



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

May 6, 2015

LICENSEE: Entergy Operations, Inc.

FACILITY: Waterford Steam Electric Station, Unit 3

SUBJECT: SUMMARY OF APRIL 22, 2015, PRE-APPLICATION PUBLIC MEETING WITH ENTERGY OPERATIONS, INC. TO DISCUSS THE LICENSE AMENDMENT REQUEST TO MODIFY TECHNICAL SPECIFICATION 3.1.3.4 AND THE FINAL SAFETY ANALYSIS REPORT CHAPTER 15 ANALYSES (TAC NO. MF5604)

On April 22, 2015, a Category 1 public meeting was held between the U.S. Nuclear Regulatory Commission (NRC) staff and representatives of Entergy Operations, Inc. (Entergy, the licensee), and Westinghouse Electric Company (Westinghouse), at NRC Headquarters, One White Flint North, 11555 Rockville Pike, Rockville, Maryland. The purpose of the meeting was to discuss the licensee's plans to submit a license amendment request (LAR) regarding changes to Technical Specification (TS) 3.1.3.4, "CEA [Control Element Assembly, or control rod] Drop Time," and Chapter 15, "Accident Analyses," of the Final Safety Analysis Report (FSAR) for Waterford Steam Electric Station, Unit 3 (WF3). This planned LAR is in response to a 0.2 second increase in the average insertion (drop) time of the CEA into the reactor vessel, which could result in the failure to meet the 3.0 second requirement of TS 3.1.3.4. The licensee plans to submit the LAR at the end of June 2015 and plans to request approval by October 25, 2015.

The meeting notice and agenda, dated April 10, 2015, are located in the Agencywide Documents Access and Management System (ADAMS) at Accession No. ML15112A122. The licensee's handouts from the meeting are available in ADAMS at Accession No. ML15113A787. A list of meeting attendees is provided in the Enclosure to this meeting summary.

Meeting Summary

After introductions, the licensee started the meeting with an explanation and graphic of the historic CEA drop times, which provided a visualization of the step change time increase that began with refueling outage 19. Based on the licensee's presentation, it was stated that on average, the CEA drop times increased 0.2 seconds and the first measurement attempt in refueling outage 20 surpassed the 3.0 seconds limit of TS 3.1.3.4. Further, the licensee stated that the second test during refueling outage 20 was successful (i.e., under 3.0 seconds).

After the licensee's explanation of the historic CEA drop times graphic, the NRC staff described some of the broad information that was needed for a complete application, including: (1) the reason(s) for the CEA drop time increase; (2) information demonstrating that the CEA drop times will not increase during the reactor cycle; (3) information to show the effects of the proposed increase in the average individual CEA drop time on the FSAR Chapter 15 analyses; and (4) information to show the effects of the proposed increase in the maximum individual CEA drop time on the FSAR Chapter 15 analyses.

The licensee discussed potential causes of the increase in the CEA drop times. The licensee cited the steam generator replacement, vessel head replacement, CEA replacement, and transition to the Next Generation Fuel Product could all be contributing factors, but no exact cause had been determined. The NRC staff questioned whether any bowing of the CEA guide tubes had occurred, but the licensee stated that none was found. The licensee stated that no mechanical problems are suspected as a factor in the increased drop times. The NRC staff requested that information on CEA drop time distribution be included in the submittal to determine if the CEA drop time step change increase also affected the CEA drop time distribution.

A discussion was held on a precedent submittal by Arkansas Nuclear One, Unit 2 (ANO-2). ANO-2 and WF3 are similar Combustion Engineering nuclear power plant designs and the NRC approved a similar LAR to ANO-2 to increase the rod drop time in 2008 (ADAMS Accession No. ML080520223). The NRC staff recommended that Entergy staff should study that precedent when submitting the application for WF3.

The licensee was asked if they had a contingency plan for the rod drop time testing in the event that they exceed the TS 3.1.3.4 drop times during the refueling outage 21 testing. Entergy replied that they are exploring alternative means of testing, which could include a testing method that removes the use of the Core Protection Calculator (CPC) because the CPC adds a 50-100 millisecond uncertainty into the CEA drop times.

Then, a discussion was held regarding the Revised Reactivity Safety Analysis Input (SAI) versus the Time graph on slide 11 of the presentation. The NRC staff wanted to understand when the Current Reactivity SAI with Delay would be used, versus when the Revised Reactivity SAI would be used in the analyses. The licensee stated that the most conservative Reactivity SAI would be used at all times.

The licensee also described how the methods of analysis were basically unchanged from previous analyses. The NRC staff commented that maintaining the same methods would facilitate the staff's review of the request.

The NRC staff noted that there could be a large number of calculations that need to be reviewed and/or audited for the LAR, and that due to the time constraints, a method for a timely and comprehensive review should be employed. The NRC staff mentioned that an audit of the analyses at Westinghouse's Rockville, MD office or a web portal, similar to that used for the National Fire Protection Association (NFPA)-805 LAR (ADAMS Accession No. ML113220230) could be used. The licensee agreed to explore both options before the application is submitted.

