September 29, 2008

Mr. Michael P. Gallagher
Vice President License Renewal Projects
AmerGen Energy Company, LLC
200 Exelon Way
Kennett Square, PA 19348

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR APPENDIX B, AGING MANAGEMENT PROGRAMS, OF THE THREE MILE ISLAND NUCLEAR STATION, UNIT 1, LICENSE RENEWAL APPLICATION, (TAC NO. MD7701)

Dear Mr. Gallagher:

By letter dated January 8, 2008, AmerGen Energy Company, LLC (AmerGen) submitted an application pursuant to 10 *Code of Federal Regulation* Part 54 (10 CFR Part 54) to renew the operating license for Three Mile Island Nuclear Station, Unit 1 for review by the U.S. Nuclear Regulatory Commission (NRC or the staff). The staff conducted an audit of Aging Management Programs from July 21, 2008 through July 23, 2008 and from July 28, 2008 through August 1, 2008 and is continuing to review the information contained in the license renewal application and has identified, in the enclosure, areas where additional information is needed to complete the review. Further requests for additional information may be issued in the future.

Items in the enclosure were discussed with Chris Wilson, of your staff, and a mutually agreeable date for the response is within 30 days from the date of this letter. If you have any questions, please contact me at 301-415-2878 or e-mail Jay.Robinson@nrc.gov.

Sincerely,

\RA

Jay Robinson, Sr. Project Manager
Projects Branch 1
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-289

Enclosure:
As stated

cc w/encl: See next page

September 29, 2008

Mr. Michael P. Gallagher
Vice President License Renewal Projects
AmerGen Energy Company, LLC
200 Exelon Way
Kennett Square, PA 19348

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR APPENDIX B, AGING MANAGEMENT PROGRAMS, OF THE THREE MILE ISLAND NUCLEAR STATION, UNIT 1, LICENSE RENEWAL APPLICATION (TAC NO. MD7701)

Dear Mr. Gallagher:

By letter dated January 8, 2008, AmerGen Energy Company, LLC (AmerGen) submitted an application pursuant to 10 *Code of Federal Regulation* Part 54 (10 CFR Part 54) to renew the operating license for Three Mile Island Nuclear Station, Unit 1 for review by the U.S. Nuclear Regulatory Commission (NRC or the staff). The staff conducted an audit of Aging Management Programs from July 21, 2008 through July 23, 2008 and from July 28, 2008 through August 1, 2008 and is continuing to review the information contained in the license renewal application and has identified, in the enclosure, areas where additional information is needed to complete the review. Further requests for additional information may be issued in the future.

Items in the enclosure were discussed with Chris Wilson, of your staff, and a mutually agreeable date for the response is within 30 days from the date of this letter. If you have any questions, please contact me at 301-415-2878 or e-mail Jay.Robinson@nrc.gov.

Sincerely,
\RA
Jay Robinson, Sr. Project Manager
Projects Branch 1
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-289

Enclosure:
As stated

cc w/encl: See next page

DISTRIBUTION: See next page

ADAMS Accession No.: ML082490089

OFFICE	LA:DLR	DLR:RER1	PM:DLR:RPB1	BC:DLR:RPB1
NAME	SFigueroa	JDozier	JRobinson	DPelton
DATE	9/12/08	9/14/08	9/15/08	9/29/08

OFFICIAL RECORD COPY

Letter to AmerGen Energy Company, LLC from J. Robinson dated September 29, 2008

DISTRIBUTION:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR APPENDIX B, AGING MANAGEMENT PROGRAMS, OF THE THREE MILE ISLAND NUCLEAR STATION, UNIT 1, LICENSE RENEWAL APPLICATION (TAC NO. MD7701)

HARD COPY:
DLR RF

E-MAIL:
PUBLIC
RidsNrrDlr
RidsNrrDlrRpb1
RidsNrrDlrRpb2
RdsNrrDlrRer1
RidsNrrDlrRer2
RidsNrrDlrRerb
RidsOgcMailCenter

MModes, RI
DKern
JBrand
RConte
RBellamy
PBamford

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 - Operations, Mid-Atlantic
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 and Regulatory Affairs
AmerGen Energy Company, LLC
Correspondence Control
P.O. Box 160
Kennett Square, PA 19348

Director
Bureau of Radiation Protection
Pennsylvania Department of
Environmental Protection
Rachel Carson State Office Building
P.O. Box 8469
Harrisburg, PA 17105-8469

