



UNITED STATES  
 NUCLEAR REGULATORY COMMISSION  
 WASHINGTON, D. C. 20555

SEP 17 1984

MEMORANDUM FOR: Robert J. Wright  
 Repository Projects Branch  
 Division of Waste Management, NMSS

WM Record File  
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WM Project 10  
 Docket No. \_\_\_\_\_  
 PDR   
 LPDR

FROM: Michael B. McNeil  
 Waste Management Branch  
 Division of Radiation Programs  
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Distribution:  
RSW/KENNEY  
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SUBJECT: GROUNDWATER CONDITIONING

It appears to me that DOE's failure, up to now, to consider adding oxygen getters to backfill to condition the groundwater is a serious omission. At present, for example, DOE is arguing that basalt itself is sufficiently reducing to absorb virtually all available oxygen, thus reducing the rates of all major forms of corrosion. As you know, this claim is certainly unproven and (in my view, at least) is wrong. DOE could greatly reduce the uncertainties in their claim by changing their design to provide for addition of magnesium scrap to the backfill in a quantity sufficient to keep the environment reducing for a considerable period. This would increase the hydrogen embrittlement problem but, although the hydrogen embrittlement problem in BWIP designs has not been definitively resolved, it should be possible to control hydrogen embrittlement and hydrogen damage effects in this situation by fairly straightforward means.

In the salt repository, the much greater availability of hydrogen makes this a less simple remedy for DOE's uncertainties, but addition of aluminum scrap (cheaper and more readily available than magnesium, and sure not to passivate in the salt environment) is certainly worth considering. I have not thought through the parallel problems in tuff.

I have mentioned this idea to friends at DOE and suggest that you raise it in appropriate meetings.

*Michael B. McNeil*

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