UNITED STATES DEPARTMENT OF COMMERCE
National Bureau of Standards
Gaithersburg, Maryland 20899



MEMORANDUM TO: Kien Chang
Engineering Branch, DWM/NMSS
Nuclear Regulatory Commission

FROM: Robert Shull
Corrosion Group
National Bureau of Standards

RE: Comment on the Pitting Potentials quoted by the Lumsden (1985) paper referenced in the Hanford Reservation FEA.

The pitting potentials given were determined only from the breakdown potentials of anodic polarization curves. Cyclic polarization data are needed in order to determine whether hysteresis is present. Lumsden did not measure this. If hysteresis is present there will exist a protection potential which is different from Lumsden's pitting potential. In order for pitting not to occur in a repository, the potential must be less than the protection potential. Since the cyclic polarization data was not measured by Lumsden, it is not obvious what the protection potential is for these materials. Consequently, in this case it cannot be stated that pitting will not occur under repository conditions. It should also be noted that if pitting does occur, both the protection potential and the pitting potential (as measured by Lumsden) for the material would shift toward the corrosion potential.

cc: E. Wick