



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON NUCLEAR WASTE  
WASHINGTON, D.C. 20555

August 30, 1996

The Honorable Shirley Ann Jackson  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Dear Chairman Jackson:

SUBJECT: COMMENTS ON THE FINAL DRAFT BRANCH TECHNICAL POSITION ON  
THE USE OF EXPERT ELICITATION IN THE HIGH-LEVEL  
RADIOACTIVE WASTE PROGRAM

The purpose of this letter is for the Advisory Committee on Nuclear Waste (ACNW) to make recommendations on the subject Branch Technical Position (BTP) and to identify residual concerns of the Committee relating to the formal use of expert elicitation. During the 85th meeting of the ACNW on August 22, 1996, the NRC staff discussed the final draft BTP with the Committee, emphasizing the responses to public comments on the draft BTP. The Committee has had a long-standing interest in the use of formally elicited expert judgment in nuclear waste programs and we recommended development of guidance such as this in our memorandum of July 31, 1991, to Robert Bernero titled "The Role of Formal Elicitation of Expert Judgment in the Performance Assessment of a Geologic High-Level Waste Repository." The use of formal elicitation of expert judgment in the facility licensing process remains one of the priority issues of the Committee.

Recommendation

The BTP provides important guidance to the applicant, the affected units of Government, and interested parties on the use of formally elicited expert judgment. The ACNW anticipates that the BTP will be immediately useful to the NRC staff, for example, in its evaluations of (or comments on) the Department of Energy's (DOE's) Probabilistic Volcanic Hazard Assessment and later comments on DOE's Probabilistic Seismic Hazard Assessment. In the long term, the BTP will provide valuable guidance to the DOE in the preparation of its license application and to other parties carrying out expert elicitations in connection with the facility licensing process.

We wish to commend the NRC staff for completing the final draft BTP, which is desirably brief and nonprescriptive. The applicant

is left to its own creativeness on how to handle such important issues as probabilities, methods of aggregating uncertainties, data updating, and the final form of the results. The Committee strongly recommends the prompt completion and publication of the final draft BTP.

### Residual Concerns

Although the ACNW welcomes and supports the subject draft BTP, we have several residual concerns regarding the use of formally elicited expert judgment in the decision-making process. The Committee does not intend that these concerns delay publication of the draft BTP. We realize that these concerns could be addressed by a variety of means outside the BTP, including workshops, letters, NUREGs, technical exchanges, and so on. These concerns include the following:

#### 1. Subject Matter Experts

The Committee believes that the nomination process for selecting subject matter experts should include organizations such as the National Academies of Sciences and Engineering, private industry, State development and regulating bodies, and representative public interest groups.

We also believe that the process of formulating the problem to be solved, the issues to be addressed, and the detailed questions to be answered should take place, primarily, before and during the process of selecting experts. The Committee's suggested approach is that before deciding on the final panel of experts, a much larger number of experts be contacted and their input be elicited on refining the general problem that has been formulated by the generalists and the normative experts. In this way, a much larger knowledge base is available to fine tune the issues, and the opportunity exists for a very effective group of experts to evolve that will eventually make up the panel. Further refinement of the issues and questions should be performed by the selected panel of subject matter experts.

#### 2. Aggregation of Results

The Committee believes that the results from expert elicitation should clearly display the uncertainties in the chosen performance measures for a particular issue. Therefore, the aggregation of the results of the expert panel should also be clear in terms of the uncertainties in the individual judgments of the panel members and the method of aggregation and integration of bottom-line results that include the quantification of uncertainties. This property of the elicitation process becomes especially important to the

regulators in the consideration of multiple elicitations covering similar or identical issues. The scientific process considers a full range of alternatives on the basis of the technical knowledge base of each and the associated reasoning processes, all of which should be exposed in the decision-making process. This documentation will facilitate the regulator's ability to discriminate between different alternatives on the basis of the evidence presented.

In this regard, major guidance would come from an illustration of the aggregation process that embraces the notion of combining and integrating probability distributions. The idea would not be to prescribe a process but rather to illustrate in graphical and analytical terms an example of what is meant by the aggregation process. It is believed that such an aid would greatly facilitate and add meaning to the use of probability methods in the licensing process in general, and in expert elicitation in particular.

### 3. Interpretation of the Results

The Committee wishes to emphasize that as a result of the flexibility of the process, the applicant should not conclude that following the guidance implies automatic acceptance of the results. The results, and the detailed bases thereof, are the desired outcome of the elicitation process. The credibility of the results has to be principally based on the individual's reasoning process, the method of aggregation, and the supporting knowledge base, including the use of specific data wherever possible.

### 4. Application of Expert Elicitation

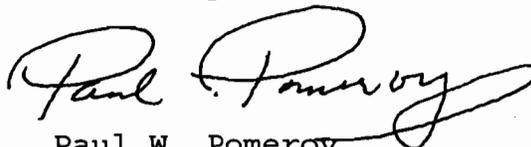
Although the Committee was pleased that the BTP was not overly prescriptive on the matter of how to conduct expert elicitations, there is a need for additional guidance on candidate issues for application. A discussion of appropriate applications would illustrate the limitations and the general intent of the process.

Additionally, the Committee believes that the Commission, consistent with its Policy Statement on probabilistic risk assessment may wish to examine the decision-making process to take greater advantage of results developed through state-of-the-art expert elicitations. For example, there may be an impact on the admissibility for testimony of a valid elicitation resulting from the unavailability of one or more subject matter experts. Although there are legal arguments for the need for a "sponsoring witness," such an individual may not be able to represent, as his or her own, the full range of the technical arguments contained in the original elicitation.

The Committee believes that these residual concerns should not delay the prompt publication of the BTP. The ACNW looks forward to working with the staff to address these concerns through other avenues.

We hope that these comments will be useful to you.

Sincerely,

A handwritten signature in black ink, reading "Paul W. Pomeroy". The signature is written in a cursive style with a large, prominent initial "P".

Paul W. Pomeroy  
Chairman