Phyllis

From: Clark, Phyllis
Sent: Tuesday, November 15, 2016 3:49 PM
To: 'mchisum@entergy.com'
Cc: 'jjarrel@entergy.com'; 'dfrey@entergy.com'; 'lmurr91@entergy.com'; 'GYOUNG4 @entergy.com'; 'Dlach@entergy.com'; 'ataylo1@entergy.com'; 'aharris@entergy.com'; 'Milster, Leia Elizabeth'; Ramirez, Frances C; Speer, Chris; Wittick, Brian; Morey, Dennis; RidsNrrDlr Resource; RidsNrrDlrRpb1 Resource; RidsNrrDlrRerb Resource; RidsNrrDlrRarb Resource; RidsNrrDlrRasb Resource; RidsNrrDlrRsrg Resource; RidsNrrPMWaterford Resource; 'RidsRgn4MailCenter@nrc.gov'; Folk, Kevin; Keegan, Elaine; Mitchell, Jeffrey; Buford, Angela; Prinaris, Andrew; Wong, Albert; Huynh, Alan; Akhavannik, Huda; Sweat, Tarico; Medoff, James; Gavula, James; Lopez, Juan; Cuadrado de Jesus, Samuel; Min, Seung K; Obadina, Sarah; Sadollah, Mohammad; Rogers, Billy; Brittner, Donald; Fu, Bart; Allik, Brian; Lehman, Bryce; Gardner, William; Thomas, George; Mink, Aaron; Doutt, Clifford; Holston, William; Yoo, Mark; Pulvirenti, April; McIntyre, David; Burnell, Scott; Moreno, Angel; Kennedy, Kriss; Scott, Catherine; Yoder, Matthew; James, Lois; Chazell, Russell
Subject: REF: WATERFORD STEAM ELECTRIC STATION, UNIT 3, LICENSE RENEWAL APPLICATION – RAI SET 7 (CAC NO. MF7492)
Attachments: WATERFORD 3 LRA Set 7 Enclosure (Final w BCA).docx

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

Mr. Michael R. Chisum
Site Vice President

SUBJECT: REQUESTS FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE WATERFORD STEAM ELECTRIC STATION, UNIT 3, LICENSE RENEWAL APPLICATION – SET 7 (CAC NO. MF7492)

Dear Mr. Chisum:

By letter dated March 23, 2016, Entergy Operations, Inc. submitted an application pursuant to Title 10 of the *Code of Federal Regulations* Part 54, to renew the operating license NPF-38 for Waterford Steam Electric Station, Unit 3. The staff of the U.S. Nuclear Regulatory Commission (NRC or the staff) is reviewing the information contained in the license renewal application and has identified areas where additional information is needed to complete the review.

The enclosed requests for additional information were discussed with Mr. Alan Harris 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 301-415-6447 or by e-mail at Phyllis.Clark@nrc.gov.

Sincerely,

Phyllis Clark

Phyllis Clark, Project Manager
Projects Branch 1
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-382

Enclosure:
As stated

cc: Listserv

ADAMS Accession No.: **ML16320A002** ***via email**

OFFICE	PM:RPB1:DLR	BC:RARB:DLR	BC:RASB:DLR	BC:RPB1:DLR(Acting)	PM:RPB1:DLR
NAME	PClark	DMorey*	BWittick*	Lois James*	PClark
DATE	11/14/2016	10/24/2016	11/3/2016	11/15/2016	11/15/2016

Phyllis Clark
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WATERFORD STEAM ELECTRIC STATION, UNIT 3
LICENSE RENEWAL APPLICATION
REQUESTS FOR ADDITIONAL INFORMATION – SET 7
(CAC NO. MF7492)

RAI B.1.1-3

Background:

The "detection of aging effects" program element of Generic Aging Lessons Learned (GALL) Report Aging Management Program (AMP) XI.M18 recommends periodic visual inspections (at least once per refueling cycle) of closure bolting for signs of leakage to ensure the detection of loss of material and loss of preload. Loss of preload or loss of material may result in leakage from the mating surfaces or joint connections of pressure boundary components. Periodic inspection of pressure boundary components for signs of leakage ensures that the effects of aging on closure bolting are detected and corrected before component leakage becomes excessive.

Issue:

The License Renewal Application (LRA) credits the Bolting Integrity Program to manage closure bolting of systems (e.g., nitrogen system, gaseous waste management system, auxiliary steam system, etc.,) that contain clear gaseous fluids. The staff notes that it is difficult to visually detect leakage of clear gaseous fluids and the GALL Report AMP XI.M18 does not provide specific guidance for the detection of leakage of clear gaseous fluids from a bolted connection. Therefore, it is not clear how signs of leakage of clear gaseous fluids are detected for closure bolts included in the Bolting Integrity Program to ensure the detection of loss of material and loss of preload before there is a loss of intended function.

