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

SECRETARY

December 18, 2007

COMMISSION VOTING RECORD

DECISION ITEM: SECY-07-0185

TITLE: MODERATOR EXCLUSION IN TRANSPORTATION PACKAGES

The Commission (with all Commissioners agreeing) disapproved the subject paper as recorded in the Staff Requirements Memorandum (SRM) of December 18, 2007.

This Record contains a summary of voting on this matter together with the individual vote sheets, views and comments of the Commission.

Annette L. Vietti-Cook
Secretary of the Commission

Attachments:
1. Voting Summary
2. Commissioner Vote Sheets

cc: Chairman Klein
Commissioner Jaczko
Commissioner Lyons
OGC
EDO

VOTING SUMMARY - SECY-07-0185

RECORDED VOTES

	APRVD	DISAPRVD	ABSTAIN	NOT PARTICIP	COMMENTS	DATE
CHRM. KLEIN		X			X	11/26/07
COMR. JACZKO		X			X	11/20/07
COMR. LYONS		X			X	11/6/07

COMMENT RESOLUTION

In their vote sheets, all Commissioners disapproved the staff's recommendation and provided some additional comments. Subsequently, the comments of the Commission were incorporated into the guidance to staff as reflected in the SRM issued on December 18, 2007.

NOTATION VOTE

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary

FROM: CHAIRMAN KLEIN

SUBJECT: SECY-07-0185 – MODERATOR EXCLUSION IN TRANSPORTATION PACKAGES

Approved _____ Disapproved __XX__ Abstain _____

Not Participating _____

COMMENTS: Below ___ Attached _XX_ None ___

SIGNATURE

11/ 26/2007
DATE

Entered on "STARS" Yes _✓_ No ___

Chairman Klein's Comments on SECY-07-0185,
Moderator Exclusion in Transportation Packages

The staff has clearly summarized in this paper the issues and options associated with use of moderator exclusion as a means to maintain subcriticality in spent fuel transportation packages. I commend the staff for identifying a path forward that would move this aspect of the cask certification process away from the existing deterministic paradigm toward a risk-informed and realistically conservative framework that would be adequately protective of public health and safety. That said, the technical basis to support codifying acceptable uses of moderator exclusion in this application does not appear to be sufficiently developed to support rulemaking. In view of the limited number of cases cited by the staff that may consider moderator exclusion over the next few years, expending resources to embark on this rulemaking is not warranted at present. Therefore, I disapprove the staff's recommended Option 3 to codify, through rulemaking, the acceptable uses of moderator exclusion for spent fuel transportation packages. I approve Option 1, which would maintain the status quo and allow for consideration of moderator exclusion on a limited-shipment basis.

I recognize that, in evaluating the use of moderator exclusion on a case by case basis, the staff would continue its present approach of issuing exceptions to the existing regulations should an applicant provide sufficient justification that adequate protection will be maintained. Although regulatory exceptions should not be our preferred approach to licensing and certifications, there will always be cases in which we will need to make use of the flexibility in our regulatory framework to allow for innovative technical approaches that will still provide for reasonable assurance of adequate protection of public health and safety and of the environment. I believe that moderator exclusion is one of these cases.

I agree with the Advisory Committee on Nuclear Waste and Materials' recommendation that the staff defer this rulemaking decision and gain experience through processing of applicants' requests for moderator exclusion. While it gains this experience, the staff should focus its efforts on using burn-up credit as a means to insert more realism into spent fuel transportation cask criticality analyses. The staff should reconsider initiating a moderator exclusion rulemaking only after it has explored burn-up credit sufficiently to determine that it would not be practical to systematically use burn-up credit in certifying spent fuel transportation casks.

Dale E. Klein 11/26/2007

NOTATION VOTE

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary

FROM: COMMISSIONER JACZKO

SUBJECT: SECY-07-0185 – MODERATOR EXCLUSION IN TRANSPORTATION PACKAGES

Approved _____ Disapproved __X__ Abstain _____

Not Participating _____

COMMENTS: Below ___ Attached __X__ None ___

SIGNATURE

11/20/07

DATE

Entered on "STARS" Yes __X__ No ___

Commissioner Jaczko Comments on SECY-07-0185
Moderator Exclusion in Transportation Packages

I disapprove of any efforts to eliminate the assumption -- used in criticality analysis for spent fuel canisters – that water could act as a moderator. In addition, I believe the staff should use the existing exemption requirements sparingly.

Licensees making shipments of spent nuclear fuel are required to demonstrate that a criticality incident would not occur in an accident even if water were to enter the fuel canister and act as a moderator for nuclear fission. As discussed in the staff paper, some licensees are interested in eliminating this safety assumption in order to place more fuel assemblies in transportation and storage canisters, reducing the number of canisters and shipments. As the staff indicates in their paper, "[a]pproval of spent fuel package designs on moderator exclusion would represent a major departure from current practice, and may preclude NRC from making categorical statements about the impossibility of criticality accidents during transportation."

The issue related to water acting as a moderator for spent fuel is fundamentally in my view an analysis assumption. As a result, I do not believe licensees may generically argue that this requirement can be eliminated from a risk perspective. It certainly is unlikely that a robust canister, designed to agency requirements, would allow water to create a criticality event. This is not, however, a sufficient basis in my view to eliminate what has been an effective safety assumption.

There is at least one option that licensees could pursue that may address their interests in emplacing more fuel assemblies in fuel canisters. Licensees could provide technical data and analyses that rely on the actual material composition of the fuel. Using this information, licensees may be able to demonstrate that sufficient poisons are present in the fuel to allow a greater number of fuel assemblies in a cask without creating a criticality event. Unlike the moderator exclusion argument, this analysis would be based on actual physical properties of the fuel not hypothetical assumptions about the accident scenario.

I encourage licensees to develop the necessary technical basis to provide a more realistic description of the fuel composition. If this technical information were obtained, licensees could then petition the commission for a rulemaking to modify existing regulations as necessary to utilize the improved understanding of the spent fuel composition.

11/20/07

Gregory B. Jaczko Date

NOTATION VOTE

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary

FROM: COMMISSIONER LYONS

SUBJECT: SECY-07-0185 – MODERATOR EXCLUSION IN TRANSPORTATION PACKAGES

Approved _____ Disapproved __X__ Abstain _____

Not Participating _____

COMMENTS: Below ___ Attached __X__ None ___

Peter B. Lyons
SIGNATURE

11/ 6 /07
DATE

Entered on "STARS" Yes __X__ No ___

Commissioner Lyons' Comments on SECY-07-0185

I disapprove the staff's recommendation to codify the acceptable uses of moderator exclusion for spent fuel transportation packages by rulemaking at this time. I believe it is appropriate for staff to adopt the ACNW&M recommendation to defer the rulemaking decision until analysis of the French burn-up data is complete. In the meantime, staff should gain experience in use of moderator exclusion through the processing of applicants' requests for moderator exclusion. I am concerned about the reliance on the use of moderator exclusion. Specifically, I am concerned about the ability to guarantee water exclusion under any and all accident scenarios. Analysis of the French burn-up data may show that the system remains safe even with water. Extensive agency expenditure of resources on analysis of moderator exclusion and accident scenarios would be better invested in exploring whether the burn-up data mitigates the whole issue in a more comprehensive way. If questions on moderator exclusion remain after utilization of burn-up data, it may be reasonable at that time to revisit my point of view and reconsider moderator exclusion. This does assume, of course, that the French data are forthcoming in a reasonable time.

Peter Lyons 10/6/07

Peter B. Lyons Date