



Phyllis

From: Clark, Phyllis
Sent: Tuesday, March 14, 2017 9:18 AM
To: 'mchisum@entergy.com'
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Subject: REF: WATERFORD STEAM ELECTRIC STATION, UNIT 3, LICENSE RENEWAL APPLICATION – RAI SET 15 (CAC NO. MF7492)
Attachments: Waterford 3 LRA RAI Set 15 (Final) (002).docx

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

Mr. Michael R. Chisum
Site Vice President
Entergy Operations, Inc.

SUBJECT: REQUESTS FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE WATERFORD STEAM ELECTRIC STATION, UNIT 3, LICENSE RENEWAL APPLICATION – SET 15 (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.: **ML17072A010** *via email

OFFICE	PM:RPB1:DLR	BC:RPRB:DLR	Acting BC:RPB1:DLR	PM:RPB1:DLR
NAME	PClark	DMorey*	RChazell*	PClark
DATE	3/7/2017	3/1/2017	3/13/2017	3/14/2017

WATERFORD STEAM ELECTRIC STATION, UNIT 3
LICENSE RENEWAL APPLICATION
REQUESTS FOR ADDITIONAL INFORMATION – SET 15
(CAC NO. MF7492)

RAI 4.2.3-1a:

Background:

In its letter dated February 6, 2017, the applicant responded to RAI 4.2.3-1 that addressed the adequacy of updated initial RT_{NDT} values for reactor vessel beltline plates. In its response, the applicant identified specific paragraphs of ASME Section III, NB-2331 (i.e., paragraphs (a)(2), (a)(3) and (a)(4)) that were used to determine the initial RT_{NDT} values. The provisions in these paragraphs are summarized as follows:

- Paragraph (a)(2): T_{NDT} (nil-ductility transition temperature by drop weight tests) is the initial RT_{NDT} if each specimen of the Charpy impact (C_v) test exhibits at least 35 mils (0.89 mm) lateral expansion and absorbed energy not less than 50 ft-lb at a temperature not greater than $T_{NDT} + 60^\circ\text{F}$.
- Paragraph (a)(3): When paragraph (a)(2) is not met, additional C_v tests are conducted in groups of three specimens to determine the temperature T_{Cv} at which they are met. In this case, the initial RT_{NDT} is the higher of T_{NDT} and $T_{Cv} - 60^\circ\text{F}$.
- Paragraph (a)(4): When a C_v test has not been performed at $T_{NDT} + 60^\circ\text{F}$ or the C_v test at $T_{NDT} + 60^\circ\text{F}$ does not exhibit a minimum of 50 ft-lb and 35 mils lateral expansion, T_{Cv} may be determined from a full C_v impact curve developed from the minimum data points of all the C_v tests performed. In this case, the initial RT_{NDT} is the higher of T_{NDT} and $T_{Cv} - 60^\circ\text{F}$.

The applicant indicated that the initial RT_{NDT} of lower shell plate M-1004-2 was determined in accordance with paragraph (a)(3) and that T_{Cv} of this material is 47°F . In addition, the applicant provided the T_{NDT} values of reactor vessel beltline plates as part of the response to demonstrate the adequacy of the initial RT_{NDT} values.

Issue:

The staff noted that Table 4 (page 124) of the following document referenced in the applicant's response does not identify 47°F as a C_v test temperature for lower shell plate M-1004-2. Therefore, it is not clear to the staff whether the applicant adequately identified the ASME Code provision that was used to determine the initial RT_{NDT} for that material.

- C-PENG-ER-004, Revision 0, Volume 1, October 1995, "The Reactor Vessel Group Evaluation Program Phase II Final Report for the Waterford 3 RPV Plates, Forging, Welds and Cladding"

In addition, the staff noted that T_{NDT} values of reactor vessel beltline plates provided in the applicant's response are not consistent with those described in FSAR Table 5.3-13 (i.e., T_{NDT} for plates M-1003-2, M-1003-3, M-1004-1, M-1004-2 and M-1004-3). For example, the FSAR table indicates that T_{NDT} of intermediate shell plate M-1003-2 is -50°F in contrast with -40°F that is identified as T_{NDT} of the material in the applicant's response.

Request:

1. Provide justification for why Table 4 of C-PENG-ER-004, Revision 0, Volume 1 does not identify 47°F as a Cv test temperature for reactor vessel plate M-1004-2 in contrast with the applicant's claim that the initial RT_{NDT} of the plate was determined in accordance with ASME Code Section III, NB-2331, paragraph (a)(3). As part of the response, explain how the applicant determined the T_{Cv} value of the M-1004-2 plate (i.e., 47°F).
2. Resolve the inconsistency regarding the T_{NDT} values of reactor vessel plates between the applicant's response and FSAR Table 5.3-13.