

May 28, 2003

Mr. John L. Skolds, Chairman
and Chief Executive Officer
AmerGen Energy Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: THREE MILE ISLAND NUCLEAR STATION, UNIT 1 (TMI-1), REQUEST FOR
ADDITIONAL INFORMATION (RAI) - RISK-INFORMED INSERVICE
INSPECTION (RI-ISI) (TAC NO. MB6498)

Dear Mr. Skolds:

By letter dated October 1, 2002, you requested approval of reliefs from the American Society for Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, requirements for inservice inspection of Class 1, 2, and 3 components. You requested approval for adopting an RI-ISI Program in accordance with the guidance contained in the Nuclear Regulatory Commission (NRC)-approved Electric Power Research Institute (EPRI) Topical Report, EPRI TR-112657, Revision B-A, plus additional relief. The NRC staff has reviewed your request and determined that it will need the additional information contained in the enclosure to complete its review. As discussed with and agreed to by your staff on April 28, 2003, you are requested to provide your response within 30 days of receipt of this request.

If you have any questions, please contact me at 301-415-1402.

Sincerely,

/RA/

Timothy G. Colburn, Senior Project Manager, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-289

Enclosure: RAI

cc w/encl: See next page

May 28, 2003

Mr. John L. Skolds, Chairman
and Chief Executive Officer
AmerGen Energy Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: THREE MILE ISLAND NUCLEAR STATION, UNIT 1 (TMI-1), REQUEST FOR
ADDITIONAL INFORMATION (RAI) - RISK-INFORMED INSERVICE
INSPECTION (RI-ISI) (TAC NO. MB6498)

Dear Mr. Skolds:

By letter dated October 1, 2002, you requested approval of reliefs from the American Society for Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, requirements for inservice inspection of Class 1, 2, and 3 components. You requested approval for adopting an RI-ISI Program in accordance with the guidance contained in the Nuclear Regulatory Commission (NRC)-approved Electric Power Research Institute (EPRI) Topical Report, EPRI TR-112657, Revision B-A, plus additional relief. The NRC staff has reviewed your request and determined that it will need the additional information contained in the enclosure to complete its review. As discussed with and agreed to by your staff on April 28, 2003, you are requested to provide your response within 30 days of receipt of this request.

If you have any questions, please contact me at 301-415-1402.

Sincerely,

/RA/

Timothy G. Colburn, Senior Project Manager, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-289

Enclosure: RAI

cc w/encl: See next page

DISTRIBUTION:

PUBLIC TChan OGC MO'Brien
PDI-1 Reading MRubin ACRS WKoo
RLaufer SMalik BPlatchek, Rgn-I TColburn

DOCUMENT NAME: G:\PDI-1\TMI-1\MB6498RAI.WPD

Accession Number: ML031480217

OFFICE	PDI-1/PM	PDI-1/LA	EMCB/SC	SPSB/SC	PDI-1/SC
NAME	TColburn	MO'Brien	TChan	DHarrison for MRubin	RLaufer
DATE	5/13/03	5/14/0303	5/12/03	5/23/03	5/28/03

OFFICIAL RECORD COPY

REQUEST FOR ADDITIONAL INFORMATION (RAI)

RISK-INFORMED ISI (RI-ISI) PROGRAM

THREE MILE ISLAND NUCLEAR STATION, UNIT 1 (TMI-1)

AMERGEN ENERGY COMPANY, LLC

DOCKET NO. 50-289

By letter dated October 1, 2002, AmerGen Energy Company, LLC (the licensee), submitted a proposed request to use a Risk-Informed Inservice Inspection (RI-ISI) Program as an alternative to the TMI-1 ISI Program requirements. The U.S. Nuclear Regulatory Commission (NRC) has reviewed the information the licensee provided that supports the proposed request. The risk-informed process used in the submittal is described in the NRC-approved Electric Power Research Institute (EPRI) Topical Report, EPRI TR-112657, Revision B-A.

