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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-NBS-HS-000029 Rev 00.

Title: Abstraction of Drift-Scale Coupled Processes.

This work includes backfill in the model which we now know is out again of the repository design; thus it is out of date. Temperatures in the drift will be lower without backfill, but DoE has also decreased the canister wall thicknesses which will increase the temperatures somewhat, but probably not as much as having backfill present. Future revisions of this work will thus need to be reviewed.

We know that atmospheric gas flows through Yucca Mountain from the work of the USGS (breathing and sucking boreholes of Ed Weeks), but there is no indication in this work that this effect on gas compositions is taken into account in the TSPA.

Simplified geochemical models employed here do not include trace elements (such as lead and mercury, among others) in the aqueous phase that we now believe are important to canister (alloy 22) corrosion. Current corrosion models in other parts of the TSPA rely on relative humidity (RH) and chloride composition in the aqueous phase as the dominant controls on canister corrosion; we believe this is now incorrect and out of date. These geochemical models will ultimately need to be changed to reflect the parameters important to material corrosion in the drift.