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109/RJS/84/09/04

SEP 10 1984

MEMORANDUM FOR: Joseph O. Bunting, Chief
Policy and Program Control Branch
Division of Waste Management, NMSS

FROM: Malcolm R. Knapp, Chief
Geotechnical Branch
Division of Waste Management, NMSS

SUBJECT: GEOTECHNICAL BRANCH REVIEW OF "AN EVALUATION OF COMMERICAL REPOSITORY CAPACITY FOR THE DISPOSAL OF DEFENSE HIGH LEVEL WASTE"

Richard Codell of the Hydrology Section and John Starmer of the Geochemistry Section have reviewed the subject document (1) and have the following comments:

1. The analyses performed for transport of waste from the high level waste repository were not comprehensive. Releases were calculated for a very simple repository model which considered single-valued retardation coefficients, poorly documented leach rates and arbitrary groundwater travel times. The values chosen were somewhere in the middle of accepted ranges, but the DOE approach does not recognize the known-variability and uncertainties in the data. Approachs such as the analyses by NRC (2) and Sandia (3) performed for the 10 CFR 60 Rationale are far superior to this report since multiple runs over wide ranges of the parameters were considered.

2. Table 2-4 presents an obsolete version of release limits in the proposed 40 CFR 191. The current version of this proposed rule (4) has both higher and lower release limits. The subject paper considered only the radionuclides C-14, Tc-99, and I-129. It is noted that the current EPA limits are halved for C-14, and doubled for I-129. The limit for Tc-99 is the same.

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In spite of these deficiencies, it is fairly evident from the comparisons in Table 2-8, that the defense wastes would present a lower hazard than commerical HLW. This conclusion, however, could probably have been reached by consideration of the quantity and type of radionuclides contained in the waste.

Malcolm R. Knapp, Chief
Geotechnical Branch
Division of Waste Management, NMSS

References:

1. Mitre Corporation, "An Evaluation of Commerical Repository Capacity for the Disposal of Defense High-Level Wastes," DOE/DP-0020 (DRAFT), US Dept. of Energy, July, 1984.

2. USNRC, "Rationale for the Performance Objectives in 10 CFR Part 60," August 30, 1982, including appendices A and B.

3. Pepping, R.E., M.D. Siegel, and M.S. Chu, NUREG/CR 3235, Vols 1-4, Sandia National Laboratories, Albuquerque NM, 1983

4. USEPA, "Environmental Standards for the Management and Disposal of Spent Nuclear Fuel, High Level and Transuranic Wastes," Working Draft 3, 40 CFR 191, 2/1/84.

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