

January 18, 2005

Mario V. Bonaca, Chairman
Advisory Committee on Reactor Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: RISK-INFORMING 10 CFR 50.46, "ACCEPTANCE CRITERIA FOR EMERGENCY CORE COOLING SYSTEMS FOR LIGHT-WATER NUCLEAR POWER REACTORS"

Dear Dr. Bonaca:

I am responding to your letter of December 17, 2004, on the staff efforts to develop a new voluntary rule to redefine the largest design basis loss-of-coolant accident (LOCA) from the current double ended guillotine break (DEGB) of the largest pipe to a smaller size. We appreciate the time and effort the Advisory Committee on Reactor Safeguards (ACRS) has devoted to this important subject. Our comments on the ACRS conclusions and recommendations are provided below.

1. A risk-informed 10 CFR 50.46 should maintain defense in depth by including requirements intended to provide reasonable assurance of a coolable core geometry for breaks up to the DEGB of the largest pipe in the reactor coolant system.

This recommendation is consistent with the staff's current approach. The Staff Requirements Memorandum (SRM) of July 1, 2004, which directed the staff to proceed with the development of the draft rule is also clear in this regard. Therefore, any modifications to the current draft of the rule will not revise the requirement that mitigation capability sufficient to assure a coolable core geometry be provided for breaks up to the DEGB of the largest pipe in the reactor coolant system.

2. The results of the expert opinion elicitation need to be further reviewed and assessed by the staff before finalizing the selection of the transition break size. Nevertheless, it appears that a transition break size corresponding to the single-ended rupture of the largest pipe attached to the reactor coolant system bounds the range of break sizes corresponding to a frequency of 1×10^{-5} /year.

The staff is continuing to assess the results of the expert opinion elicitation and the selection of the transition break size. The areas of emphasis in the staff's review include those identified in your December 10, 2004, letter to the Chairman "Estimating Loss-of-Coolant Accident Frequencies Through the Elicitation Process". In particular, the staff is reviewing the potential impact of plant to plant variability, the implications of using various methods of aggregating the individual expert's opinions, and the relationship of break morphology to the frequency estimates.

3. A better quantitative understanding of the possible risk benefits of a smaller transition break size is needed to arrive at a final choice of the transition break size. If the defense-in-depth capability to mitigate breaks greater than the transition break size is maintained, a smaller choice of transition break size may be supportable.

The staff agrees that a better understanding of the possible risk benefits would help the final choice of the transition break size and is attempting to identify areas where quantification of potential benefits might be meaningful. We have also engaged the industry to develop quantified estimates of the safety benefits associated with a smaller transition break size. We expect to have these estimates available during the rule comment period. If these estimates show a clear safety benefit associated with a smaller transition break size, we will consider this when deciding on the final transition break size.

As you are aware, the staff is now targeting the end of March 2005 for issuance of the proposed rule for public comment. We plan to meet with the ACRS again in the intervening time period to discuss the above recommendations and any revisions to the current draft of the rule.

Sincerely,

/RA Ellis W. Merschoff Acting For/

Luis A. Reyes
Executive Director
for Operations

cc: Chairman Diaz
Commissioner McGaffigan
Commissioner Merrifield
SECY

- 3. A better quantitative understanding of the possible risk benefits of a smaller transition break size is needed to arrive at a final choice of the transition break size. If the defense-in-depth capability to mitigate breaks greater than the transition break size is maintained, a smaller choice of transition break size may be supportable.

The staff agrees that a better understanding of the possible risk benefits would help the final choice of the transition break size and is attempting to identify areas where quantification of potential benefits might be meaningful. We have also engaged the industry to develop quantified estimates of the safety benefits associated with a smaller transition break size. We expect to have these estimates available during the rule comment period. If these estimates show a clear safety benefit associated with a smaller transition break size, we will consider this when deciding on the final transition break size.

As you are aware, the staff is now targeting the end of March 2005 for issuance of the proposed rule for public comment. We plan to meet with the ACRS again in the intervening time period to discuss the above recommendations and any revisions to the current draft of the rule.

Sincerely,

/RA Ellis W. Merschoff Acting For/

Luis A. Reyes
Executive Director
for Operations

cc: Chairman Diaz
Commissioner McGaffigan
Commissioner Merrifield
SECY

DISTRIBUTION: G20040864
RidsNrrWpcMailCenter
RidsNrrOd
RidsEdoMailCenter
RidsResOd
RidsOgcMailCenter

ADAMS NO: PKG: ML050060219, INCOMING: ML043580284, MEMO: ML050060215
DOCUMENT NAME: G:\DONR\Tim Collins\Risk-Informed 10 CFR 50.46 ACRS letter.wpd

| | | | | | | | | | |
|--------|-------------------------|--|----------|--|------------|--|-----------|--|---------|
| OFFICE | NRR | | NRR/DSSA | | NRR/DE | | NRR/OD | | NRR:OD |
| NAME | T. Collins | | S. Black | | R. Barrett | | B. Sheron | | J. Dyer |
| DATE | 01/06/05 | | 01/11/05 | | 01/11/05 | | 1/11/05 | | 1/11/05 |
| OFFICE | RES | | OEDO | | | | | | |
| NAME | CPaperiello(JCraig for) | | L. Reyes | | | | | | |
| DATE | 01/11/05 | | 1/18/05 | | | | | | |