Plant Manager - Three Mile Island Nuclear Station, Unit 1
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

Ronald Bellamy, 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

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-1
Kennett Square, PA 19348

cc:

Manager Licensing - Three Mile Island
Nuclear Station, Unit 1
Exelon Generation Company, LLC
Correspondence Control
P.O. Box 160
Kennett Square, PA 19348

Christopher M. Crane
President and Chief Executive Officer
AmerGen Energy Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Mr. Charles G. Pardee
Chief Nuclear Officer
AmerGen Energy Company, LLC
200 Exelon Way
Kennett Square, PA 19348

Associate General Counsel
AmerGen Energy Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Chief Operating Officer (COO)
AmerGen Energy Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Frederick W. Polaski
Manager License Renewal
Exelon Nuclear
200 Exelon Way
Kennett Square, PA 19348

Albert A. Fulvio
License Renewal Senior Project Manager
Exelon Nuclear
200 Exelon Way
Kennett Square, PA 19348

REQUEST FOR ADDITIONAL INFORMATION (RAI)

APPENDIX B, AGING MANAGEMENT PROGRAMS

THREE MILE ISLAND NUCLEAR STATION, UNIT – 1

LICENSE RENEWAL APPLICATION

RAI#: B.2.1.1-1

LRA Section: B.2.1.1, American Society of Mechanical Engineers (ASME) Section XI Inservice Inspection (ISI), Subsections IWB, IWC, and IWD

Background:

The first paragraph under "Exceptions to NUREG-1801", on Page B-13 of the License Renewal Application (LRA) states that "The next 120-month inspection interval for TMI-1 will incorporate the requirements specified in the version of the ASME Code incorporated into 10 CFR 50.55a twelve months before the start of the inspection interval", indicating that the program will be in accordance with the Generic Aging Lessons Learned (GALL) Report (NUREG-1801, Rev. 1) during the period of extended operation.

Issue:

Since the code edition was previously approved under 10 CFR 50.55a for this ten-year interval, the staff concluded that the stated exceptions should not be identified as such. Similarly, the staff finds that an exception is not needed for requirements found in the 2001 edition, but not in the 1995 edition of the code.

Request:

Indicate agreement or provide justification if disagreement.

RAI#: B.2.1.1-2

LRA Section: B.2.1.1, ASME Section XI ISI, Subsections IWB, IWC, and IWD

Background:

Page I-2 of the GALL Report, Volume 2, Revision 1 states the following on the applicability of current Code reliefs for the period of extended operation:

> "The NRC Director of the Office of Nuclear Reactor Regulation may approve licensee proposed alternatives to the ASME Code in accordance with the provisions of 10 CFR 50.55a(a)(3). These NRC approved ASME Code alternative requirements may have an associated applicability time limit. The applicability time limits associated with the approved alternatives do not extend beyond the current license term. If an applicant seeks relief from specific requirements of 10 CFR 50.55a and Section XI of the ASME Code for the period of extended operation, the applicant will need to re-apply for relief through the 10 CFR 50.55a relief request process once the operating license for the facility has been renewed."

Issue:

The staff noted the use of risk informed inservice inspection (RI-ISI) to determine inspection frequency. RI-ISI and the use of specific Code Cases have been approved by the NRC

ENCLOSURE

under the 10 CFR 50.55a process and only apply to the current ISI interval. The provisions of 10 CFR 54 for the license renewal process do not include the use of ASME Section XI code cases or RI-ISI. The staff noted that the fourth inspection will be performed during the period of extended operation and that the program will be submitted during the current license period for the fourth ISI interval.

Request:

How will the TMI-1 ISI program be implemented during the period of extended operation? Explain if TMI-1 will follow ASME Code requirements and approved code cases as described in Regulatory Guide 1.147 for future intervals.

