	Scientific Analysis/Calculation Error Resolution Document *Complete only applicable items.*	QA: QA Page 1 of 20

INITIATION

1. Document Number:	ANL-WIS-MD-000027	2. Revision/Addendum:	REV 00	3. ERD:	03
4. Title:	Features, Events, and Processes for the Total System Performance Assessment: Analyses				
5. No. of Pages Attached:	19				

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

This Error Resolution Document (ERD) is provided to update the FEP Analysis AMR, Rev 00 to correct issues identified in Condition Reports (CRs) 11919, 12452, 12486, and 13051 and to correct other referencing errors identified in the process of addressing these CRs. There is no impact to the overall conclusion of the AMR caused by these minor corrections.

To satisfy CR 11919, Action 005:

1. FEP 2.1.03.01.0B, page 6-389, last paragraph, lines 5-6, "DTN: LL040803112251.117 [DIRS 171362]"

   should be changed to:

   "DTN: LL081002312251.202 [DIRS 185793]"

2. Table 2.1.03.01.0B-1, page 6-391,

DTN: LL040803112251.117	Target Compositions of Aqueous Solutions Used for Corrosion Testing	171362

should be changed to:

DTN: LL081002312251.202	Chemical Comparison of Corrosion Testing Solutions Used for Alloy C22 and Titanium at LLNL – Developed	185793

(The DIRS report will be updated accordingly.)

(continued on next page)

7. CONCURRENCE

	Printed Name	Signature	Date
Checker for	James A. Blink	Peter Persoff	01/29/2009
QCS/QA Reviewer	Peter Persoff	Peter Persoff	01/29/2009

8. APPROVAL

Originator	Thomas F. Ehrhorn	Thomas F. Ehrhorn	1/29/2009
Responsible Manager	Jerry A. McNeish	Jerry A. McNeish	1-30-09

3. FEP 2.1.03.03.0B, page 6-408, second paragraph, "Tests included exposure of samples to fluoride-bearing SCW (about 1,000x ionic concentration of J-13 well water with target composition of: 1,400 mg/L fluoride (0.07 *m*); 6,700 mg/L chloride (0.19 *m*); 6,400 mg/L nitrate (0.1 *m*); 16,700 mg/L sulfate (0.17 *m*); and 27 mg/L (0.001 *m*) to 49 mg/L (0.0017 *m*) silica at a pH value of 9.8 to 10.2 (DTN: LL040803112251.117 [DIRS 171362], file: *LL040803112251.117 Table 1.pdf*))"

   should be changed to:

   "Tests included exposure of samples to fluoride-bearing SCW (about 1,000x ionic concentration of J-13 well water with an average measured composition of: 1,260 mg/L fluoride (0.06 *M*); 6,470 mg/L chloride (0.18 *M*); 6,770 mg/L nitrate (0.11 *M*); 15,200 mg/L sulfate (0.16 *M*); and 44 mg/L (0.0016 *M*) silica at a pH value of 10.4 (DTN: LL081002312251.202 [DIRS 185793], file: *Revised_Vessel_Chem_02and04v4.xls, worksheet: Range*)."

4. Table 2.1.03.03.0B-1, page 6-410, row "SCW", column "pH", "~10"

   should be changed to:

   "10.4"

   source 3, "pH is the middle of the target value from DTN: LL040803112251.117 [DIRS 171362], file *LL040803112251.117 Table 1.pdf*"

   should be changed to:

   "pH is the average of the value for SCW, DTN: LL081002312251.202 [DIRS 185793], file: *Revised_Vessel_Chem_02and04v4.xls, worksheet: Range*"

5. Table 2.1.03.03.0B-3, page 6-413,

DTN: LL040803112251.117	Target Compositions of Aqueous Solutions Used for Corrosion Testing	171362

   should be changed to:

DTN: LL081002312251.202	Chemical Comparison of Corrosion Testing Solutions Used for Alloy C22 and Titanium at LLNL – Developed	185793

   (DIRS report will be updated accordingly.)

