NRR-PMDAPEm Resource

From: Feintuch, Karl
Sent: Monday, March 26, 2012 12:27 PM
To: Craig D Sly
Cc: Gary D Miller; Paige, Jason
Subject: RE: ME8205 - KEWAUNEE POWER STATION - 10 CFR 50.46, 30-DAY RESPONSE - REQUEST FOR ADDITIONAL INFORMATION - DRAFT ITEMS
Attachments: ME8205 50.46 WEC TCD Draft Audit Plan- Ke.docx

A draft audit plan for the forthcoming audit at the Westinghouse facility in Cranberry, PA is attached.

Also, a telephone call this afternoon is offered (not solicited or needed, just cognizant NRC staff being available to respond to questions). To schedule any telephone call, contact me, and I will work with the coordinating PM, Jason Paige.

Further, regarding conference calls pertaining to the audit, provision is being made for NRC staff/Licensee staff debriefs (termed Tier 2 Teleconferences; references to Tier 1 would be for NRC only conferencing). Bridge Line information will be forthcoming for Tier 2 calls. Details follow:

Tier 2 - Staff and Licensee Teleconferences

Date	Start Time	Duration (Approx.)
Wednesday, March 28 (entrance meeting)	0800 ET	90 Min
Wednesday, March 28	1630 ET	60 Min
Thursday, March 29	1630 ET	60 Min
Friday, March 30 (exit meeting)	1400 ET	60 Min

Karl Feintuch
USNRC
301-415-3079

======= Preceding emails are included for completeness =======

From: Craig D Sly [mailto:craig.d.sly@dom.com]
Sent: Monday, March 26, 2012 11:18 AM
To: Feintuch, Karl
Subject: FW: ME8205 - KEWAUNEE POWER STATION - 10 CFR 50.46, 30-DAY RESPONSE - REQUEST FOR ADDITIONAL INFORMATION - DRAFT ITEMS

Karl,

This has been received and distributed. Thanks. At this time our fuels analysis folks are working with Westinghouse and the industry to develop a strategy for responding. We may have some desire for a clarification phone call in the future, but not at this point. Not sure how long we would need to respond to the questions at this point either.

My strategy is to give the analysis folks a couple of days to digest and work with their peers and then we will be ready to coordinate with you on logistics.

Craig Sly
Dominion Resources Services, Inc.
Nuclear Licensing and Operations Support
W: 804-273-2784

C: 804-241-2473

From: Gary D Miller (Generation - 6)
Sent: Monday, March 26, 2012 8:16 AM
To: Thomas L Breene (Generation - 4); Dana Knee (Generation - 6); Craig D Sly (Generation - 6); David Sommers (Generation - 6)
Cc: Tom Huber (Generation - 6)
Subject: FW: ME8205 - KEWAUNEE POWER STATION - 10 CFR 50.46, 30-DAY RESPONSE - REQUEST FOR ADDITIONAL INFORMATION - DRAFT ITEMS

From: Feintuch, Karl [mailto:Karl.Feintuch@nrc.gov]
Sent: Friday, March 23, 2012 3:50 PM
To: Gary D Miller (Generation - 6)
Cc: Parks, Benjamin; Paige, Jason
Subject: ME8205 - KEWAUNEE POWER STATION - 10 CFR 50.46, 30-DAY RESPONSE - REQUEST FOR ADDITIONAL INFORMATION - DRAFT ITEMS

By letter dated March 15, 2012 (ADAMS Accession No. ML12079A287), the licensee, Kewaunee Power Station, submitted a Title 10 Code of Federal Regulations (10 CFR) 50.54(f) response to the NRC's information request related to the estimated effect on peak cladding temperature resulting from thermal conductivity degradation in the Westinghouse furnished realistic emergency core cooling evaluation. The licensee also stated that this response served as a 30-day report in accordance with requirements of 10 CFR 50.46.

In the course of the Reactor Systems Branch (SRXB) *10 CFR 50.46* response review, the NRC staff has determined that additional information is necessary to complete its review. Prompt transmittal of the requested information is requested by the staff.

The staff's request for additional information follows. Please contact Karl Feintuch (301-415-3079) to discuss the schedule for response or any need for clarification.

KEWAUNEE POWER STATION

10 CFR 50.46, 30-DAY RESPONSE

REQUEST FOR ADDITIONAL INFORMATION

DRAFT ITEMS

1. Please explain how the 10 CFR 50.46(a)(3) error report enclosed in your response to the NRC's Information Request pursuant to 10 CFR 50.54(f) remains adherent to the WCAP-14449-P-A methodology, which includes a supplement describing the method for fulfilling 10 CFR 50.46(a)(3) re-analysis requirements.

2. Justify the evaluation of reduced peaking factors at beginning-of-life conditions to obtain analytic margin to offset the TCD effect. Show that peaking factor reductions affect PCT in a manner that is substantially independent of fuel burnup.