The licensee also presented a selection of the FSAR Chapter 15 analyses for the NRC staff to demonstrate the effects of the 0.2 second CEA drop time increase. The licensee presented FSAR Sections 15.1.1.3 – "Increased Main Steam Flow," 15.1.2.3 – "Increased Main Steam Flow with Single Failure," 15.3.3.1/15.3.3.2 – "Single Reactor Coolant Pump (RCP) Shaft Seizure/Single RCP with a stuck open secondary safety valve," and 15.4.3.6 – "CEA Ejection," and concluded that there would be minimal effects on any of the above accidents.

The NRC staff questioned the licensee on the effects of the increased rod drop times on the containment energy release during accidents and transients. The NRC indicated that the licensee should include the containment effects in the submittal to facilitate a timely and comprehensive review of the LAR.

The NRC staff emphasized that all efforts will be made to complete the review of the amendment before the requested due date; however, the very short (i.e. 4 month), completion time request poses significant challenges to the review. To support the expedited review, the NRC staff and the licensee discussed other foreseen avoidable delays to the forthcoming LAR. The NRC staff mentioned that the licensee's (currently unknown) approach toward accounting for nuclear fuel thermal conductivity degradation (TCD) within the Chapter 15 analyses could result in a delay. The licensee stated it was not initially planning to submit this information, but the issue would be addressed in the submittal. The NRC staff stated that a future public meeting in the near term might be needed to discuss the issue of TCD before the licensee submits the LAR. The NRC staff stated that the licensee should avoid other changes to the design bases to avoid further delays, if possible.

The licensee asked if the NRC would prefer the TS 3.1.3.4 change to be submitted under its current custom TS or be converted to the improved standard TS (as often desired by the NRC). The NRC staff stated that due to the requested expedited approval, Entergy should submit the LAR with the least number of TS and FSAR changes as possible (i.e., submit under the current custom TS).

The NRC staff asked the licensee if the Title 10 of the *Code of Federal Regulations* Part 50, Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979," fire transients are impacted by the TS 3.1.3.4 change. The licensee stated that the fire transients are not directly impacted, but will be reviewed again and any impacts will be noted in the submittal.

Action Items

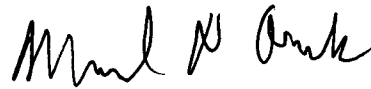
Entergy to determine the need for and/or schedule a public meeting on TCD.

Entergy to investigate the available access methods for the LAR calculations.

Members of the public were not in attendance. One member of the public was on the telephone bridgeline. No Public Meeting Feedback Forms were received for this meeting.

Please direct any inquiries to me at 301-415-3229, or Michael.Orenak@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael D Orenak". The signature is fluid and cursive, with the first name "Michael" being the most prominent.

Michael D Orenak, Project Manager
Plant Licensing Branch IV-2 and Decommissioning
Transition Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-382

Enclosure:
List of Attendees

cc w/encl: Distribution via Listserv

LIST OF ATTENDEES

APRIL 22, 2015, PRE-APPLICATION MEETING WITH ENTERGY OPERATIONS, INC.

AND WESTINGHOUSE ELECTRIC COMPANY

REGARDING THE LICENSE AMENDMENT REQUEST TO MODIFY

TECHNICAL SPECIFICATION 3.1.3.4 AND

THE FINAL SAFETY ANALYSIS REPORT CHAPTER 15 ANALYSES

WATERFORD STEAM ELECTRIC STATION, UNIT 3

DOCKET NO. 50-382

NAME

ORGANIZATION

Michael Orenak	U.S. Nuclear Regulatory Commission (NRC)
Summer Sun	NRC
Robert Beaton	NRC
Christopher Jackson	NRC
Kevin Heller	NRC
Paul Clifford	NRC
John Parillo	NRC
Manuel Jimenez	NRC
Pamela Hernandez	Entergy Operations, Inc.
John Jarrell	Entergy Operations, Inc.
Leia Milster	Entergy Operations, Inc.
William Steelman	Entergy Operations, Inc.
Kim Jones	Westinghouse Electric Company
Amanda Maguire	Westinghouse Electric Company
Matthew Wilcox	Westinghouse Electric Company
Michael Mulligan	Public (via phone)

Enclosure

Members of the public were not in attendance. One member of the public was on the telephone bridgeline. No Public Meeting Feedback Forms were received for this meeting.

Please direct any inquiries to me at 301-415-3229, or Michael.Orenak@nrc.gov.

Sincerely,

/RA/

Michael D Orenak, Project Manager
Plant Licensing Branch IV-2 and Decommissioning
Transition Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-382

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ADAMS Accession No.: ML15117A503

* via email

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NAME	MOrenak	PBlechman	MKhanna	MOrenak
DATE	5/5/15	4/28/15	5/5/15	5/6/15

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