The NRC staff has identified the following questions or concerns that require clarification or additional information in order to complete its review:

1. In relief request RR-00-21 for implementing the RI-ISI program, the licensee stated that "In lieu of the evaluation and sample expansion requirements of EPRI TR-112657, Revision B-A, Section 3.6.6.2, 'RI-ISI Selected Examinations,' Three Mile Island, Unit 1 will utilize the requirements of Subarticle-2430, 'Additional Examinations,' which is contained in Code Case N-578-1." It should be noted that Code Case (CC) N-578-1 has not been approved by the NRC for generic use. The guidelines for sample expansion in CC N-578-1 are not consistent with the NRC staff's position as delineated in the EPRI TR-112657, Revision B-A, Report. The NRC staff considered that all required examinations due to sample expansion should be completed during the same refueling outage, and that the candidates for selecting elements in sample expansion should include all elements that are determined to be susceptible to the same root cause and degradation mechanism found in the initial samples. Therefore, for the evaluation and sample expansion, the licensee should follow the requirements of EPRI TR-112657, Revision B-A, Section 3.6.6.2, instead of CC N-578-1. Please revise your evaluation and sample expansion requirements, accordingly.
2. The licensee identified in its RI-ISI Program that the following four augmented programs will not be subsumed into the RI-ISI Program and will remain unaffected:
 - Stagnant Borated Water Systems (IE Bulletin 79-17)
 - Service Water Integrity Program (Generic Letter (GL) 89-13)
 - Flow Accelerated Corrosion (FAC) (GL 89-08)
 - High Energy Line Breaks (USNRC Branch Technical Position MEB 3-1)
 - a. The augmented program of High Energy Line Breaks was not referenced in the EPRI TR-112657, Revision B-A, Report. Discuss this augmented inspection program and its relationship to EPRI's RI-ISI methodology. What degradation mechanisms and systems are involved in this augmented program?

Enclosure

- b. The integration of augmented programs of Stagnant Borated Water Systems (IE Bulletin 79-17) and Service Water Integrity Program (GL 89-13) into the RI-ISI Program is discussed in EPRI TR-112657, Revision B-A, Report. Provide your reasons for not integrating these augmented programs into your proposed RI-ISI Program.
- c. Identify and discuss that the element numbers shown in Table 3 of your RI-ISI Program include the elements to be examined under the referenced augmented programs.
3. In Table 2 of your proposed RI-ISI Program, the piping element in the decay heat removal system is susceptible to primary water stress corrosion cracking (PWSCC) and erosion-cavitation (E-C). In Table 4, it is indicated that two elements and one element are scheduled for inspection in Category 2 and 5 in this system, respectively. Discuss how the inspection will be performed and discuss elements selected to detect degradation from both PWSCC and E-C.
4. In Table 4 of your proposed RI-ISI Program, fifteen elements in the main steam system are scheduled for inspection in Risk Category 1. Category 1 is for inspection of flow accelerated corrosion and is inspected under a separate GL 89-08 program. Discuss what degradation mechanism this inspection is intended for in your RI-ISI Program.
5. In your RI-ISI Program, a large number of elements, 139, in Risk Category 4 (Table 4) are scheduled for inspection. Elements in this Category are not susceptible to any specific degradation mechanism. If degradation was found in the initial inspection of this Category, discuss the guidelines that you will follow to select elements for additional examination when a root cause of the degradation can not be determined. Should you also consider elements in other Categories for additional examination and modify your program (subject to NRC approval) due to the new finding for future inspection?
6. Through-wall cracking due to PWSCC was found in a hot-leg pipe weld made of Alloy 182/82 material at the V. C. Summer plant. Discuss and confirm that all your components that consist of Alloy 182/82 weld or butter have been evaluated and properly categorized for their susceptibility to PWSCC.
7. Under what conditions would your RI-ISI Program be resubmitted to the NRC before the end of any 10-year interval?
8. On page 1 of your submittal, you state that the TMI Nuclear Station 2000 Probabilistic Risk Assessment (PRA) Model TMIL2RV2, dated August 2000, was used for your RI-ISI analysis. Please provide the baseline core damage frequency and baseline large early release frequency from this version of the PRA model.