RAI#: B.2.1.2-1

LRA Section: B.2.1.2 Water Chemistry

Background:

The staff noted the following differences between TMI-1's implementing procedures for AMP B.2.1.2, "Water Chemistry", and recommendations in Electric Power Research Institute (EPRI) Topical Report (TR)-1002884, "Pressurized Water Reactor Primary Water Chemistry Guidelines", Revision 5:

Differences in Actions Limits (AL)						
Parameter	EPRI Guideline			TMI-1 Procedure		
	AL1	AL2	AL3	AL1	AL2	AL3
Dissolved Oxygen (pps)	>5	-----	>100	>5	>100	>1000

Differences in Sampling Frequencies		
Parameter	EPRI Guideline	TMI-1 Procedure
Conductivity	1/D (once per day)	5/W (five per week)
pH	1/D	5/W
Boron	1/D	2/W

Request:

1. For the differences in action limits and sampling frequencies noted above, explain why these differences are not considered to be exceptions to the recommendations of the GALL Report, which states that a pressurized water reactor (PWR) applicant's primary water chemistry program should be based on EPRI TR-105724, "PWR Primary Water Chemistry Guidelines", Revision 3, or later revisions.

2. Provide technical justification as to why the differences between the TMI-1 program's parameters and the recommendations in the EPRI guidelines are acceptable to provide adequate protection for components affected by primary water chemistry.

RAI#: B.2.1.4-1

LRA Section: B.2.1.4, Boric Acid Corrosion

Background:

The Gall Report AMP (XI.M10) addressing Boric Acid Corrosion (BAC) provides for the management of loss of material due to boric acid corrosion.

Issue:

The specific components included within the scope of the BAC AMP could not be determined. It was unclear whether or not examinations will be implemented through the BAC AMP or a different AMP for in-scope nickel alloy locations. It was unclear as to which program would be used to evaluate evidence of leakage that is detected through the BAC or another AMP. For in-scope nickel alloy components it was unclear as to what type of visual examinations will be performed.

Request:

1. Clarify which components are included within the scope of the BAC Program AMP, and whether the scope includes all Class 1 nickel alloy locations.

2. For in-scope nickel alloy locations (if any), clarify whether the examinations will be implemented through the BAC AMP or some other TMI-1 AMP in the LRA. If another AMP will be used for specific components, clarify which AMP will be implemented for the examination.

3. Clarify which programs will be used to evaluate the evidence of leakage that is detected through this AMP or other AMPs.

4. For the in-scope nickel-alloy components, clarify what type of visual examinations (i.e., specify whether VT-1, VT-2 or VT-3, and whether the visual examinations are enhanced, bare-surface, qualified, etc.) will be performed on the components.

RAI#: B.2.1.6-1

LRA Section: B.2.1.6, Flow Accelerated Corrosion

Background:

The GALL Report AMP XI.M17 relies on implementation of the EPRI guidelines NSAC-202L-R2 for an effective Flow Acceleration Corrosion (FAC) program. On page B-27 of the LRA, there is an exception that states NSAC-202L-R3 is used and that Rev. 2 and Rev. 3 of the guidelines are equivalent with one difference: Rev. 3 allows an additional method, (Averaged Band Method), for determining the wear of piping components from ultrasonic examination (UT) which TMI-1 does not use at this time.

Issue:

The program basis document references procedure ER-AA-430, “Conduct of Flow Accelerated Corrosion Activities”, which utilizes NSAC-202L-R2 as a guideline.

Request:

1. Clarify if TMI-1 plans to revise procedure ER-AA-430 to include NSAC-202L-R3 instead of NSAC-202L-R2?
2. Indicate if TMI-1 has any plans to use the Averaged Band Method for determining the wear of piping components from UT in the future, and if so, what additional controls will be put in place to utilize this method.

RAI#: B.2.1.6-2

LRA Section: B.2.1.6, Flow Accelerated Corrosion

Background:

The GALL Report AMP XI.M17 in the "monitoring and trending" element recommends that inspection results be evaluated to determine if additional inspections are needed.

Issue:

It is not clear what criteria is used to determine when additional samples are required.

Request:

Provide the criteria used to determine when additional samples are required.

RAI#: B.2.1.9-1

LRA Section: B.2.1.9, Open-Cycle Cooling Water System

Background:

On page B-37 of the LRA, exceptions to the GALL Report for the Open-Cycle Cooling Water System AMP are identified. The exceptions state that the AMP activities are adequate for managing the aging effects of the internal surfaces of concrete circulating water piping.

Issue:

Based on the information provided, the adequacy of the Open-Cycle Cooling Water System program to provide adequate aging management for this concrete component, which is treated as a structure in the LRA when documenting the aging management review results, cannot be determined.

Request:

1. Is inspection or monitoring of the concrete circulating water piping currently included in the Open-Cycle Cooling Water System program, and are current base-line conditions for this component/structure known and documented? Provide a description of current conditions, if known.

