

May 17, 2001

MEMORANDUM TO: Charles L. Miller, Deputy Director
Licensing and Inspection Directorate
Spent Fuel Project Office, NMSS

THRU: Michael Tokar, Chief */RA/*
Transportation and Storage Safety
and Inspection Section
Spent Fuel Project Office, NMSS

FROM: Chester Poslusny, Senior Project Manager */RA/*
Transportation and Storage Safety
and Inspection Section
Spent Fuel Project Office, NMSS

SUBJECT: SUMMARY OF MEETING WITH NUCLEAR ENERGY INSTITUTE ON
HIGH BURNUP FUEL ISSUES

On April 18, 2001, representatives from the U.S. Nuclear Regulatory Commission's (NRC's) Spent Fuel Project Office, the Nuclear Energy Institute (NEI), the Electric Power Research Institute (EPRI) and industry attended a meeting to discuss NRC staff feedback on two recent NEI submittals concerning characteristics of high burnup fuel. Attachment 1 is a list of attendees. Attachment 2 is the set of slides reflecting staff comments on the reports. Attachment 3 is the set of responses NEI and EPRI staff provided during the meeting. Although the NEI/EPRI slide content was based on a draft set of NRC slides released to the public prior to the meeting, it was still relevant to the information provided in the NRC slides at the meeting.

The purpose of the meeting was to discuss NRC staff comments on EPRI Report 1001207, "Creep As the Limiting Mechanism For Spent Fuel Dry Storage," (December 2000) and EPRI Report 1001281, "Fracture Toughness Data for Zirconium Alloys-Application to Spent Fuel Cladding in Dry Storage (January 2001). The reports were developed to provide a technical basis for the staff to approve the storage of fuel with burnups in excess of 45 GWd/MTU. Such approval is needed for dry storage because many operating reactors have authorization to achieve burnup levels above 45 Gwd/MTU and are currently discharging fuel to spent fuel pools with burnup exceeding this level.

Regarding the first report, the staff noted agreement that stress corrosion cracking is not a factor for the fuel cladding under dry storage conditions. For delayed hydride cracking during storage, the staff noted some disagreement with assumptions and applicability to expected dry storage conditions along with some limitations of applicability of the data that was referenced in the report. Further the staff concluded that additional data would be needed to support a new creep strain limit. In response, EPRI provided some clarification as reflected in slides 5-18 of Attachment 3. The staff noted some disagreement on the stress/strain assumptions and agreed to further review the information provided during the meeting.

Regarding the second report, the staff noted that the stress-strain behavior application to creep and fracture mechanisms may be too simplistic to be relied upon for revising the current regulatory position. Further, the staff noted that additional confirmatory data was needed to support the use of the critical energy strain density correlation for application to zircaloy cladding representative of higher burnup and to fuel that is maintained under dry storage conditions. The EPRI staff provided additional clarification as reflected in slides 19-26.

NRC, NEI, and EPRI staff agreed to the following action items:

1. Pacific Northwest National Laboratory (PNNL) staff will provide information on Canadian CANDU reactor data relative to presence of delayed hydride cracking detected in zirconium alloy pressure tubes.
2. NRC will review the stress/strain data and analyses provided in the EPRI reports to focus on the assumptions of total versus uniform strain.
3. NRC will explain its proposed use of the Larson-Miller technique.
4. PNNL will review the information in Table 6.1 (Page 22 of Enclosure 2) and correct as necessary.
5. NRC will provide a set of questions to NEI after reviewing the slides and information provided in the meeting. A date for submittal of the questions will be identified and provided to NEI by April 27, 2001.
6. After NEI reviews the questions, a date for a followup meeting will be established in the near term. The meeting will include discussion of the noted questions and items 1-4 above.

Attachments: 1. Attendees List
2. NRC Slides
3. NEI/EPRI Slides

May 17, 2001

C. Miller

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OFC:	SFPO		SFPO	N	SFPO					
NAME:	CPoslusny:dd		EZiegler		MTokar					
DATE:	05/14/01		05/15/01		05/17/01					

OFFICIAL RECORD COPY

Attachment 1
Attendance List

**Workshop on High Burnup Fuel Issues
April 18, 2001**

Attendance List

NAME	ORGANIZATION	Phone #
Chet Poslusny	NRC/NMSS/SFPO	301-415-1341
Carl Beyer	PNNL	509-372-4605
Wayne Hodges	NRC/NMSS/SFPO	301-415-2398
Eileen Supko	ERI	202-785-8833
Robert Beall	CN/Calvert Cliffs	410-495-4018
Glenn Guerra	Transnuclear	914-347-2345
Tara Neider	CNS	410-793-3476
Stan Hayes	Duke Power	704-382-6786
Les Goldstein	NAC/Stoller	914-741-1200
Jayant Bondre	TN-West	510-744-6043
Ken Erwin	NRC/NMSS/SFPO	301-415-2443
Earl Easton	NRC/NMSS/SFPO	301-415-8520
Robert Quinn	BNFL	831-430-5220
Tom Brookmore	Dominion	804-273-3243
Ian Spivak	NRC/NMSS/SFPO	301-415-1209
Stan Turner	Holtec Int'l	727-787-4625
Stefan Anton	Holtec Int'l	856-797-0800
Alan Wells	Consultant	770-495-9136
Tae Ahn	NRC	301-415-5812
Altheia Wache	SERCH Licensing/Bechtel	301-228-6401
Sud Bash	NRC	301-415-6774
Nancy Osgood	NRC/NMSS/SFPO	301-415-8513
Maureen Conley	Platts/McGraw-Hill	301-933-9008
Harold Scott	NRC/RES	301-415-6771
Chiquita Collins	NRC/SSSB	301-415-8091
Makuteswara Srinivasan	NRC/NMSS/SFPO	301-415-1525
Alan Nelson	NEI	202-739-8110
Andrea Jennetta	WNC	301-652-9500
Lynnette Hendricks	NEI	202-739-8109
Y.R. Rashid	Annatech	n/a

Attachment 2

NRC Slides

Attachment 3
NEI/EPRI Slides

ROUTING AND TRANSMITTAL SLIP

Date: May 21, 2001

NAME	INITIALS	DATE
CPoslusny		04/ /01
EZiegler		04/ /01
MTokar		04/ /01
Secretary (dispatch)		04/ /01

ACTION: _____ APPROVAL: _____ FOR YOUR INFO: _____
 NOTE & RETURN: _____ PREPARE REPLY: _____ COORDINATION: _____

EDO/NMSS TICKET NO(s):
 DUE TO DIVISION:
 DUE TO NMSS:
 DUE TO EDO:

MEMORANDUM/LETTER TO: Charles L. Miller
 THRU: Michael Tokar
 FROM: Chet Poslusny

SUBJECT: SUMMARY OF APRIL 18, 2001 MTG W/ NEI ON HIGH BURNUP FUEL ISSUES

REMARKS:

ORIGINATOR: Chet Poslusny PHONE: 415-1341
 SECRETARY: PHONE:
