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MEMORANDUM

31 October 2000

To: Yucca Mountain File, Nye Co. N.W.R.P.O.
From: Don L. Shettel
Subject: Review of AMR/PMR: ANL-EBS-MD-000038 Rev 00.

Title: In-Drift Microbial Communities.

Radiolysis must be considered (ignored in this version), because canister walls have been thinned and thus it will be more important.

Not all corrosion rates for all materials in the repository are known, and thus some have been assumed to be the same for similar materials (analogs). However, those that are not known are assigned 10,000 years arbitrarily. Even known or assumed corrosion/degradation rates for materials are a constant number; one wonders if these corrosion/degradation rates apply to repository conditions or something else. We now know that the corrosion rate for allow 22 is much higher than they are using here (several hundred thousands of years), and the rate that DoE currently uses in TSPA is also much lower (on the order of 10,000 years, the presumed regulatory period).

The radiation tolerance of bacteria (and fungus, mold, etc.) is discussed, but not one word is spent on the potential for radiation-induced mutations in these organisms. I believe this is a credible topic, but is being ignored for the obvious reasons.

The range of water compositions considered included J-13, but there are no analyses of dripping fracture water in the ESF, and apparently DoE does not even have a technical procedure to collect and analyze it, if it were observed.