

November 3, 2005

Dr. Graham B. Wallis
Chairman
Advisory Committee on Reactor Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

SUBJECT: REPORT ON PROPOSED TECHNICAL BASIS FOR REVISION OF
THE EMBRITTLEMENT CRITERIA IN 10 CFR 50.46(b)

Dear Dr. Wallis:

In your letter, dated September 23, 2005, the Advisory Committee on Reactor Safeguards (ACRS) made three recommendations regarding the staff's presentation concerning a proposed technical basis for revision of the embrittlement criteria in Title 10, Section 50.46(b), of the *Code of Federal Regulations* [10 CFR 50.46(b)]. In response, the staff is pleased to provide the following comments:

- (1) The Committee recommended that the requirements of 10 CFR 50.46(b) concerning the coolability and geometric integrity of a reactor core during a design-basis loss-of-coolant accident (LOCA) and the aftermath of such an accident should be updated to facilitate the use of better reactor materials and improved understanding of phenomena and processes that affect core integrity and core coolability.

The staff agrees with this recommendation and plans to initiate rulemaking to accomplish the recommended update.

- (2) The Committee recommended that the updated requirements should be written at a high level so that they are as technology-neutral and materials-neutral as practicable. Methods acceptable to the staff for demonstrating that specific cladding materials meet the high-level requirements of the regulations should be described in regulatory guides.

As the ACRS recognizes, the staff has proposed criteria that will eliminate reference to specific cladding materials. Nonetheless, the staff is actively considering the addition of an option in the revision of 10 CFR 50.46(b), which would be written at the highest level to ensure maintaining coolable core geometry.

- (3) The Committee noted that the process developed by the staff for the qualification of zirconium alloy cladding provides a basis for a regulatory guide for such materials and recommended that the research needed to validate this process should be completed.

G. Wallis

-2-

We agree. As discussed during the recent meeting with the ACRS, the staff plans to complete enough work to initiate rulemaking and subsequently complete supporting tests using high-burnup fuel rods with advanced cladding that we expect to receive in 2006 and 2007.

Thank you very much for providing the Committee's recommendations and allowing us to discuss this important work with you.

Sincerely,

/RA Martin J. Virgilio Acting For/

Luis A. Reyes
Executive Director
for Operations

cc: Chairman Diaz
Commissioner McGaffigan
Commissioner Merrifield
Commissioner Jaczko
Commissioner Lyons
SECY

We agree. As discussed during the recent meeting with the ACRS, the staff plans to complete enough work to initiate rulemaking and subsequently complete supporting tests using high-burnup fuel rods with advanced cladding that we expect to receive in 2006 and 2007.

Thank you very much for providing the Committee's recommendations and allowing us to discuss this important work with you.

Sincerely,

/RA Martin J. Virgilio Acting For/

Luis A. Reyes
Executive Director
for Operations

cc: Chairman Diaz
Commissioner McGaffigan
Commissioner Merrifield
Commissioner Jaczko
Commissioner Lyons
SECY

Distribution: SMSAB R/F, DSARE #146, RES #2005528, EDO G20050670
MVirgilio, WKane, JSilber, KCyr/SBurns, JDyer
JDixon-Herrity, EDO, ACRS File

Package: ML052870373
Incoming: ML052700550

G:\DSARE\SMSAB\Meyer.R\ACRSLOCA Letter Reply-edited.wpd

*See previous concurrence

OAR in ADAMS? (Y or N) Y

ADAMS ACCESSION NO: ML052870363

TEMPLATE NO.: EDO-002

Publicly Available? (Y or N) N

DATE OF RELEASE TO PUBLIC: N/A

SENSITIVE? N

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	*SMSAB	*C:SMSAB	*Tech Editor	N	*D:DSARE	D:RES	*D:NRR		
NAME	RMeyer:mb	PBaranowsky	PGarrity		FEltawila by JRosenthal	CPaperiello	JDyer		
DATE	10/21 /05	10/21/05	10/17/05		10/25 /05	10/27/05	10/27/05		
OFFICE	DEDMRS	EDO							
NAME	MVirgilio	LReyes							
DATE	11/03/05	11/03/05							