6. Section 8.3, page 8-73,

   delete entry:

   171362 LL040803112251.117. Target Compositions of Aqueous Solutions Used for Corrosion Testing. Submittal date: 08/14/2004.

7. Section 8.3, page 8-74, after the entry for DIRS 183159, LL070800612251.197

   add:

   185793 LL081002312251.202. Chemical Comparison of Corrosion Testing Solutions Used for Alloy C22 and Titanium at LLNL-Developed. Submittal date: 10/03/2008.

To satisfy CR 12452, Action 003:

The items below update the references as recommended by CR 12452 and also address specific issues related to parameters listed in that CR.

1. FEP 2.1.06.01.0A, page 6-505, third paragraph, lines 9-11, "*Total System Performance Assessment Data Input Package for Requirements Analysis for Subsurface Facilities* (SNL 2007 [DIRS 179466], Table 4-1, Parameter Number 01-18)".

   should be changed to:

   "*Postclosure Design Input Parameters for Subsurface Facilities* (SNL 2009 [DIRS 185407], Table 4-1, Parameter Number 01-23)".

2. FEP 2.1.06.01.0A, page, 6-505, fourth paragraph, line 10, "(SNL 2007 [DIRS 179466], Table 4-1, Parameter 01-18)"

   should be changed to:

   "(SNL 2009 [DIRS 185407], Table 4-1, Parameter 01-23)".

3. Table 2.1.06.01.0A-1, page 6-507, entry for SNL 2007, *Total System Performance Assessment Data Input Package for Requirements Analysis for Subsurface Facilities*,

   delete:

   entry for Table 4-1, Parameter 01-18. DIRS report will be updated accordingly.

4. Table 2.1.06.01.0A-1, page 6-507, after the entry for SNL 2007, *Total System Performance Assessment Data Input Package for Requirements Analysis for Subsurface Facilities*,

   add:

SNL 2009. *Postclosure Design Input Parameters for Subsurface Facilities.* [DIRS 185407].	Table 4-1, Parameter 01-23	Standoff between cementitious material and waste packages.

   (DIRS report will be updated accordingly.)

5. FEP 2.1.06.07.0B, page 6-542, Screening Justification, third paragraph, lines 4-6, "*Total System Performance Assessment Data Input Package for Requirements Analysis for Engineered Barrier System In-Drift Configuration* (SNL 2007 [DIRS 179354], Table 4-1, Parameter Number 02-03)"

   should be changed to:

   "*Postclosure Design Input Parameters for Engineered Barrier System In-Drift Configuration* (SNL 2008 [DIRS 185406], Table 4-1, Parameter Number 02-03)".

6. FEP 2.1.06.07.0B, Page 6-542, Screening Justification, third paragraph, lines 7-10, "*Total System Performance Assessment Data Input Package for Requirements Analysis for Engineered Barrier System In-Drift Configuration* (SNL 2007 [DIRS 179354], Table 4-1, Parameter Numbers 02-01 and 02-02)"

   should be changed to:

   "*Postclosure Design Input Parameters for Engineered Barrier System In-Drift Configuration* (SNL 2008 [DIRS 185406], Table 4-1, Parameter Numbers 02-01 and 02-02)".

7. FEP 2.1.06.07.0B, page 6-542, last paragraph, lines 1 and 2 and line 3, "SNL 2007 [DIRS 179354], Table 4-3"

   should be changed to:

   "SNL 2008 [DIRS 185406], Table 4-4".

8. FEP 2.1.06.07.0B, page 6-543, first paragraph line 1, "SNL 2007 [DIRS 179354]"

   should be changed to:

   "SNL 2008 [DIRS 185406]".

9. FEP 2.1.06.07.0B, page 6-543, first paragraph lines 3, 7, and 12 and second paragraph, lines 4 and 6, "SNL 2007 [DIRS 179354], Table 4-3"

   should be changed to:

   "SNL 2008 [DIRS 185406], Table 4-4".