3. Fully explain all peaking factor adjustments and provide the rationale for each adjustment.

4. Compare the results of the TCD and offset sensitivity studies to the fuel rod parameter sensitivity studies discussed in the Code Qualification Document. Please explain any significant discrepancies in the results.

5. Your submittal referenced a March 7, 2012 letter sent by Westinghouse Electric Company to the NRC.

    a. In the final paragraph on page 2 of 9, the document states, "Small differences between the void volumes may exist for rods with the same cladding diameter, however, these differences in void volumes have been compared, and the components of the void volume calculations are either conservative or the changes in void volume are negligible after considering other conservatisms. Core operating conditions and powers were also confirmed to either be bounding, the same, or offset by other margins. The representative fuel temperatures and rod internal pressures are either similar or bound those expected for plant specific calculations." Provide the results of this comparison for Kewaunee, including the relevant conclusions and the technical basis supporting those conclusions. For any conclusion that differences in void volume are offset by other conservatisms, list those conservatisms and provide a quantitative estimate of each conservatism, as well as a brief description of the rigor associated with that estimate.
    b. Please provide the values for the coefficients A_1 and A_2 used in the PAD 4.0 + TCD UO_2 thermal conductivity equation.
    c. Please explain any error corrections, code improvements, and miscellaneous code cleanup between the WCOBRA/TRAC and HOTSPOT code versions used in the TCD evaluations and those used in the plant's AOR.
    d. What is the thermal conductivity model impact of code version changes in HOTSPOT?

6. Explain the differences between the TRANSURANUS and PAD computer codes and the impact of those differences. Provide graphs or other quantified descriptions that aid in explanation.

7. Please explain how the changed design values will be verified during operation of the plant, i.e. TS limits, Surveillances, etc. Also, explain what compensatory actions will be taken if a value is found to be outside of the limits assumed in the analysis.

8. Page 3 of Attachment 2 to Serial 12-100 states that "Dominion and its vendor, Westinghouse Electric Company, LLC, utilize processes which ensure that LOCA analysis input values conservatively bound the as-operated plant values for those parameters." Please explain these processes.

======= End preceding emails =======

Hearing Identifier: NRR_PMDA
Email Number: 307

Mail Envelope Properties (Karl.Feintuch@nrc.gov20120326122600)

Subject: RE: ME8205 - KEWAUNEE POWER STATION - 10 CFR 50.46, 30-DAY RESPONSE - REQUEST FOR ADDITIONAL INFORMATION - DRAFT ITEMS
Sent Date: 3/26/2012 12:26:47 PM
Received Date: 3/26/2012 12:26:00 PM
From: Feintuch, Karl

Created By: Karl.Feintuch@nrc.gov

Recipients:
"Gary D Miller" <gary.d.miller@dom.com>
Tracking Status: None
"Paige, Jason" <Jason.Paige@nrc.gov>
Tracking Status: None
"Craig D Sly" <craig.d.sly@dom.com>
Tracking Status: None

Post Office:

Files	**Size**	**Date & Time**
MESSAGE	7204	3/26/2012 12:26:00 PM
ME8205 50.46 WEC TCD Draft Audit Plan- Ke.docx	30378	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

AUDIT PLAN

10 CFR 50.46(a)(3) REPORT REVIEWS

LICENSEES UTILIZING WESTINGHOUSE FURNISHED

REALISTIC EMERGENCY CORE COOLING SYSTEM EVALUATION MODELS

Introduction

By letters dated March 15-19, 2012, five licensees[1] submitted 30-day reports pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), §50.46(a)(3), associated with eleven NRC-licensed facilities. The reports discussed the estimated effects on peak cladding temperature (PCT), of thermal conductivity degradation (TCD), and of offsetting changes, to the applications of the emergency core cooling system (ECCS) evaluation models for the affected facilities.

During its review of the reports, the Reactor Systems Branch (SRXB) identified questions associated with the safety analyses to support the 50.46 reports that warrant resolution with an audit. The staff questions, which have been drafted as requests for additional information, and which will be transmitted to each licensee following the audit, fall within the following topical areas:

- The method used to estimate the effects of thermal conductivity degradation on peak cladding temperature,
- The rationale for the offsetting evaluation model application changes made and how their PCT effects were estimated, and
- Conformance of the analyses supporting the 50.46 reports to the respective ECCS evaluation models.

Purpose and Scope

The audit will be conducted in accordance with NRR Office Instruction LIC-111, “Regulatory Audits.” The scope includes an evaluation of the methodology used to determine the estimated effect of TCD on PCT, including plant specific inputs and results. The audit will be conducted to assess the adequacy of licensee actions taken to comply with 10 CFR 50.46 requirements.

