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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-000021 Rev 00.

Title: Geochemical and Isotopic Constraints on Groundwater Flow Directions, Mixing, and Recharge at Yucca Mountain, Nevada.

Based on the existing data, this is another fairly good report. However, it will be subject to revisions as more data are available, especially from the EWDP.

Major problems with this report include:

Insufficient consideration of the effect of faults on potential flow paths. Flow paths are pretty much estimated from contours of dissolved constituents.

Missing data: there is additional information that could have been collected that might have offered some additional insight, such as nitrogen and sulfur stable isotopes, and trace elements.

This report points out the paucity of data, the variability of data collected over several decades, and the need for data at additional locations. The recommendations contained within should be used to collect additional data that would reduce the uncertainties in flow paths, mixing, and recharge.