



Scientific Analysis/Calculation Error Resolution Document

QA: QA
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Complete only applicable items.

INITIATION

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| 1. Originator: John M. Scaglione | 2. Date: 7-10-2008 | 3. ERD No. ANL-WIS-MD-000027 ERD 02 |
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| 4. Document Identifier: ANL-WIS-MD-000027 REV 00 | 5. Document Title: Features, Events, and Processes for the Total System Performance Assessment: Analyses |
|---|---|

6. Description of and Justification for Change (Identify applicable CRs and TBVs):

Introduction:

This document is being written as part of the action to resolve CR-11887: Two minor errors in Criticality FEP Screening AMR, and to correct the reference citations that are in error as listed in CR-12300: ANL-NBS-HS-000039 ERD 01 Impact Evaluation requires changes in downstream documents.

Background Information Summary:

Two issues are identified in CR 11887. (1) confusion caused by the way Table 6.4-6 is titled, and 2) how different frequency earthquakes, which result in different numbers of potentially impacted waste packages are combined to provide a single probability value for potential criticality from any seismic faulting event. ANL-WIS-MD-000027 REV 00 quotes this information that has been corrected with ANL-DS0-NU-000001 ERD02. Therefore, the quoted information needs to be corrected in ANL-WIS-MD-000027 REV 00.

One issue is identified in CR-12300: CR 11731 identified that ANL-NBS-HS-000039 REV 02 had two sections numbered 6.5.5. In corrective action 11731-001, the second Section 6.5.5 was renumbered as 6.5.6, and all following subsections within 6.5 were also incremented. As a result, other documents that cite these subsections of ANL-NBS-HS-000039 REV 02 must be corrected.

AMR Changes:

Please see attached. Affected areas are as follows: Table 2.1.14.19.0A-2 title, Table 2.1.14.19.0A-1 title, Equations listed on page 6-828, 4th paragraph on page 6-828, and p. 6-1019. Typographical error identified on p. J-142 while processing ERD. Output DTN: MO0706SPAFEPLA.001.

Impact Evaluations/Results:

The following documents were evaluated for impact: LA-SAR, ANL-EBS-MD-000033 REV 06, ANL-EBS-MD-000049 REV 03, Addendum 01, ANL-NBS-HS-000057 REV 00, ANL-WIS-MD-000024 REV 01, ANL-WIS-MD-000026 REV 00, CAL-DN0-NU-000002 REV 00C, MDL-MGR-HS-000001 REV 00 ACN 01, MDL-MGR-MD-000001 REV 02, MDL-NBS-HS-000011 REV 03, MDL-WIS-PA-000005 REV 00, and TDR-PCS-SE-000001 REV 05 Addendum 01. The documents evaluated for impact do not reference any of the information that is being changed; therefore there is no impact to any other technical product as a result of these changes.

These changes in the ERD do not impact the conclusion of ANL-WIS-MD-000027 REV 00.

CONCURRENCE

| | Printed Name | Signature | Date |
|--------------------|-------------------|-----------|------------|
| 7. Checker | Peter Persoff | | 07/16/2008 |
| 8. QCS/QA Reviewer | Brian Mitcheltree | | 7/16/08 |

APPROVAL

| | | | |
|-------------------------|----------------|--|---------|
| 9. Originator | John Scaglione | | 7/16/08 |
| 10. Responsible Manager | Cliff Howard | | 7/16/08 |

Paul R. Dixon

7-18-08

AMR Changes for CR-11887:

- 1) The title of Table 2.1.14.19.0A-2 should be changed to the following: *Probability of Seismic Vibratory Ground Motion Events with Potential to Cause Damage to Codisposal Waste Packages*
- 2) The title of Table 2.1.14.19.0A-1 should be changed to the following: *Probability of Seismic Vibratory Ground Motion Events with Potential to Cause Damage to TAD Canister-Bearing Waste Packages*
- 3) The equivalent section on page 6-828 should be replaced with the following:

PWR TAD canister loading curve violation:

$$1.2 \times 10^{-4} \times (1 - P_B(0; 1.65 \times 10^{-7}, (19.4 \times 4568/7483))) + 4.3 \times 10^{-4} \times (1 - P_B(0; 1.65 \times 10^{-7}, (27.6 \times 4568/7483))) + 1.7 \times 10^{-4} \times (1 - P_B(0; 1.65 \times 10^{-7}, (32.1 \times 4568/7483))) = 1.9 \times 10^{-9}$$

PWR TAD canister absorber misload

$$1.2 \times 10^{-4} \times (1 - P_B(0; 1.25 \times 10^{-7}, (19.4 \times 4568/7483))) + 4.3 \times 10^{-4} \times (1 - P_B(0; 1.25 \times 10^{-7}, (27.6 \times 4568/7483))) + 1.7 \times 10^{-4} \times (1 - P_B(0; 1.25 \times 10^{-7}, (32.1 \times 4568/7483))) = 1.4 \times 10^{-9}$$

44-BWR TAD canister absorber misload

$$1.2 \times 10^{-4} \times (1 - P_B(0; 1.25 \times 10^{-7}, (19.4 \times 2915/7483))) + 4.3 \times 10^{-4} \times (1 - P_B(0; 1.25 \times 10^{-7}, (27.6 \times 2915/7483))) + 1.7 \times 10^{-4} \times (1 - P_B(0; 1.25 \times 10^{-7}, (32.1 \times 2915/7483))) = 9.0 \times 10^{-10}$$

DOE-owned SNF canister absorber misload (DOE1, DOE2, and DOE7)

$$1.0 \times 10^{-4} \times (1 - P_B(0; 1.25 \times 10^{-7}, (2.6+3.5) \times 1223/3074)) + 6.9 \times 10^{-4} \times (1 - P_B(0; 1.25 \times 10^{-7}, (3.7 + 4.9) \times 1223/3074)) + 2.8 \times 10^{-4} \times (1 - P_B(0; 1.25 \times 10^{-7}, (4.3 + 5.7) \times 1223/3074)) + 3.0 \times 10^{-5} \times (1 - P_B(0; 1.25 \times 10^{-7}, (21.6 + 28.5) \times 1223/3074)) = 4.6 \times 10^{-10}$$

- 4) The fourth paragraph on page 6-828 should be changed as follows: Thus, a conservative estimate for the probability of achieving a configuration with criticality potential in the repository resulting from a seismic faulting initiating event for commercial SNF and DOE SNF is 4.7×10^{-9} for 10,000 years.

AMR Changes for CR-12300:

- 1) On page 6-1019, 3rd line of TSPA Disposition, citation to DIRS 177394, “Sections 6.3, 6.5.5, and G5.4.3”, should be changed to the following: *Sections 6.3, 6.5.6, and G5.4.4*.

Other Changes

A typographical error was identified on p. J-142 while processing this ERD. Row 5 of Table J-3, “Description” column, “Modeling of potential ...dose is 1.8×10^{10} ” should be as follows: “Modeling of potential ... dose is 1.8×10^{10} mrem/yr”

As a result of the above changes The Table of Tables should reflect the appropriate table title modifications and Section 8.4 Output DTN: MO0706SPAFEPLA.001 submittal date should be updated to 7/16/2008.