



**AMERICAN NUCLEAR SOCIETY
SPECIAL COMMITTEE ON SOURCE TERMS**

W.R. Stratton, Chairman
2 Acoma Lane
Los Alamos, NM 87544
505/667-8772

R.L. Seale, Vice Chairman
Department of Nuclear Engineering
University of Arizona
Tucson, AZ 85721
602/626-2311

March 22, 1983

Dr. N.J. Palladino
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Palladino:

Since the time of the accident at Three Mile Island, interest in the matter called the source term, the amount and rate and chemical form of the fission products that might escape from a nuclear power plant undergoing a severe accident, has increased at a steady rate. The source term is central to matters relating to siting, licensing, design, construction, and, especially nowadays, emergency planning, response and estimates of public risk. Thus, the current interest is certainly justified.

Some few months ago, the American Nuclear Society decided to review the state of knowledge in this area, and to prepare a document summarizing this knowledge. Mr. Manning Muntzing, the Society's president, appointed a "Special Committee on Source Terms," and asked me to serve as chairman, and Dr. Robert Seale as vice-chairman. The committee is international, having members from both Western Europe and Japan, as well as from the United States. Those from the United States are associated with the National Laboratories, the Nuclear Regulatory Commission, the Department of Energy, universities, and the industry, per se. Thus, the committee is broadly based throughout the technical community of persons who are expert in some aspect of nuclear energy. We expect to produce a review document that will have the consensus of the committee, and will have been critically examined by members of the ANS and the technical community. We hope, in addition, that the document will be useful and instructive to those persons who are not expert in the subject.

The committee's broad objectives are to examine in detail a small number of very severe accident sequences for both PWRs and BWRs. These sequences have been chosen to be representative of the broad classes of accidents discussed in recent risk assessment studies, and will include examples of pertinent chemical and physical phenomena that influence the behavior and movement of fission products. The description of the accident sequence, per se, will be updated to take into account new knowledge. Only consequences to the point of definition of the source term internal or external to the containment will be examined.

8305230469 830502
PDR COMMS NRCC
CORRESPONDENCE PDR

Important new developments since the accident at Three Mile Island include appreciation of the need for careful consideration of the chemistry of the fission products and inert materials in the pertinent environment, the transport of the appropriate compounds and other materials through the primary system and into the containment and/or secondary buildings, and the strength of the containment itself. It appears to be the case that the retention of fission product compounds in the primary system and containment and/or secondary buildings is of major importance in the evaluation of the source term. This must be done very carefully if realistic and believable consequences are to be estimated, and the committee has this objective in mind.

For an evaluation of this kind, the committee will depend upon not only the expertise in the Society and technical community at large, but also will be very dependent on the extensive programs on the source term being conducted by the Nuclear Regulatory Commission, the Industry Degraded Core Rulemaking Program, the Department of Energy, and the Electric Power Research Institute. As results appear from these programs and studies, the committee will make use of these in its review of the existing state of knowledge. It is certainly fair to say that these programs are making major advances in our understanding and knowledge relative to the analyses of accidents involving degraded cores.

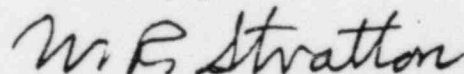
In addition to these programs, the committee is cognizant of work in the area being performed in Canada, Western Europe, Japan, and by the International Atomic Energy Agency. These studies also will be considered in the writing of the report.

The committee expects to have a preliminary report by early June of this year, and a further report by the end of 1983. The intent is to have the actual writing and reviewing broadly based throughout the Society and the technical community, a process that is time-consuming but will contribute significantly to an ultimate consensus, and be a major benefit in this regard.

Members of your staff have been most cooperative with us in this activity, and we wish this to be known to the Commission. On our part, I (and I volunteer for other members of the committee) would be pleased to discuss the source term issue and the work of the committee with you and the other Commissioners at some appropriate time.

Please let me know if such a presentation would be of interest.

Sincerely yours,



William R. Stratton
Chairman, Source Term Committee

WRS/bjs