2. On what frequency is the condition of the concrete circulating water piping inspected? Is the inspection mandatory or optional? What is the extent

(percentage coverage) of the inspection? What is the basis for any inspection frequency requirement?

3. The LRA lists several aging effects/mechanisms for the internal surface of the concrete circulating water piping accounted for in the Open-Cycle Cooling Water System AMP. For each of the aging effects/mechanisms listed in the LRA, provide a description of the examination techniques used to detect the aging effects, if present. Also, provide the history of aging effects previously detected, and the history of any corrective actions previously taken.

RAI#: B.2.1.12-1

LRA Section: B.2.1.12, Compressed Air Monitoring Program

Background:

The GALL Report AMP XI.M24, Compressed Air Monitoring, states that the program manages the effects of corrosion and presence of unacceptable levels of contaminants on the intended function of the compressed air system.

Issue:

On page B-47 of the LRA, the program description states that the Compressed Air Monitoring Program manages loss of material due to corrosion and reduction of heat transfer due to fouling.

Request:

Explain how this program manages the effects of fouling and the resulting reduction of heat transfer.

RAI#: B.2.1.12-2

LRA Section: B.2.1.12, Compressed Air Monitoring Program

Background:

The GALL Report AMP XI.M24 in the “monitoring and trending” element states that test data are analyzed and compared to data from previous tests to provide for timely detection of aging effects.

Issue:

The program basis document (TM-PBD-AMP-B.2.1.12, Revision 1, “Compressed Air Monitoring”) for this element states that results of tests are compared to established acceptance criteria; however, it is not clear if these results are compared to previous test results to establish a trend.

Request:

Clarify and discuss if the test results are also compared to previous test results for trending purposes.

RAI#: B.2.1.13-1

LRA Section: B.2.1.13, Fire Protection Program

Background:

The GALL Report AMP XI.M26, Fire Protection, in the "detection of aging effects" element, states that Halon/CO_2 system visual inspection detects any sign of degradation, such as corrosion, mechanical damage, or damage to dampers.

Issue:

The program basis document TM-PDP-AMP-B.2.1.13, Revision 1, "Fire Protection", references surveillance procedures 1303-12.11 for Halon system inspection and 1303-12.5 for CO_2 system inspection. However, the inspection procedures do not clearly state that the systems should be specifically inspected for corrosion, mechanical damage or damage to dampers.

Request:

Since surveillance procedures 1303-12.11 and 1303-12.5 do not do not provide for inspections for corrosion, mechanical damage, or damage to dampers, provide clarification as to why there is no enhancement to the Fire Protection AMP to provide for these inspections.

RAI#: B.2.1.13-2

LRA Section: B.2.1.13, Fire Protection Program

Background:

The GALL Report AMP XI.M26, Fire Protection, in the "acceptance criteria" element states any signs of corrosion and mechanical damage of the halon/carbon dioxide fire suppression system are not acceptable.

Issue:

There are no acceptance criteria specified for inspection parameters in surveillance procedures 1303-12.11 and 1303-12.5 that are referenced in the fire protection program basis document (TM-PDP-AMP-B.2.1.13, Revision 1, "Fire Protection") for Halon and CO_2 systems.

Request:

Provide clarification as to why there is no enhancement to the Fire Protection Program for acceptance criteria for the inspection of these system components.

RAI #: B.2.1.14-1

LRA Section: B.2.1.14, Fire Water System

Background:

The GALL Report AMP XI.M27, Fire Water System, in the "acceptance criteria" element, states that no biofouling exists in the sprinkler systems that could cause corrosion in the sprinkler heads.

Issue:

In the fire water system program basis document TM-PDP-AMP-B.2.1.14, Revision 1, "Fire Water System", section 3.6 (c) states that new inspection activities will include an evaluation of identified degradation for impact on the system or component intended functions. The applicant indicated during the on-site audit that non-intrusive (e.g., volumetric) testing techniques such as ultrasonic testing would be used.

Request:

Please clarify what information UT will provide that will enable an evaluation of fouling to be conducted.

RAI #: B.2.1.14-2

LRA Section: B.2.1.14, Fire Water System

Background:

The GALL Report AMP XI.M27, Fire Water System, in the "preventive actions" element, states to ensure no significant corrosion, microbiologically influenced corrosion (MIC), or biofouling has occurred in water-based fire protection systems; periodic flushing, system performance testing, and inspections are conducted.

