CNWRA *A center of excellence in earth sciences and engineering™*

A Division of Southwest Research Institute®
6220 Culebra Road • San Antonio, Texas, U.S.A. 78228-5166
(210) 522-5160 • Fax (210) 522-5155

July 16, 2004
Contract No. NRC–02–02–012
Account No. 20.06002.01.081

U.S. Nuclear Regulatory Commission
ATTN: Dennis Galvin
Two White Flint North
11545 Rockville Pike
Mail Stop T7 F3
Washington, DC 20555

Subject: Submittal of Intermediate Milestone—Microbially Influenced Corrosion Studies of Engineered Barrier System Materials, IM 06002.01.081.420

Dear Mr. Galvin:

Enclosed subject intermediate milestone provides a summary of experimental investigations on microbially influenced corrosion of engineered barrier system materials. In this study, microbially influenced corrosion was evaluated using galvanic current and repassivation potential measurements of Type 304 SS in aqueous solutions containing sulfate-reducing bacteria. Results indicate that the sulfate-reducing bacteria has no effect on the repassivation potential. High anodic currents observed in the forward polarization scans were attributed to the oxidation of reduced sulfur species adsorbed on the metal surface rather than metal corrosion. However, pitting corrosion of Type 304 SS was observed after 93–157 days of immersion in solutions containing sulfate-reducing bacteria. A set of long-term experiments is currently underway in which specimens of Alloy 22, Type 316L SS and Alloy 825 are being exposed in parallel cells containing *Pseudomonas, Thiobacilli,* sulfate-reducing bacteria, slime formers, or mixtures of these bacteria to evaluate potential of localized corrosion. This milestone also provides an assessment of DOE studies on microbially influenced corrosion of Alloy 22 and the model abstraction used in the performance assessment.

If you have any questions regarding this report, please feel free to contact Dr. L. Yang at (210) 522 2483 or me (210) 522-5439.

Sincerely yours,

Vijay Jain
Element Manager
Corrosion Science & Process Engineering

VJ:jg

cc:						
	D. DeMarco	G. Hatchett	L. Kokajko	W. Ford	L. Yang	Ltr only
	E. Whitt	A. Campbell	F. Brown	M. Bailey	K. Chiang	CNWRA EMs & Dirs.
	B. Meehan	L. Campbell	A. Csontos	D. Codell	D. Dunn	L. Gutierrez
	W. Reamer	T. McCartin	E. Collins	W. Patrick	O. Pensado	P. Maldonado
	B. Leslie	T. Ahn	J. Thomas	B. Sagar	Y.-M. Pan	Record Copy B, IQS
	K. Stablein	D. Brooks	T. Kobetz	G. Cragnolino	X. He	

Washington Office • Twinbrook Metro Plaza #210
12300 Twinbrook Parkway • Rockville, Maryland 20852-1606

WM-00011
NMSS06Rub