

September 17, 1999

The Honorable Greta Joy Dicus  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Dear Chairman Dicus:

**SUBJECT: PROPOSED FINAL RULE ON USE OF ALTERNATIVE SOURCE TERM AT OPERATING REACTORS, DRAFT REGULATORY GUIDE, AND STANDARD REVIEW PLAN**

During the 465<sup>th</sup> meeting of the Advisory Committee on Reactor Safeguards, September 1-3, 1999, we reviewed the proposed final rule on Use of Alternative Source Term at Operating Reactors, the associated draft Regulatory Guide (DG-1081), and the associated Standard Review Plan Section (SRP) (15.0.1). Our Subcommittee on Severe Accident Management reviewed this matter during its August 9-10, 1999 meeting. During these meetings, we had the benefit of discussions with the NRC staff and of the documents referenced. We previously reviewed a proposed version of the source term rule and provided a report to the Commission dated November 19, 1998.

## **BACKGROUND**

Because of the regulatory significance of source term usage, we have had a long-standing interest in the subject. For example, we previously endorsed the efforts to update and define a more realistic source term for future plants, as described in NUREG-1465, and to require the use of total effective dose equivalent (TEDE) and the "worst" two-hour release period.

Although the revised source term was intended for use by future plant licensees, the current rulemaking effort is aimed at allowing the use of the NUREG-1465 alternative source term by licensees of currently operating plants. In our November 19, 1998 report, we noted that the staff had done a commendable job of addressing the issues associated with allowing licensees of currently operating plants the option to make plant changes based on the NUREG-1465 alternative source term. Also, we supported the use of the alternative source term at operating plants on a selective and voluntary basis. Public comments have been received on the proposed rule, and the staff intends to seek Commission approval both to issue the final version of the rule and to publish DG-1081 and SRP Section 15.0.1 for public comment. Our comments are offered for consideration prior to publication of these documents.

## OBSERVATIONS AND RECOMMENDATIONS

1. The staff has done an excellent job in developing a workable rule, regulatory guide, and SRP Section.
2. The staff should modify the proposed redefinition of the source term to eliminate the connotation that the release is necessarily to the containment but should retain the wording “. . . release from the RCS . . . .”
3. The staff should reassess the requirement for evaluating the effects of changes on core damage frequency (CDF) and large, early release frequency (LERF) and determine if this requirement could be relegated to the 10 CFR 50.59 change process.
4. The requirement to have prior NRC approval for “changes . . . that result in a reduction in safety margins” should be reevaluated for removal in light of both the analytical assessments done by the Office of Nuclear Regulatory Research and the results of the pilot applications of the alternative source term.

## DISCUSSION

### Redefinition of the Source Term

The staff has proposed to change the wording in the definition of the source term from “. . . released from the reactor core to the containment . . .” to “. . . released from the reactor fuel . . . .” The purpose of this proposed change is to avoid the implication that the alternative source term could not be used for the entire range of design basis accidents, including those that bypass containment.

We believe this proposed change would misrepresent the NUREG-1465 basis for the alternative source term in two respects: (1) the chemical forms in the source term become “stabilized” only after some distance of transport downstream from the point of release from the fuel, and (2) the intent of the NUREG-1465 alternative source term was that deposition within the reactor coolant system (RCS) is accounted for and that any implementation should not consider additional attenuation due to passage through the RCS. To avoid any potential misunderstanding, we believe the desired objective could be achieved more appropriately by eliminating the words “to the containment” but retaining the words, “. . . release from the RCS . . . .” We do not support use of the words “. . . release from the fuel.”

### Risk Issues

The draft Regulatory Guide and the SRP Section call for “identifying whether the application should be considered risk informed,” and “. . . ensuring that any associated plant modification that may have an impact on CDF and LERF is reviewed by risk analysts . . . .”

While these are seemingly innocuous statements, we believe that they are not needed. There is ample evidence from both the Office of Nuclear Regulatory Research assessments and the

pilot plant results that the risk metrics (CDF and LERF) are sufficiently insensitive to any plant modifications that can result from use of the alternative source term that there appears to be no need to continue to evaluate them for each plant modification. We believe that the staff should consider the approach of viewing such changes in the same light as the 10 CFR 50.59 change process.

### Safety Margins

The draft Guide defines safety margins as “the difference between calculated parameters (e.g., postulated offsite or control room dose) and the associated limits . . . .” It goes on to state that “. . . changes, or the net effects of multiple changes, that result in a reduction in safety margins may require prior NRC approval.” These statements in the draft Guide are troublesome to us. The changes resulting from adopting the NUREG-1465 alternative source term are likely to result in a reduction of the safety margins as they are defined above. The assessments made by the Office of Nuclear Regulatory Research have demonstrated that these reductions in margins are acceptable. Since there are no regulatory requirements that specify the magnitude of these safety margins and no guidance on how to determine them, there is little need for the stipulation for prior NRC approval. As noted above, it is conceivable that the changes resulting from application of the alternative source term could be considered minimal changes as discussed in 10 CFR 50.59.

The staff has done an excellent job overall. We plan to review the proposed final Regulatory Guide and SRP section following the reconciliation of public comments.

Sincerely,

/s/

Dana A. Powers,  
Chairman

### References:

1. Memorandum dated July 13, 1999, from Gary M. Holahan, Office of Nuclear Reactor Regulation, NRC, to John T. Larkins, ACRS, Subject: Transmittal of the Final Amendments to 10 CFR Parts 21, 50, and 54: Draft Regulatory Guide; Draft Standard Review Plan Section; Regarding Use of an Alternative Source Term at Operating Reactors.
2. Compilation of Public Comments Received on Proposed Rule, “Use of Alternative Source Terms at Operating Reactors”:
  - Letter dated May 25, 1999, from David J. Modeen, Nuclear Energy Institute
  - Letter dated May 25, 1999, from Daniel F. Stenger, Counsel to the Nuclear Utility Backfitting and Reform Group
  - Letter dated May 20, 1999, from M. S. Tuckman, Duke Energy
  - Letter dated May 24, 1999, from H. L. Sumner, Jr., Southern Nuclear Operating Company, Inc.
  - Letter dated May 20, 1999, from James M. Levine, APS, Palo Verde Nuclear

Generating Station

- Letter dated June 7, 1999, from Kent Tosch, State of New Jersey
  - Letter dated May 10, 1999 from Ralph Cantral, State of Florida
3. ACRS report dated November 19, 1998, from R. L. Seale, Chairman, ACRS, to Shirley Ann Jackson, Chairman, NRC, Subject: Proposed Rule on Use of Alternative Source Term at Operating Reactors.
  4. U.S. NRC Report, NUREG-1465, "Accident Source Terms for Light-Water Nuclear Power Plants" - Final Report, L. Soffer, et al., February 1995.