Issue:

The staff noted that Issue Report 748645 was issued on April 11, 2008 to document corrosion and possibly leakage of fire protection piping. The cause was determined to be heavy tuberculation of MIC causing excessive internal pitting. Issue Report 635626 indicates that ineffective mitigation of MIC in fire service water system has resulted in degradation of important piping, including some through wall leaks.

In section 3.2 of program basis document TM-PDP-AMP-B.2.1.14, Revision 1, "Fire Water System", it is stated that flow tests are conducted once every three years and that the flow tests are intended to evaluate for indication of internal piping degradation or fouling, but based on the above Issue Report, these periodic flow tests may not be adequate.

Request:

Please identify what preventive measures besides periodic flow testing are proposed to ensure that aging degradation due to MIC is adequately managed during the period of extended operation such that component intended functions are maintained.

RAI#: B.2.1.15-1

LRA Section: B.2.1.15, Aboveground Steel Tanks

Background:

The program description on page B-57 of the LRA states that the program will provide for management of loss of material aging effects for outdoor carbon steel tanks.

Issue:

Row 13 of LRA Table 3.2.2-5 on page 3.2-80, for component type “Sodium Thiosulfate Tank” and material type “stainless steel”, credits AMP B.2.1.15 for aging management.

Request:

1. Clarify whether or not any stainless steel tanks, including the Sodium Thiosulfate Tank, are within the scope of AMP B.2.1.15.

2. Clarify whether or not stainless steel tanks will require a one-time thickness measurement of the bottom of the tanks.

RAI#: B.2.1.15-2

LRA Section: B.2.1.15, Aboveground Steel Tanks

Background:

On page B-58 of the LRA, as part of the enhancement, it is stated that the program will be enhanced to inspect the condition of the sealant between the Condensate Storage Tanks (CST) and the concrete foundations.

Issue:

Upon review of the Aging Management Review (AMR) line items in LRA Section 3, it does not appear that AMP B.2.1.15 accounts for aging management of paints and coatings on the external surface of the tanks, and sealants and caulkings at the tank-foundation interface of those tanks.

Request:

1. Clarify if the CSTs are the only tanks within the scope of this program that are supported by a concrete foundation with a sealant at the tank-foundation interface.

2. Clarify whether or not paints/coatings used on the external surface of the tanks and sealants/caulking used at the tank-foundation interface will be inspected as part of AMP B.2.1.15. If not, please indicate the program that is credited for aging management of paint/coatings on the external surface and sealants and caulkings at the tank-foundation interface.

RAI#: B.2.1.15-3

LRA Section: B.2.1.15, Aboveground Steel Tanks

Background:

On page B-57 of the LRA, an exception is taken which states that the program utilizes tank inspection at least every five years in place of periodic system walkdowns each outage. The exception further states that the change in frequency is based on industry guidance and experience that indicates that monitoring of exterior surfaces of components made of carbon steel with a protective coating on a frequency of at least every five years provides reasonable assurance that loss of material will be detected before an intended function is affected.

Issue:

The program element, "monitoring and trending", of the GALL Report AMP XI.M29, states that operating experience has shown that periodic walkdowns during each outage will provide timely detection of aging effects.

Request:

1. Clarify the current inspection frequency of all the tanks that are within the scope of this program.

2. Provide the details of the industry guidance and experience that is referred to in the exception and justify your basis for not performing walkdowns of these tanks each outage as recommended by the GALL Report.

RAI#: B.2.1.16-1

LRA Section: B.2.1.16, Fuel Oil Chemistry

Background:

On page B-59 of the LRA it is stated that TMI-1 has not adopted the Standard Technical Specifications; however, the TMI-1 fuel oil specifications and procedures invoke equivalent requirements for fuel oil purity and fuel oil testing as described in the Standard Technical Specifications.

Issue:

The staff noted that the meaning of "equivalent requirements" is not clear.

Request:

Provide a direct comparison between the Standard Technical Specifications and the TMI-1 fuel oil specifications along with a justification for any difference in fuel oil purity and testing parameters.

RAI#: B.2.1.16-2

LRA Section: B.2.1.16, Fuel Oil Chemistry

Background:

On page B-60 of the LRA it is stated that multilevel sampling, tank bottom draining, cleaning and internal inspection of the 7.3 gallon Station Blackout Diesel Clean Fuel Tank and the 550 gallon Station Blackout Diesel Fuel Day Tank are not periodically performed.