Your submittal also states that the TMI-1 PRA model used to support your RI-ISI Program is an update to the Individual Plant Examination (IPE) submitted to the NRC on May 20, 1993. In the NRC staff's evaluation of the IPE, dated December 19, 1996, the NRC staff states that the IPE submittal did not include a containment phenomena sensitivity analysis as requested by GL 88-20. Please state whether including the containment phenomena sensitivity analysis would have an impact on your RI-ISI analysis.

9. As shown on Table 3 (page 15) of your submittal, the total number of elements in the High Risk Categories is 304 and as shown on Table 4 (page 16), the total number of High Risk elements selected for inspection is 56, less than the EPRI methodology guideline of 25% of the total number of High Risk elements. Please confirm that the discrepancy in the percentage of welds inspected is due to the exclusion of "FAC only" welds and identify the number of "FAC only" welds in each category, by system.

10. On page 8 of your submittal, you discuss use of the Markov piping reliability method to estimate the change in risk due to adding and removing locations from the inspection program. Please confirm that the change in risk is calculated utilizing the Markov model described in EPRI Topical Report, TR-111061, dated December 1998, to estimate the "inspection efficiency factor" and that the method is the same as that described by the Dresden licensee in a February 19, 2001, RAI response (ADAMS accession number ML010570133), and approved by the NRC staff in a safety evaluation dated September 5, 2001 (ML012050103), on the Dresden RI-ISI submittal.

Three Mile Island Nuclear Station, Unit 1

cc:

Site Vice President - Three Mile Island Nuclear
Station, Unit 1
AmerGen Energy Company, LLC
P. O. Box 480
Middletown, PA 17057

Senior Vice President Nuclear Services
AmerGen Energy Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Vice President - Mid-Atlantic Operations Support
AmerGen Energy Company, LLC
200 Exelon Way, KSA 3-N
Kennett Square, PA 19348

Senior Vice President -
Mid Atlantic Regional Operating Group
AmerGen Energy Company, LLC
200 Exelon Way, KSA 3-N
Kennett Square, PA 19348

Vice President -
Licensing and Regulatory Affairs
AmerGen Energy Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Regional Administrator
Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Chairman
Board of County Commissioners
of Dauphin County
Dauphin County Courthouse
Harrisburg, PA 17120

Chairman
Board of Supervisors
of Londonderry Township
R.D. #1, Geyers Church Road
Middletown, PA 17057

Senior Resident Inspector (TMI-1)
U.S. Nuclear Regulatory Commission
P.O. Box 219
Middletown, PA 17057

Director - Licensing - Mid-Atlantic Regional
Operating Group
AmerGen Energy Company, LLC
Nuclear Group Headquarters
Correspondence Control
P.O. Box 160
Kennett Square, PA 19348

Rich Janati, Chief
Division of Nuclear Safety
Bureau of Radiation Protection
Department of Environmental Protection
Rachel Carson State Office Building
P.O. Box 8469
Harrisburg, PA 17105-8469

Three Mile Island Nuclear Station, Unit 1
Plant Manager
AmerGen Energy Company, LLC
P. O. Box 480
Middletown, PA 17057

Regulatory Assurance Manager - Three Mile
Island Nuclear Station, Unit 1
AmerGen Energy Company, LLC
P.O. Box 480
Middletown, PA 17057

John F. Rogge, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Michael A. Schoppman
Framatome ANP
Suite 705
1911 North Ft. Myer Drive
Rosslyn, VA 22209

Three Mile Island Nuclear Station, Unit 1

cc: continued

Vice President, General Counsel and Secretary
AmerGen Energy Company, LLC
2301 Market Street, S23-1
Philadelphia, PA 19101

Dr. Judith Johnsrud
National Energy Committee
Sierra Club
433 Orlando Avenue
State College, PA 16803

Eric Epstein
TMI Alert
4100 Hillsdale Road
Harrisburg, PA 17112

Correspondence Control Desk
AmerGen Energy Company, LLC
200 Exelon Way, KSA 1-N
Kennett Square, PA 19348

Manager Licensing - Oyster Creek and Three Mile
Island
AmerGen Energy Company, LLC
Nuclear Group Headquarters
Correspondence Control
P.O. Box 160
Kennett Square, PA 19348