UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 17, 2012

LICENSEE: Entergy Operations, Inc.

FACILITY: Grand Gulf Nuclear Station

SUBJECT: SUMMARY OF TELEPHONE CONFERENCE CALL HELD ON MARCH 14, 2012, BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION AND ENTERGY OPERATIONS, INC., CONCERNING REQUESTS FOR ADDITIONAL INFORMATION PERTAINING TO THE GRAND GULF NUCLEAR STATION, LICENSE RENEWAL APPLICATION (TAC. NO. ME7493)

The U.S. Nuclear Regulatory Commission (NRC or the staff) and representatives of Entergy Operations, Inc. held a telephone conference call on March 14, 2012, to discuss and clarify the staff's requests for additional information (RAIs) concerning the Grand Gulf Nuclear Station, license renewal application. The telephone conference call was useful in clarifying the intent of the staff's RAIs.

Enclosure 1 provides a listing of the participants and Enclosure 2 contains a listing of the RAIs discussed with the applicant, including a brief description on the status of the items.

The applicant had an opportunity to comment on this summary.

Nathaniel Ferrer, Project Manager
Projects Branch 1
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-416

Enclosures:
As stated

cc w/encls: Listserv

TELEPHONE CONFERENCE CALL
GRAND GULF NUCLEAR STATION
LICENSE RENEWAL APPLICATION

LIST OF PARTICIPANTS
MARCH 14, 2012

PARTICIPANTS	AFFILIATIONS
Nate Ferrer	U.S. Nuclear Regulatory Commission (NRC)
On Yee	NRC
Bart Fu	NRC
Seung Min	NRC
Allen Hiser	NRC
Ching Ng	NRC
Jeff Seiter	Entergy Operations, Inc. (Entergy)
Ted Ivy	Entergy
Andy Taylor	Entergy
Alan Cox	Entergy
Stan Batch	Entergy
Leland Loyd	Entergy
Wayne Bichlemeir	Entergy

ENCLOSURE 1

REQUESTS FOR ADDITIONAL INFORMATION (SETS 1 AND 2)

LICENSE RENEWAL APPLICATION
MARCH 14, 2012

The U.S. Nuclear Regulatory Commission (NRC or the staff) and representatives of Entergy Operations, Inc. held a telephone conference call on March 14, 2012, to discuss and clarify the following requests for additional information (RAIs) concerning the license renewal application (LRA).

Draft RAI B.2.1.8-1

Background
The "parameters monitored/Inspected" program element of GALL Report, Rev.2, AMP XI.M8, "BWR Penetrations," states that the program manages the effects of cracking due to stress corrosion cracking (SCC) and intergranular stress corrosion cracking (IGSCC) on the intended function of the BWR instrumentation nozzles, CRD housing and incore-monitoring housing (ICMH) penetrations, and BWR standby liquid control (SLC) nozzles/Core ΔP nozzles. The GALL Report also states that the program accomplishes this by inspection for cracks in accordance with the guidelines of approved BWRVIP-49-A, BWRVIP-47-A or BWRVIP-27-A and the requirements of the ASME Code, Section XI, Table IWB 2500-1.

In addition, Section 3.2.5, "Other Inspections," in BWRVIP-47-A indicates that the BWRVIP has determined that removing or dismantling of internal components for the purpose of performing inspections is not warranted to assure safe operation; however, on occasion, utilities may have access to the lower plenum due to maintenance activities not part of normal refueling outage activities. BWRVIP-47-A further states that in such cases, utilities will perform a visual inspection to the extent practical.

Issue
During the audit, the staff noted that in contrast with BWRVIP-47-A, the site documentation for Reactor Vessel Internals Program indicates that the baseline inspections for the CRD housing do not require access to the lower plenum area and currently no additional inspections are recommended beyond the baseline inspections. Additionally, the site documentation shows that if access is gained to the lower plenum (areas below the core plate), accessible areas of the incore flux monitor housing, guide tubes and guide tube stabilizer should be inspected by the VT-3 method. However, it is not clear whether these additional inspections are applied to the incore monitoring housing penetration.

Request
1. Provide information regarding when the lower plenum housing and penetration are accessible during maintenance activities not part of normal refueling outage activities.