Issue:

In page B-60 of the LRA it is stated that a one-time inspection will be performed for these tanks. On page B-62 of the LRA it is stated that and enhancement will be the the use of ultrasonic techniques for determining tank bottom thicknesses should there be any evidence of loss of material due to general, pitting, crevice, and microbiologically influenced corrosion, and fouling found during visual inspection activities.

Request:

1. Provide the reason that these tanks can not be periodically drained, cleaned, and periodically inspected.
2. Provide the scope of UT examination of the tank bottoms.
3. Provide the design features of the tanks.
4. Explain how a one-time UT is equivalent to periodic draining, cleaning, and inspection.

RAI#: B.2.1.16-3

LRA Section: B.2.1.16, Fuel Oil Chemistry

Background:

On page B-60 of the LRA it is stated that the GALL Report requires periodic multilevel sampling of tanks in accordance with the manual sampling standards of American Society for Testing and Materials (ASTM) D 4057-95 (2000).

Issue:

TMI-1 has not committed to ASTM D 4057-95 (2000) for manual sampling standards. Instead, samples are taken near the bottom of the tank where water and particulate and water concentrations will be larger due to settlement. However, it is not clear why multilevel sampling of these tanks can not be performed.

Request:

Explain why multilevel sampling of tanks cannot be performed and why it is believed that bottom sampling is equivalent to multilevel sampling.

RAI#: B.2.1.16-4

LRA Section: B.2.1.16, Fuel Oil Chemistry

Background:

Results of cleaning and visual inspection of fuel oil tanks was not available.

Issue:

The staff's review of documents provided by the applicant during the onsite audit did not include results of cleaning and visual inspection of fuel oil tanks.

Request:

Provide information documenting fuel oil tank cleaning and visual inspection to confirm that the plant-specific operating experience did not reveal any degradation not bounded by industry experience.

RAI#: B.2.1.20-1

Background:

The staff noted that UT examination is capable of detecting loss of material in buried fuel oil tanks.

Issue:

The LRA is not clear as to the extent and scope of the UT examinations. The potential for degradation of a buried tank is uniform over the entire surface of the tank. Measurements of tank thickness representative of the entire tank surface needs to be performed to ensure that the tank will continue to perform its intended function.

Request:

Provide additional information that identifies the extent and scope of the UT measurements of the buried Diesel Generator Fuel Storage 30,000 Gallon Tank.

RAI#: B.2.1.21-1

LRA Section: External Surfaces Monitoring

Background:

On page B-77 of the LRA under "Exceptions" it is stated that the scope of the materials to be inspected by the program will be expanded to include aluminum alloy, asbestos cloth, copper alloy, elastomers and stainless steel. The exception further states that the scope of aging effects will also be expanded to include hardening and loss of strength.

Issue:

The GALL Report AMP XI.M36 states that the External Surfaces Monitoring Program is only applicable to detect loss of material due to general, pitting, and crevice corrosion for carbon steel components only.

Request:

1. Justify the basis for including aluminum alloy, copper alloy, and stainless steel in the scope of AMP B.2.1.21 and explain how this program will adequately manage the

aging effects of loss of material as it applies to the additional metallic components added to the scope of the program.

2. Justify the basis for including elastomers in the scope of AMP B.2.1.21 and explain how this program will adequately manage the aging effects of hardening and loss of strength as it applies to the additional non-metallic components added to the scope of the program. Describe the specific inspection techniques that will be used to detect the applicable aging effects for elastomers and clarify the acceptance criteria that will be used for these inspection techniques.

3. In Table 3.2.2-04 on page 3.2-68 of the LRA, AMP B.2.1.21 is credited for managing loss of material due to cracking for asbestos. Clarify whether this aging effect is in the scope of this program for asbestos. Justify how this program will adequately manage loss of material due to cracking for asbestos or provide an appropriate program to manage loss of material due to cracking for asbestos.

RAI#: B.2.1.22-1

LRA Section: B.2.1.22, Inspection of Internal Surfaces in Misc. Piping and Ducting Components

Background:

On page B-79 of the LRA, under the "exceptions", it is stated that the scope of the materials to be inspected by the program will be expanded to include asbestos, copper alloy with 15% zinc or more, copper alloy with less than 15% zinc, neoprene, nickel alloy, rubber, stainless steel and titanium alloy. The exception further states that the scope of aging effects will also be expanded to include cracking, reduction of heat transfer, hardening and loss of strength.

