00098082	CR#00084703	CR#00094573	CR#00085580	CR#00098082
CR#00098098	CR#00084116	CR#00073622	CR#00075678	

Action Requests (ARs)

A2000520	A2010144	A1802410	A2006747	A2024279
A2000544	A2014753	A2000504	A2008394	A2019519
A1802266	A2016408	A2000506	A2001443	A2004024
A1802385	A2016640	A1802045	A1802208	A2005909
A1802583	A2017659	A2008852	A2016640	A2024830
A2005897	A2021480	A2012620	A2014753	A2005898
A2005909	A2021479	A2012618	A2009909	A2029355
A2014850	A2024279	A2016939	A2020558	A1800964
A2014855	A2006799	A2021515	A2027227	A1801157
A2019519	A2005951	A2021666	A2023732	A2028217
A2020558	A1802490	A2008852	A2011648	
A2022139	A1802478	A2029314	A2022139	
A2009909				

List of Documents Reviewed (Cont.)

CAPs

T2000-1043	T2000-0336	T2001-0800	T2001-0108	T2001-0136
T2000-0989	T2000-0585	T2001-0678	T2001-0439	T2001-0152
T2000-0167	T2001-0632	T2001-0644	T2002-0016	

c. List of Acronyms Used

AmerGen	AmerGen Energy Company, LLC
AR	Action Request
CAP	Corrective Action Process
CR	Condition Report
NCV	Non-cited Violation
NRC	Nuclear Regulatory Commission
SDP	Significance Determination Process
TMI	Three Mile Island, Unit 1