10. FEP 2.1.06.07.0B, page 6-543, last paragraph, lines 5 and 6, "(SNL 2007 [DIRS 179354], Table 4-2, Parameter Numbers 07-03, 07-04, 07-08, 07-14, and 07-15)"

    should be changed to:

    "(SNL 2008 [DIRS 185406], Table 4-3, Parameter Numbers 07-04, 07-08, 07-14, and 07-15)".

11. FEP 2.1.06.07.0B, page 6-544, second paragraph, lines 2 and 3, "(SNL [DIRS 179354], Table 4-2, Parameter Number 07-07)"

    should be changed to:

    "(SNL 2008 [DIRS 185406], Table 4-3, Parameter Number 07-07)".

12. FEP 2.1.06.07.0B, page 6-544, second paragraph, line 6, "SNL 2007 [DIRS 179354]"

    should be changed to:

    "SNL 2008 [DIRS 185406]".

13. FEP 2.1.06.07.0B, page 6-544, second paragraph, lines 11-14, "*Total System Performance Assessment Data Input Package for Requirements Analysis for Engineered Barrier System In-Drift Configuration* (SNL 2007 [DIRS 179354], Table 4-1, Parameter Numbers 02-04, 02-07, and 02-08)"

    should be changed to:

    "*Postclosure Design Input Parameters for Engineered Barrier System In-Drift Configuration* (SNL 2008 [DIRS 185406], Table 4-1, Parameter Numbers 02-04, 02-07, and 02-08)".

14. FEP 2.1.06.07.0B, page 6-544, third paragraph lines 2 and 3, "(SNL 2007 [DIRS 179354], Table 4-2, Parameter Number 07-07)"

    should be changed to:

    "(SNL 2008 [DIRS 185406], Table 4-3, Parameter Number 07-07".

15. FEP 2.1.06.07.0B, page 6-544, third paragraph, lines 7, 10, and 13, "SNL 2007 [DIRS 179354], Table 4-3"

    should be changed to:

    "SNL 2008 [DIRS 185406], Table 4-4".

16. Table 2.1.06.07.0B-1, Page 6-545, column "Input", "SNL 2007. *Total System Performance Assessment Data Input Package for Requirements Analysis for EBS In-Drift Configuration.* [DIRS 179354]"

    should be changed to:

    "SNL 2008. *Postclosure Design Input Parameters for Engineered Barrier System In-Drift Configuration.* [DIRS 185406]". DIRS report should be modified accordingly.

17. Table 2.1.06.07.0B-1, Page 6-545, Column "Source", rows 3, 6, and 7, "Table 4-2"

    should be changed to:

    "Table 4-3". DIRS report should be modified accordingly.

18. Table 2.1.06.07.0B-1, Page 6-545, Column "Source", rows 5, 8, 10, 11, and 12, "Table 4-3

    should be changed to:

    "Table 4-4". DIRS report should be modified accordingly.

19. Table 2.1.06.07.0B-1, Page 6-545, Column "Source", sixth row:

    delete:

    "07-03". DIRS report should me modified accordingly.

20. Table 2.1.06.07.0B-1, page 6-546, column "Input", "SNL 2007. *Total System Performance Assessment Data Input Package for Requirements Analysis for EBS In-Drift Configuration.* [DIRS 179354]. (continued)"

    should be changed to:

    "SNL 2008. *Postclosure Design Input Parameters for Engineered Barrier System In-Drift Configuration.* [DIRS 185406]. (continued)". DIRS report will be updated accordingly.

21. Table 2.1.06.07.0B-1, Page 6-546, Column "Source", rows 1, 2, and 3, "Table 4-3"

    should be changed to:

    "Table 4-4". DIRS report should be modified accordingly.

22. Table 2.1.06.07.0B-2, page 6-546, "SNL 2007 *Total System Performance Assessment Data Input Package for Requirements Analysis for EBS In-Drift Configuration* 179354"

    should be changed to:

    "SNL 2008 *Postclosure Design Input Parameters for Engineered Barrier System In-Drift Configuration* 185406". DIRS report will be updated accordingly.