Issue:

The GALL Report AMP XI.M38 states that the material within the scope of this program is limited to only steel and for visual inspections to detect visual evidence of corrosion to indicate possible loss of material.

Request:

1. Justify the basis for including copper alloy with 15% zinc or more, copper alloy with less than 15% zinc, nickel alloy, stainless steel and titanium in the scope of AMP B.2.1.22 and explain how this program will adequately manage the aging effects of loss of material and reduction of heat transfer as it applies to the additional metallic components added to the scope of the program.

2. Justify the basis for including neoprene and rubber in the scope of AMP B.2.1.22 and explain how this program will adequately manage the aging effects of hardening and loss of strength as it applies to the additional non-metallic components added to the scope of the program. Describe the specific inspection techniques that will be used to detect the applicable aging effects for elastomers and clarify the acceptance criteria that will be used for these inspection techniques.

3. In Table 3.2.2-04 on page 3.2-68 of the LRA, AMP B.2.1.22 is credited for managing loss of material due to cracking for asbestos. Clarify whether this aging effect is in the scope of this program for asbestos. Justify how this program will adequately manage

loss of material due to cracking for asbestos or provide an appropriate program to manage loss of material due to cracking for asbestos.

4. On page B-79 of the LRA in section B.2.1.22 under exceptions to the Gall Report, it is stated that stress corrosion cracking (SCC) of stainless steel components will be detected by the use of volumetric testing. Please clarify the acceptance criteria that will be used for the volumetric testing to detect SCC of stainless steel components.

RAI#: B.2.1.22-2

LRA Section: B.2.1.22, Inspection of Internal Surfaces in Misc. Piping and Ducting Components

Background:

On page B-80 of the LRA in the operating experience section of AMP B.2.1.22, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components", it is stated that an internal inspection is performed during each refueling outage of the Reactor Building Cooling Units at specified locations.

Issue:

On page B-80, the LRA further states that boron deposits coating less than 5% of the total surface area of the normal cooling coils were found. Corrective actions were taken by the applicant to clean the boron deposits on the fan and coolers, and the reactor coolant leak was fixed.

Request:

Please describe the results of the internal inspections subsequent to the discovery of boron deposits during the 2003 refueling outage and clarify whether or not the existing procedures are suitable for managing age-related degradation in this system that would otherwise impact the components intended function during the period of extended operation.

RAI#: B.2.1.22-3

LRA Section: B.2.1.22, Inspection of Internal Surfaces in Misc. Piping and Ducting Components

Background:

On page B-79 of the LRA under "Exceptions" it is stated that physical manipulation may be used to detect hardening and loss of strength of elastomers both internally and externally.

Issue:

On page B-79 under the program description, on page A-17 in the summary description for Section A.2.1.22, and in Commitment #22 on page A-46 there is no mention of augmenting a visual inspection with a physical manipulation to detect hardening and loss of strength of elastomers.

Request:

Clarify whether or not a brief description of augmenting visual inspections with a physical manipulation for elastomers should be included in the program description of LRA Section B.2.1.22, the summary description in LRA Section A.2.1.22 and Commitment #22.

RAI #: B.3.1.1-1

LRA Section: B.3.1.1, Metal Fatigue of Reactor Coolant Pressure Boundary

Background:

The TMI-1 metal fatigue of reactor coolant pressure boundary management program relies on transient cycle monitoring to evaluate the fatigue usage described in the license renewal application. This approach tracks the number of occurrences of significant thermal and pressure transients (significant events) and compares the cumulative cycles, projected to cover the renewal period, against the number of design cycles specified in the design specifications. The projected cycles are then used to evaluate the total cumulative usage factor (CUF) which covers the period of extended operation. For this approach to work, none of the significant events tracked should produce stresses greater than those that would be produced by the design transients. That is, the P-T (Temperature and Pressure) characteristics, including their values, ranges, and rates, all must be bounded within those defined in the design specifications.

Issue:

Based on a review of the LRA, the LRA does not require the P-T characteristics, including their values, ranges, and rates be bounded within the characteristics defined in the design specifications.

Request:

Please provide additional information so the staff can confirm that the program will ensure that P-T characteristics, including their values, ranges, and rates remain bounded within the characteristics defined in the design specifications.