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

February 26, 1997

Mr. Thomas E. Tipton
Nuclear Energy Institute
1775 Eye Street, N.W., Suite 300
Washington, DC 20006-3708

Dear Mr. Tipton:

In your letter of November 15, 1995, you requested the Nuclear Regulatory Commission (NRC) staff to review the Electric Power Research Institute's Technical Report TR-105909, "Generic Framework for Application of Revised Accident Source Term to Operating Plants." You stated that TR-105909, in combination with the pilot plant examples, is intended to provide utility licensees with a generic, technical framework for consistent implementation of the revised source term described in NUREG-1465, "Accident Source Terms for Light-Water Nuclear Power Plants."

The staff has completed its review of the generic methodology and the proposed applications in TR-105909 for applying the revised source term to operating power plants. As part of its evaluation, the staff performed a preliminary review of pilot plant applications and met with pilot plant representatives to gain a better understanding of how the industry intends to apply TR-105909 on a plant-specific basis. The staff met on a number of occasions with representatives from the Nuclear Energy Institute (NEI) and some utilities to inform the industry of NRC's progress in reviewing TR-105909 and to obtain estimates of the total number and spectrum of applications of the revised source term that may be submitted for NRC's review.

The staff focused its review on the four principles contained in TR-105909. The first principle states that continued use of the existing licensing basis is acceptable for operating plants. The staff has determined that a backfit of the revised source term at operating plants is not mandatory. Thus, it is not necessary for licensees to change source-term assumptions in their design-basis accident analyses.

The second principle contained in TR-105909 states that "essentially complete" implementation of NUREG-1465 as a substitute for the existing licensing-basis source term is acceptable if an adequate margin of safety is maintained. The staff agrees that licensees of current plants may request use of the revised source term for plant applications and that such undertakings are voluntary and optional. Nonetheless, the staff believes that the integrated impact on a plant as a result of implementing the revised source term must be assessed. All potential impacts of the use of the revised source term need to be assessed when proposing changes in plant design or operation on the basis of the revised source term. Areas potentially affected are radiological consequences, equipment qualification, post-accident sampling, shielding and vital area access, engineered safety feature capability, control room habitability, and containment performance. Such assessments are not intended to be a complete reanalysis of the plant, but the scope of potential impacts should be addressed in all areas.

In the context of assessing the integrated impact, the staff is reluctant to accept the removal of existing accident mitigation equipment, such as charcoal filtration systems, solely on the basis of the revised source term. Relaxation of some testing and operability requirements may be acceptable. However, uncertainties continue to exist in the state-of-the-science of accident progression, and such equipment may be useful as defense in depth to help mitigate severe accidents or accidents that progress in a manner not previously analyzed. The staff plans to examine risk impacts from the removal of existing accident mitigation equipment through a rebaselining study, which is discussed later in this letter.

As proposed in TR-105909, selective implementation (the third principle) would implement some, but not all, aspects of the revised source term. The staff recommends that selective implementation be limited to "timing-only" applications to maintain the technical integrity of the revised source term. Small changes in ventilation system drawdown times and load sequencing of emergency diesel power are examples of applications that the staff believes will not require comprehensive assessments. The staff believes that more extensive implementation of the revised source term would require as thorough an evaluation as a complete implementation of the revised source term.

Regarding the continued use of the existing dose calculational methodology when applying the revised source term (the fourth principle), the staff is evaluating whether it is necessary to change the calculational framework contained in Regulatory Guides 1.3 and 1.4 to account for changes in the fission product distribution of the revised source term. The staff is also evaluating the need to revise 10 CFR Parts 50 and 100 by the rulemaking process to allow operating plants to implement the revised source term. The staff's evaluation will include the rebaselining of one representative pressurized-water reactor (Surry) and one representative boiling-water reactor (Grand Gulf). The staff plans to publish the results of the rebaselining effort for use by the industry.

The appendices of TR-105909 that contain comparisons of existing and revised source terms and information on applications and aerosol release parameters did not receive a comprehensive technical evaluation during this review. However, the applications discussed in the appendices and the pilot plant submittals clarified the industry's proposed use of the generic methodology.

Although no unresolvable technical issues were identified in the main body of TR-105909, the staff determined that plant-specific information is necessary to clarify how licensees will apply the generic methodology and concepts contained in TR-105909. It is expected that existing and likely future technical issues will be addressed on a plant-specific basis during the review of the pilot plant applications.

The staff concludes that TR-105909 adequately identifies the key technical issues and assumptions that licensees should address to implement the revised source term. The staff considers the four principles proposed by NEI generally acceptable for applying the revised accident source term to operating plants, with the aforementioned comments on selective implementation and, pending the results of the staff's rebaselining effort, possible changes to the dose calculation methodology.

The NRC looks forward to formally reviewing pilot plant applications beginning next month.

Sincerely,

L. Joseph Callan
Executive Director
for Operations

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Sincerely,

Original Signed by
L. J. Callan

L. Joseph Callan
Executive Director
for Operations

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February 12, 1997

MEMORANDUM TO: Hugh L. Thompson, Jr.
Acting Executive Director for Operations

FROM: John C. Hoyle, Secretary

SUBJECT: STAFF REQUIREMENTS - SECY-96-242 - USE OF THE NUREG-1465 SOURCE TERM AT OPERATING REACTORS

The Commission has approved the staff's approach to allow use of the revised accident source term. The staff should commence rulemaking upon completion of the new source term rebaselining and concurrent with the pilot plant evaluations (Option 2). The revised Part 20 dose terminology (TEDE criterion and methodology) and the worst two hour methodology should be factored into the implementation of NUREG-1465 source term at operating reactors.

If needed, technically justified exemptions to facilitate the pilot programs should be considered on a case-by-case basis pending completion of such rulemaking. Actions necessary to evaluate the new source term for operating reactors should proceed in a timely manner, taking into consideration the safety significance of the specific licensing activity. The staff should exercise caution so as to avoid creating new severe accident mitigation requirements in the licensing of currently operating plants that do not have explicit and informed Commission approval. Upon completion of the new source term rebaselining, the staff should provide the Commission with the results and a rulemaking plan.

~~(EDO)~~ (NRR) (SECY Suspense: 8/29/97) 9700025

The staff should provide the Commission with a summary paper that details Commission consideration of severe accident risk, both in past regulatory decisions or rules and potential future actions (e.g., Station Blackout, PRA policy guidance, Regulatory Analysis Guidelines, steam generator rule, etc.). The paper should

SECY NOTE: THIS SRM, SECY-96-242, AND THE COMMISSION VOTING RECORD CONTAINING THE VOTE SHEETS OF ALL COMMISSIONERS WILL BE MADE PUBLICLY AVAILABLE 5 WORKING DAYS FROM THE DATE OF THIS SRM.

include a staff assessment, and recommendation if appropriate, for formalizing the agency's position on consideration of severe accident risk.

(EDO) (NRR) (SECY Suspense: 5/30/97) 9700026

The response to NEI should be modified as follows: The next to the last sentence in the fourth paragraph (For example, it must ... is not diminished.) should be deleted.

(NRR) (Suspense: 2/26/97) 9600092

cc: Chairman Jackson
Commissioner Rogers
Commissioner Dicus
Commissioner Diaz
Commissioner McGaffigan
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