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[1] The licensees and plants are as follows:
First Energy Nuclear Operating Co. (FENOC), Beaver Valley Power Station (BVPS)
Exelon Generation Co. (EGC), Braidwood Station Unit 2 and Byron Station Unit 2
Duke Energy Carolinas, LLC (Duke), Catawba Nuclear Station and McGuire Nuclear Station
Indiana Michigan Power Co. (American Electric Power, AEP), D. C. Cook Nuclear Plant
Dominion Energy Kewaunee, Inc., Kewaunee Power Station

Audit Agenda and Schedule

The audit will be held at Westinghouse's offices in Cranberry Township, Pennsylvania, from Wednesday, March 28, 2012, through Friday, March 30. 2012. The audit will be divided into portions that will include generic review and plant specific review.

The agenda will include review and assessment of the following items:

- ASTRUM run matrices
- Cases executed to develop off-setting margin assessments including:
  - Peaking factor adjustments and their rationale
  - Containment pressure changes
- Code Qualification Document (CQD) TCD and offset sensitivity studies
- Coefficients used in the PAD 4.0 + TCD thermal conductivity equation
- Thermal conductivity model impact of code version changes in HOTSPOT
- Differences between TRANSURANUS and PAD codes and their impacts
- Code improvements, error corrections, and model and/or model application changes since NRC approval of the methods
- Adherence to NRC-approved methodology in safety analyses

The schedule is proposed as follows:

Wednesday, 3/28	7:45 AM	Audit Team in-processing
	8:00 AM	Entrance Briefing*
	8:30 AM	Westinghouse and Licensee Remarks*
	9:00 AM	Generic Technical Topics
	4:00 PM	NRC Staff Caucus†*
	4:30 PM	Daily Status Briefing*
Thursday, 3/29	8:00 AM	Evaluation Model-Specific Topics
	12:45 PM	Plant-Specific Topics, Assigned as Follows
		Parks: CQD Plants
		Gall: AEP Plants
		Woodyatt: EGC Plants
		Miller: FENOC – BVNPS 1
	4:00 PM	NRC Staff Caucus†*
	4:30 PM	Daily Status Briefing*
		Note: Friday staff assignments will be provided during this briefing
Friday, 3/30	8:00 AM	Continuation of Staff Review Activities
	1:00 PM	NRC Staff Caucus†*
	2:00 PM	Exit Meeting*

*Teleconference
†NRC Staff-Internal Meeting

Audit Team

The audit team will consist of:

- Benjamin Parks, Audit Team Lead, Reactor Systems Branch Technical Reviewer
- Diana Woodyatt, Reactor Systems Branch Technical Reviewer
- Joshua Miller, Reactor Systems Branch Technical Reviewer
- Jennifer Gall, Reactor Systems Branch Technical Reviewer
- Anthony Ulses, Chief, Reactor Systems Branch
- William Ruland, Director, Division of Safety Systems

The following support personnel are requested:

- Licensing Staff, familiar with the subject matter, from the licensee organizations
- Cognizant staff engineers from Westinghouse (specifically with respect to analysis using ASTRUM, CQD and WCOBRA/TRAC)

Plant-Specific Information Requested for Staff Review

The SRXB staff requests that the following ASTRUM data be available in tabular form by WCOBRA/TRAC case number used pre- and post-completion of the estimation of the effect of thermal conductivity degradation on PCT: ASTRUM input treated statistically, as well as key results including peak cladding temperature, local oxidation, time of PCT, time of accumulator injection, and time of HPSI injection.

Logistical Considerations

Planning

The SRXB staff requests a conference call between the relevant parties at FENOC, Duke, AEP, Dominion, EGC, and Westinghouse to take place Monday, March 26, 2012 prior to conducting the audit.

Information Security

The audit team expects to review and discuss proprietary information during the audit. The team will not remove any licensee- or vendor-generated information from Westinghouse facilities. Any such information that is processed on NRC machines will be deleted, destroyed, or saved to read-only media and left onsite. Licensee-specifc information will be discussed and reviewed in a private and secure setting.

Requested Accommodations

The following accommodations are requested:

- A facility large enough to accommodate six NRC staff members in addition to the participating personnel from Westinghouse and licensee organizations, for the duration of the audit.
- For Thursday afternoon and Friday morning, breakout rooms to review and discuss plant-specific information.
- Telecommunications equipment to conduct entrance, exit, and daily status update meetings with remote participants. The audit team will use NRC teleconference infrastructure to accommodate remote NRC participants.

Documentation of Audit

Within 15 days of the audit, the NRC staff will prepare an audit results summary report summarizing the information reviewed during the audit, and any open items identified as a result of the audit. The NRC staff will also document its understanding of the proposed resolution of any identified open items. The audit team will make every reasonable effort to ensure that the audit report is a publicly available document.

Any information provided by Westinghouse and/or licensee organizations relevant to the 50.46(a)(3) report assessments will be formally requested for submittal by the appropriate licensees in accordance with governing NRC processes.