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PDR

LPDR (B,N,S)

Dr. Peter Soo, Associate Division Head
Nuclear Waste Management Division
Brookhaven National Laboratory
Associated Universities, Inc.
Upton, NY 11973

Dear Dr. Soo:

NRC's comments on BNL's October Progress Letter for FIN A-3164 (DOE Waste Package Program) are presented below.

The BNL letter points out that the approach taken by the Reference Repository Conditions Interface Working Group's (RRC-IWG) recent assessment of expected conditions for CHLW, DHLW, and SF in salt repositories (ONWI-483) is to (1) obtain estimates of such conditions based on local area thermal loadings and (2) use the estimates as maximum conditions (i.e., design limits) for design analyses. The RRC/IWG is criticized for "attempting to set limits on expected conditions without consideration of specific emplacement design." Proposed basic designs (reference and alternates) for CHLW, DHLW, and SF waste package concepts (borehole and self-shielded) have been presented, however, in ONWI-438 and elsewhere, and at least three draft Environmental Assessments for salt repositories are anticipated from DOE in the next few months. It is time, therefore, for BNL to focus on the design bases and design limits that will be needed for licensing of waste packages for salt, taking into consideration DOE's proposed waste package conceptual design and repository conditions, the existing experimental data base, and analytical assessments. BNL should address whether the repository conditions (thermal, radiation, brine volume accumulations, gamma radiation doses, etc.) are viable or not, based on what is currently known or expected to be confirmed about the performance of the current conceptual designs, and should either propose alternate design bases and limits if they are needed or identify specific (not general) data needs if the current data base is inadequate.

The trip report for the ANS meeting in San Francisco, October 30 - November 3, 1983 (Appendix A) is informative.

We note that R. T. Wild (for R. A. Deju) stated that BWIP has determined that packing material having sufficient density can be blown into the borehole. Please identify in the next progress letter any references to support this statement.

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We also note that (talk by S. J. Basham, Jr.) corrosion of 1025 cast steel in salt at 150°C was not enhanced in the presence of gamma radiation at a dose rate of 10^3 rads/hour, which is the predicted radiation level at the outside surface of the canister. BNL should state the duration of the tests and comment (in the next progress letter) on the significance of these test data (since BNL from its studies on Rock Salt Irradiation under FIN A-3167 predicted that the dissolution of radiation damaged rock salt surrounding a HLW package by thermally induced brine migration could elevate the brine to a pH of 14, thus contributing to compromising the performance of the waste package). We note that at higher than anticipated gamma radiation levels (10^5 rad/hour), corrosion rates were enhanced by a factor of 3 to 10. BNL should also comment on the applicability of data obtained in tests using higher than anticipated levels of radiation.

The action taken by this letter is considered to be within the scope of the current contract FIN A-3164. No changes to costs or delivery of contracted products are authorized. Please notify me immediately if you believe this letter would result in changes to costs or delivery of contracted products.

Sincerely,

ORIGINAL SIGNED BY

Everett A. Wick
 Engineering Branch
 Division of Waste Management

- cc: Dr. H. J. C. Kouts, Chairman
Nuclear Energy Department
- Dr. W. Y. Kato, Deputy Chairman
Nuclear Energy Department
- Dr. D. G. Schweitzer, Associate
Chairman and Head
Nuclear Waste Management Division
- Dr. M. S. Davis, Deputy Division Head
Nuclear Waste Management Division
- Dr. B. Siskind
Nuclear Waste Management Division

*See previous concurrence.

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