2. Justify why the BWR Penetrations Program does not include the additional inspections of the CRD housing and housing penetration (including stub tubes) described in BWRVIP-47-A, Section 3.2.5. In addition, clarify if the additional inspections are applied to the incore flux monitoring housing penetrations.

3. Ensure the LRA and site documentation are consistent with the response to this RAI.

Discussion: The applicant stated that the issue section of this question is unclear because of a reference to the Reactor Vessel Internals Program. The staff was referencing site documentation for the BWR Penetrations Program and will reword the issue section of this question as follows:

> Issue. During the audit, the staff noted that in contrast with BWRVIP-47-A, the site documentation for BWR Penetrations Program indicates that the baseline inspections for the CRD housing do not require access to the lower plenum area and currently no additional inspections are recommended beyond the baseline inspections. Additionally, the site documentation shows that if access is gained to the lower plenum (areas below the core plate), accessible areas of the incore flux monitor housing, guide tubes and guide tube stabilizer should be inspected by the VT-3 method. However, it is not clear whether these additional inspections are applied to the incore monitoring housing penetration.

The staff will issue the revised question as a formal RAI. Additionally, draft RAIs B.2.1.8-1 through B.2.1.8-3 refer to LRA Section B.1.8 and will be renumbered as formal RAIs B.1.8-1 through B.1.8-3, respectively.

Draft RAI B.1.23-1

Background
LRA Section B.1.23, "Inservice Inspection," states that, "ISI Program Summary Reports between 2004 and 2010 reveal compliance and provide evidence that the program is effective for managing aging effects in accordance with the ASME Boiler Pressure Vessel Code Section XI."

GALL AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD," states that that the program "has been shown to be generally effective in managing aging effects in Class 1, 2, or 3 components and their integral attachments in light-water cooled power plants." It also provides industry operating experience cases in the "operating experience" program element.

Issue
The "operating experience" program element of the Inservice Inspection Program indicates that the program is consistent with the GALL Report and is in compliance with the ASME Code. However, the LRA does not provide any detailed discussion, beyond the general statement about the Code compliance, to demonstrate the effectiveness of the program in detecting and managing the aging effects of Class 1, 2, or 3 components. The applicant's ISI Program Summary Reports between 2004 and 2010 provide brief inspection results to establish the program's compliance with the ASME Code, but do not provide any discussion to demonstrate program effectiveness in the context of monitoring, detecting, and correcting aging degradation. The staff needs to further clarify how the applicant's plant-specific operating experience demonstrates the effectiveness of the program (e.g., detection of aging effects and directing corrective actions in a timely manner).

Request
1. Provide detailed representative operating experience related to the Inservice Inspection Program in order to demonstrate that the program is effective in managing aging effects in accordance with ASME Code Section XI. The discussion should provide context for any specific example in terms of (1) detection of aging effects such as indications of cracking or

loss of material, (2) monitoring and trending of aging effects such as results of flaw evaluation and subsequent inspections, and (3) timely corrective actions such as inspection sample expansion and repair/replacement activities.

2. If a need is identified for expanding the program elements based on the plant-specific operating experience review, enhance the program accordingly. In addition, revise the applicable LRA sections, as necessary, consistent with this RAI response.

Discussion: Based on the discussion between the staff and the applicant, the applicant stated that the question is clear. The staff will issue the question as a formal RAI.

Draft RAI B.1.19-1

Background
During its audit, the staff reviewed the applicant's program basis document and implementing procedure for the Fatigue Monitoring Program and noted that the program relies on tracking the number of critical thermal and pressure transients to ensure that fatigue usage remains within allowable limits. However, the applicant's implementing procedure discusses a periodic update methodology for manual counting of accrued cycles, determining all relevant plant cycles and computing cumulative usage factors (CUFs). In addition, the implementing procedure discusses partial cycle counting and partial cycle determination (for hydrotests and thermal cycles).

Issue
The Fatigue Monitoring Program uses several different methods for managing cumulative fatigue damage that are not described in LRA Sections B.1.19 and A.1.19 or the applicant's program basis document. Therefore, the details of how the program manages cumulative fatigue damage, including environmental effects when applicable, are not clear. The program's reliance on manual cycle counting, automatic cycle counting, cycle-based fatigue usage updates and partial cycle-based fatigue updates and how they relate to a specific component or fatigue evaluation was not clearly identified. It is also not clear how the different methods work together to ensure that cumulative fatigue damage is managed and the allowable limit is not exceeded (e.g. actual cycles < assumed cycles, CUF < 1.0, CUF < 0.1, CUF_{en} < 1.0).