Requests:

State how signs of leakage of clear gaseous fluids will be detected from bolted closures included in the Bolting Integrity Program in order to ensure the detection of loss of material and loss of preload before there is a loss of intended function.

Follow-up (Set 1) RAI B.1.3-1a

Background:

As amended by letter dated October 13, 2016, LRA Section B.1.3, "Buried and Underground Piping and Tanks Inspection," and LRA Section A.1.3 (associated Updated Final Safety Analysis Report (UFSAR) Summary Description) state that the external surfaces of buried piping components subject to aging management review will be managed for loss of material and cracking. In addition, LRA Section B.1.3 states that components included in the program are fabricated from metallic or concrete materials.

GALL Report AMP XI.M41 and the associated UFSAR Summary Description issued in License Renewal Interim Staff Guidance (LR-ISG)-2015-01 state that the program addresses the aging effects of loss of material, cracking, and changes in material properties (for cementitious piping only).

Issue:

It is unclear to the staff why changes in material properties is not an applicable aging effect for concrete (i.e. cementitious) piping.

Request:

State the basis for why changes in material properties is not an applicable aging effect for concrete piping.

Follow-up (Set 1) RAI B.1.1-1a (submerged bolting)

Background:

LRA Section B.1.1 describes the existing Bolting Integrity Program as consistent with an exception and enhancements, with GALL Report AMP XI.M18, "Bolting Integrity." The GALL Report AMP XI.M18 recommends periodic inspections (at least once per refueling cycle) of closure bolting for signs of leakage to ensure the detection of age-related degradation due to loss of material and loss of preload. The staff noted that a submerged environment limits the ability to detect leakage of submerged bolted connections and, by letter dated September 15, 2016, issued RAI B.1.1-1 requesting the applicant to describe the frequency and method(s) of inspection to be used to detect loss of material and loss of preload on Waterford Steam Electric Station, Unit 3 (WF3) submerged closure bolts. In its response to RAI B.1.1-1, dated October 13, 2016, Entergy Operations, Inc. and Entergy Louisiana, LLC (Entergy or the applicant) stated, in part, the following:

> Aging management activities will include opportunistic inspection of the normally inaccessible submerged bolted connection on each [dry cooling tower] DCT area sump pump. […] In addition, each DCT area sump pump is flow-tested at least once every seven years. An acceptable flow test indicates that the submerged bolted connection is not degraded due to loss of material or loss of preload such that the intended function cannot be met. […] A review of operating experience and maintenance records dating back to 1987 identified no indication of loss of intended function of submerged bolting associated with the DCT sump pumps. Therefore, the monitoring methods and frequency of pump flow testing and opportunistic inspections have been shown effective in managing the applicable aging effects to prevent significant age-related degradation of the submerged DCT area sump pump submerged bolting.

Issue:

Standard Review Plan for License Renewal (SRP-LR) states that for aging management of structures and components (SCs), method and frequency of inspections may be linked to plant specific or industry wide operating experience and the program should include justification that the method and frequency are adequate to detect the aging effects before there is a loss of SC intended function. The SRP-LR also states that the detection of aging effects should occur before there is a loss of SC intended function and that "[a] program based solely on detecting [SC] failure should not be considered as an effective AMP for license renewal." Although the applicant stated that a review of operating experience and maintenance record shows no loss of intended function to date, the staff notes that absence of loss of intended function to date does not demonstrate the program effectiveness for adequate and timely detection of aging effects for long-lived passive SCs. The SRP-LR requires the staff to verify that an adequate AMP demonstrates that it will be effective in the timely detection of the aging effects before there is a loss of intended function.

It is not clear to the staff whether plant-specific operating experience has shown that opportunistic inspections have occurred such that the staff can assess whether the proposed opportunistic inspections are adequate to manage aging of submerged closure bolts during the period of extended (PEO). Considering the possibility that opportunistic inspections may not be performed during the PEO, the staff does not consider that pump flow tests performed once every 7 years will allow for adequate and timely detection of degradation of the submerged

closure bolts. The program including only opportunistic inspection in conjunction with testing of pump flow every 7 years may result in inspections and/or testing not done frequently enough to detect the aging effects of loss of material and loss of preload of the submerged bolts before there is a loss of intended function. Additional information is needed to demonstrate that the Bolting Integrity Program frequency and method(s) of inspections will be adequate to detect loss of material and loss of preload in submerged bolts before there is a loss of intended function.

Requests:

Provide the technical basis (e.g., operating experience, related maintenance history, analyses, inspection results, other applicable methods of performance monitoring) to demonstrate that the aging management program's methods and frequency of inspections will ensure that the aging effects of loss of material and loss of preload for the submerged bolts will be timely detected and adequately managed before there is a loss of intended function.