USCEA
U. S. Council for Energy Awareness

Suite 400
1776 I Street, N.W.
Washington, DC 20006-2495
(202) 293-0770

John Siegel
Vice President, Technical Programs

April 29, 1988

Ronald L. Ballard, Chief
Technical Review Branch
Division of High-Level Waste Management
U.S. Nuclear Regulatory Commission
Mail Stop 1 WFN 4-H-3
Washington, D.C. 20555

Re: Draft Generic Technical position on "Guidance for Determination of Anticipated Processes and Events and Unanticipated Processes and Events" (53 Fed. Reg. 6040)

Dear Mr. Ballard:

These comments are submitted on behalf of the High Level Waste Task Force of the U.S. Council for Energy Awareness (USCEA) in response to the above-referenced notice. We have reviewed the draft Generic Technical Position (GTP) and do not believe that it provides appropriate guidance for evaluating processes and events that could occur after closure of a high-level radioactive waste repository so that they can be categorized as either "anticipated processes and events," or "unanticipated processes and events." Accordingly, USCEA is of the view that the guidance presented in the draft GTP should not be adopted without significant modification.

In general, we believe that the GTP provides a good framework for moving forward. The examples section is excellent: it definitely helps clarify both the intent, and the approved mode of implementation, of the approach.

However, from the technical standpoint, there is little if any justifications for a number of positions taken in the GTP. The lack of technical support invalidates the use of the GTP and results in an arbitrary document which will result in endless discussions with no conclusions.

Attached are our specific comments which address our technical concerns. If you have any questions or desire additional information, please let me know.

Sincerely,

John Siegel
Vice President

108.13
WM-1
NH01 1/1

ATTACHMENT TO RONALD L. BALLARD LETTER

Page 2 Paragraph 1
Page 7 Paragraph 1
Page 13 Paragraph 3

Human induced events whether anticipated or unanticipated needs greater elaboration or should be completely eliminated from the GTP.

Inadvertent Human Intrusion is relatively unimportant for the following reasons. a) If civilization survives and flourishes it will maintain accurate records which include location and content of the repository, therefore, intrusion would not be inadvertent but by design with proper engineering and safeguards. b) If civilization decays such that the records which locate the repository and contents are lost, inadvertent human intrusion would be placed on the same status as inadvertent human intrusion of a toxic or a carcinogenic waste repository. Additionally, if inadvertent intrusion is a result of introduction of pollutants to the atmosphere which causes modification of the climate, then the resulting climate modification would create far more adverse effects than the intrusion of the repository.

Creditable human enduced events which may result in inadvertent intrusion would be rerouting a river or the construction of a major dam which could effect the water table or could break and flood the repository.

Page 3. Regulatory Background

Paragraph 1

Post closure performance of engineered barriers and the waste package are limited to 1,000 years under current regulation. This should be included in the last sentence.

Paragraph 2 Sentence 1

Include "i.e., for 10,000 years" after 40 CFR 191.

Page 4. Technical Position

Your position on credible geologic processes and events is based on the Quaternary history of a site. This presumes that all potential sites have an adequate Quaternary record. The lack of an adequate Quaternary record should not preclude an otherwise acceptable site from licensing. Your position should be revised to reflect this possibility.

Footnote 4

Your position on 700,000 years is arbitrary. Reliable texts on Geologic time places Holocene as approximately 11-15,000 years and Plecatocene as 6-700,000 years. Both make up the Quaternary period. Your basis of the importance of late Quaternary period is okay but should consider EPA rational for establishing 10,000 years as a period for containment. There is no basis for requiring modeling to be extended 70 times the EPA containment goal.

EPA chose 10,000 yr. to assure that (1) long term risk estimates were not deceptively low (47 Fed Req 58199 dated 12/29/82) and (2) the respository design and performance criteria would not be unnecessarily impacted by major unpredictable geologic or climatic changes.

The SAB sub-committee supported EPA's position finding that the repository modeling and risk assessments could be extended to a few tens of thousands of years with reasonable confidence and likely be free of major geologic changes such as volcanism or renewed glaceation. Surely major earth flooding or climatic change caused by "Greenhouse" effects fall within the same realm of exclusion. As discussed above, we disagree with the entire Quaternary period being used as a basis to define the anticipated and unanticipated events. The Quaternary Period, which is 2.5 million years old and has had at least 8 major ice ages, is much too broad to use as a basis for licensing even a 10,000 year facility.

We suggest using the Holocene Epoch as the licensing basis. By using the Holocene the uncertainties are greatly reduced and the context of the licensing period is better matched.

Pages 4 and 5 Technical Position

The position paper as a whole is vague and not explicit in its definitions and criteria. Given that your objective is to provide clear definitions of "anticipated processes and events and unanticipated processes and events," you should endeavor to be more precise. Again, reactor licensing experience has demonstrated that imprecise definitions lead to lengthy discussions, legal confrontations, and costly licensing delays.

The vague definition of "unanticipated processes and events" is a good example. Your position permits geologic processes that have occurred in some areas of the region to be transposed to other areas within the region. Unless this definition is made stricter and more precise, intervenor groups would be permitted to introduce incredible geologic scenarios with no scientific justification. This comment extends to the remainder of your position concerning unanticipated events; that is, events not occurring within the Quaternary, and events resulting from other unanticipated events.

Page 5. Paragraph 2.

'An "anticipated process" should consider a reasonable and conservative projection of the rate of the process that is occurring.' While no one can argue with the reasonable part, we have some difficulty with the conservative part. This is at least in part due to your inclusion of uncertainties about the postulated process in the variation around the average rate. It appears that this could lead to a compounding of uncertainties, first including them in the average (being "conservative"), and then in the variation around the average as well. It would be preferable to use a best estimate for the average, and then include the uncertainties around the average in the variations considered."

Page 6 Add item 4.

We believe is also important for the staff to consider whether the stratum under consideration is rising on sinking, the rate of charge and the effect of the charge on the repository.

Page 8 Last Paragraph

More priority should be given to probabilistic risk assessment in this case. We question the assumption that deterministic evaluations can be applied fairly, consistently, and dependably. Power reactor licensing experience argues against this, particularly in regards to seismicity. Given the esoteric definition of "unanticipated processes and events," probability will of necessity play a significant role. Deterministic evaluations and probabilistic analyses should be applied equally and both should be tempered with liberal doses of sound professional judgment.

Page 15 Paragraph 1

"However, if it can be shown . . . " the use of the what if scenario implies that there is an "if it can't be shown . . . " statement, which opens the area up for endless discussion and no conclusion.

Page 16 Paragraph 2

". . . an acceptable model, . . . " this phase is similar to the what if scenario. An acceptale model is in the perspective of the author of the model. Models which DOE believes acceptable may not be acceptable to the NRC. In this case what would happen if extremes of the late quarternary were adopted as the standard?

Page 19 References

You should draw your conclusions from and rely on references which have been thoroughly peer reviewed and are generally accepted by the scientific community. To do otherwise raises spurious issues which are extremely difficult or expensive or impossible to put to rest.