QA: QA

Model
Administrative Change Notice

Complete only applicable items.

1. Document Number:	ANL-EBS-MD-000003	2. Revision:	03	3. ACN:	01
4. Title:	General Corrosion and Localized Corrosion of Waste Package Outer Barrier				
5. No. of Pages Attached	1				

6. Approvals:		
Preparer:	Kevin Mon (Print name and sign) Kevin Mon	08/02/07 (Date)
Checker:	Frederick D. Wall (Print name and sign) F. D. Wall	08/03/07 (Date)
QCS/Lead Lab QA Reviewer:	Sounia Kassabian-Darnell (Print name and sign) Sounia K. Darnell	08/03/2007 (Date)
Independent Technical Reviewer:	for Jean Younker (Print name and sign) Jean Younker for Jinsuo Zhu	8/3/07 (Date)
Responsible Manager:	For Paul R. Dixon Cliff Howard (Print name and sign) Paul R. Dixon	8-3-07 (Date)

7. Affected Pages	8. Description of Change:
6-1	- Changed Table 6-1 footnote [a] from "Aqueous corrosion processes are included" to "Dry oxidation processes are treated as aqueous corrosion process". - Removed first row and footnote from Table 6-2.

6. MODEL DISCUSSION

6.1 ANALYSIS AND MODELING OBJECTIVES

The purpose and scope of this report are to document the analyses and models for general and localized corrosion of the waste package outer barrier (WPOB). The purpose of the general corrosion model is to analyze degradation of the Alloy 22 outer barrier by general corrosion under the range of expected repository exposure conditions over the repository performance period. The purpose of the localized corrosion model is to analyze degradation of the Alloy 22 outer barrier by crevice corrosion under the range of expected repository exposure conditions over the repository performance period. The Alloy 22 corrosion modeling and analyses documented in this report include an analysis of dry oxidation, general corrosion modeling, crevice corrosion initiation modeling, crevice corrosion growth modeling, an analysis of MIC, and an analysis of the effect of aging and phase instability. Treatment of seismic and igneous events and their consequences on WPOB performance are not discussed because they are outside of the scope of this report, although the general and localized corrosion models developed in this report are suitable for use in these scenarios. This report is used as a source of information in downstream analyses of waste package degradation.

6.2 FEATURES, EVENTS, AND PROCESSES RELEVANT TO THIS REPORT

The development of a comprehensive list of features, events, and processes (FEPs) potentially relevant to postclosure performance of the Yucca Mountain repository is an iterative process based on site-specific information, design, and regulations. Table 6-1 provides a list of FEPs included in this report and provides specific references to where the included FEPs are discussed within this report. Table 6-2 provides a list of excluded FEPs discussed in this report and provides specific references to sections within this report where the excluded FEPs are discussed. MO0706SPAFEPLA.001 [DIRS 181613], file: *FEPs_be.mdb* provides a list of all FEPs related to waste package and drip shield degradation.

Table 6-1. Included Features, Events, and Processes Addressed in This Report

FEP Number	FEP Name	Section(s) Where Described
2.1.03.01.0A	General corrosion of waste packages[a]	6.4.3, 6.4.5
2.1.03.03.0A	Localized corrosion of waste packages[b]	6.4.4
2.1.03.05.0A	Microbially influenced corrosion (MIC) of waste packages	6.4.5

[a] Dry oxidation processes are treated as aqueous corrosion processes.
[b] Localized corrosion due to dust deliquescence is discussed in SNL 2007 [DIRS 181267].

Table 6-2. Excluded Features, Events, and Processes Addressed in this Report

FEP Number	FEP Name	Section(s) Where Described
2.1.11.06.0A	Thermal sensitization of waste packages	6.4.6