Request
- Describe all of the different methods that are used to manage cumulative fatigue damage with the Fatigue Monitoring Program. Describe any additional methods that are currently planned to be used by the Fatigue Monitoring Program during the period of extended operation to manage cumulative fatigue damage.
- If a particular method is used for certain components or fatigue evaluations (e.g., design basis, environmentally-assisted, high-energy line break) specifically identify the components/fatigue evaluations that each method relies on. In addition, justify that the particular method is capable of ensuring the analyses remains valid or the allowable limit is not exceeded prior to taking corrective actions.
- If these monitoring methods are used or will be used in combination with each other; describe how they work together to ensure that cumulative fatigue damage is managed and the allowable limit is not exceeded.
- Revise the applicable LRA sections, as necessary, (Appendices A and B) to incorporate the details of the different monitoring methods and how the Fatigue Monitoring Program manages cumulative fatigue damage (this includes the use of the FatiguePro software).

If any of the monitoring methods is not a part of the existing program, provide an appropriate enhancement to the program.

Discussion: Based on the discussion between the staff and the applicant, the applicant stated that the question is clear. The staff will issue the question as a formal RAI.

Draft RAI B.1.19-2

Background
The "parameters inspected/monitored" program element of GALL Report AMP X.M1, "Fatigue Monitoring," states that more detailed monitoring of local pressure and thermal conditions may be performed to allow the actual fatigue usage for the specified critical locations to be calculated.

LRA Section B.1.19 states, in part, that the Fatigue Monitoring Program ensures that fatigue usage remains within allowable limits by tracking the number of critical thermal and pressure transients for selected components. In addition, LRA Section 4.3.1.1 states that stress-based fatigue (SBF) monitoring on the feedwater nozzle, the high pressure core spray nozzle, and the feedwater weldolets is being used. LRA Section 4.3.1.2 states the feedwater nozzle fatigue due to plant transients and the rapid cycling fatigue were reanalyzed for EPU operating conditions and will also be reanalyzed to consider the effects of reactor water environment on fatigue.

Issue
Since the Fatigue Monitoring Program relies on tracking the number of transients for selected components to ensure that fatigue usage remains within allowable limits, it is not clear how SBF monitoring is currently incorporated and how it will be used to manage fatigue for the feedwater nozzle, since it will be reanalyzed to consider the effects of reactor water environment.

As discussed in RIS 2008-30 "Fatigue Analysis of Nuclear Power Plant Components," there were concerns with a methodology that has been used to perform fatigue calculations and as input for on-line fatigue monitoring programs by license renewal applicants or licensees in the current operating term. Specifically, the concern involves an input in which only one value of stress is used for the evaluation of the actual plant transients and that this simplification of the analysis requires a great deal of judgment by the analyst to ensure that the simplification still provides a conservative result.

Request
- Describe how the Fatigue Monitoring Program currently incorporates the use of SBF monitoring. If applicable, describe how SBF monitoring will be used in the reanalysis of the feedwater nozzle to consider the effects of reactor water environment on fatigue. Revise the applicable LRA sections (Appendices A and B), as necessary, to incorporate the details of how SBF is used by the Fatigue Monitoring Program to manage cumulative fatigue damage.
- Describe and justify any actions that have been or will be taken to address the concerns described in RIS 2008-30, related to the use of one value of stress to perform fatigue calculations and as input for on-line fatigue monitoring programs.
- Since SBF monitoring is used for the feedwater nozzle, the high pressure core spray nozzle, and the feedwater weldolets, describe and justify the actions taken to ensure that the potential non-conservative methods described in RIS-2008-30 have not challenged the ability to maintain the allowable limit.

