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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-000012 Rev 00.

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Title: Clad Degradation - Local Corrosion of Zirconium and its Alloy under Repository Conditions.

Literature suggests that fluoride (F) is most important for Zircaloy corrosion, but too much reliance is placed on the use of J-13 water, which is not vadose zone water (exact composition unknown currently), nor does it flow under Yucca Mountain. No consideration is given to other waters, such as vadose zone pore waters, perched waters within the repository block (UZ-14), or other compositions that might develop during repository heating (boiling, condensation, and refluxing processes). No consideration is given to the F content of repository rocks from which it might be derived during hydrothermal processes.

No consideration is taken of experiments that involve dripping waters of various appropriate compositions on hot, non-isothermal metallic surfaces of Zircaloy to evaluate corrosion and the different salts/brines that might be important.