Discussion: The applicant stated that it was unclear what additional information is being requested beyond the request in RAI B.1.19-1. The staff will reword the request section to clarify the focus on SBF monitoring as follows:

Request.

a. Since SBF will be used in the reanalysis of the feedwater nozzle to consider the effects of reactor water environment on fatigue, describe and justify any actions that have been or will be taken for the period of extended operation to address the concerns described in RIS 2008-30, related to the use of one value of stress to perform fatigue calculations and as input for on-line fatigue monitoring programs, for any reanalysis that will use SBF.
b. Since SBF monitoring is currently used for the feedwater nozzle, the high pressure core spray nozzle, and the feedwater weldolets, describe and justify the actions that have been taken to ensure that the potential non-conservative methods described in RIS 2008-30 have not challenged the ability to maintain the allowable limit.

The staff will issue the revised question as a formal RAI.

Draft RAI B.1.9-4

Background
The "corrective actions" program element of GALL Report AMP X.M1 recommends specific corrective actions if the acceptance criteria are exceeded, in addition to the requirements of 10 CFR Part 50, Appendix B. Specifically, it states acceptable corrective actions include repair of the component, replacement of the component, and a more rigorous analysis of the component to demonstrate that the design code limit will not be exceeded during the period of extended operation. In addition, it recommends program scope expansion to include consideration of other locations with the highest expected cumulative usage factors when considering environmental effects.

The applicant claimed, in its program basis document for the Fatigue Monitoring Program, that the "corrective actions" program element is consistent GALL Report AMP X.M1.

LRA Section B.1.19 states that the sample set of locations that will address the effects of reactor water environment will include the locations identified in NUREG/CR-6260 and additional plant-specific component locations in the reactor coolant pressure boundary if they are found to be more limiting than those considered in NUREG/CR-6260.

Issue
During its audit, the staff reviewed the "corrective actions" program element in the applicant's program basis document and noted the applicant applies the requirements of 10 CFR Part 50 Appendix B to its program through the Corrective Actions Program. However, the specific recommendations from GALL Report X.M1 for corrective actions that include repair, replacement and reanalysis of the component and scope expansion were not included in the program basis document or Fatigue Monitoring Program.

Since the applicant will be enhancing its program prior to the period of extended operation as described above, it is not clear whether the "corrective actions" program element of the

applicant's program will ensure that if any changes/modifications that occur in the future that the limiting locations will have been addressed for the effects of reactor water environment.

Request
Justify the claim of consistency with the "corrective actions" program element of GALL Report AMP X.M1, considering the recommendations for corrective actions to include repair, replacement and reanalysis of the component and scope expansion to include other locations when considering environmental effects were not included.

Confirm that the enhanced Fatigue Monitoring Program will continually ensure that the locations managed for effects of reactor water environment will remain limiting for the plant-specific configuration. Alternatively, justify that the program can adequately address the effects of reactor water environment on fatigue life.

Discussion: The applicant stated that it was unclear what additional information is being requested beyond what is stated in the LRA. The staff will clarify that the request is focused on ensuring that program will assess selected locations for monitoring after plant modifications occur. The staff will reword the request section to as follows:

> Request. Justify the claim of consistency with the "corrective actions" program element of GALL Report AMP X.M1, considering the recommendations for corrective actions to include repair, replacement and reanalysis of the component and scope expansion to include other locations when considering environmental effects were not included.
>
> Confirm that the enhanced Fatigue Monitoring Program will continually ensure that the locations managed for effects of reactor water environment will remain limiting for the plant-specific configuration if any plant changes or modifications occur in the future. Alternatively, justify that the program can adequately address the effects of reactor water environment on fatigue life.

The staff will issue the revised question as a formal RAI. Additionally, draft RAI B.1.9-4 refers LRA Section B.1.19 and will be renumbered as formal RAI B.1.19-4.

July 17, 2011

LICENSEE: Entergy Operations, Inc.

FACILITY: Grand Gulf Nuclear Station

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/RA/
Nathaniel Ferrer, Project Manager
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Docket No. 50-416

Enclosures:
As stated

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Memorandum to Entergy Nuclear Operations from N. Ferrer dated July 17, 2012

SUBJECT: SUMMARY OF TELEPHONE CONFERENCE CALL HELD ON MARCH 14, 2012, BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION AND ENTERGY OPERATIONS, INC., CONCERNING REQUESTS FOR ADDITIONAL INFORMATION PERTAINING TO THE GRAND GULF NUCLEAR STATION, LICENSE RENEWAL APPLICATION (TAC. NO. ME7493)

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