23. FEP 2.1.14.15.0A, page 6-802, last paragraph, lines 4 and 5, "(SNL 2007 [DIRS 179394, Table 4-1, Parameter Numbers 03-07 and 03-10)"

    should be changed to:

    "(SNL 2007 [DIRS 179394], Table 4-1, Parameter Numbers 03-03 and 03-10; DOE 2008 [DIRS 185304], Section 3.1.5(2)a2)".

24. Table 2.1.14.15.0A-2, page 6-808, column "Input", seventh row, "SNL 2007. *Total System Performance Assessment Data Input Package for Requirements Analysis for TAD Canister and Related Waste Package Overpack Physical Attributes Basis for Performance Assessment.* [DIRS 179394]"

    should be changed to:

    "SNL 2007. *Total System Performance Assessment Data Input Package for Requirements Analysis for Transportation, Aging and Disposal Canister and Related Waste Package Physical Attributes Basis for Performance Assessment.* [DIRS 179394]."

    column "Source", "Table 4-1, Parameter Numbers 03-07 and 03-10"

    should be changed to:

    "Table 4-1, Parameter Numbers 03-03 and 03-10". DIRS report will be updated accordingly.

25. Table 2.1.14.15.0A-2, page 6-808, between the rows for Radulescu et al. and SNL 2007

add the following entry:

DOE 2008. *Transportation, Aging and Disposal Canister System Performance Specification.* [DIRS 185304]	Section 3.1.5(2)a2	Minimum thickness of the neutron absorber materials

(DIRS report will be updated accordingly.)

26. Page 8-54, after the entry for DIRS number 179962,

add:

"185406 SNL 2008. *Postclosure Design Input Parameters for Engineered Barrier System In-Drift Configuration.* ANL-EBS-PA-000011. Las Vegas, Nevada: Sandia National Laboratories. ACC: DOC.20081119.0010."

"185407 SNL 2009. *Postclosure Design Input Parameters for Subsurface Facilities.* ANL-EBS-PA-000012. Las Vegas, Nevada: Sandia National Laboratories.

27. Table A-1, page A-3, entry for Control Parameter 01-07, column "Control Parameter."

delete:

"Repository Standoff from Perched Water"

column "Representative FEPs Relying on Design/Control Parameter."

delete:

"FEP 2.2.06.03.0A – Seismic Activity Alters Perched Water Zones (Excluded)*"

column, "Control Parameter Use in Performance Assessment."

change entry to:

"Not used"

28. Table A-1, page A-5, entry for control parameter 01-18, column "Representative FEPs Relying on Design/Control Parameter",

delete:

"FEP 2.1.06.01.0A – Chemical Effects of Rock Reinforcement and Cementitious Materials in EBS (Excluded)"

29. Table A-1, page A-5, entry for control parameter 01-18, column "Control Parameter Use in Performance Assessment",

delete:

"Supports basis for FEP exclusion".

30. Table A-1, page A-5, After the entry for parameter 01-22,

add:

01-23 Cementitious Material Standoff from Emplaced Waste	• FEP 2.1.06.01.0A -- Chemical Effects of Rock Reinforcement and Cementitious Materials in EBS (Excluded)	Supports basis for FEP exclusion

31. Table A-1, Page A-8, Control Parameter 03-03, Waste Package Outer Barrier Material and Thickness, column "Representative FEPs Relying on Design/Control Parameter"

add:

FEP 2.1.14.15.0A – In-Package Criticality (Intact Configuration) (Excluded)

32. Table A-1, page A-9, Control Parameter 03-07, Waste Package Corrosion Allowance, column "Control Parameter"

delete:

"Waste Package Corrosion Allowance"

column "Representative FEPs Relying on Design/Control Parameter"

delete:

FEP 1.2.03.02.0A – Seismic Ground Motion Damages EBS Components*

FEP 2.1.03.01.0A – General Corrosion of Waste Packages

FEP 2.1.14.15.0A – In-Package Criticality (Intact Configuration) (Excluded)

column "Control Parameter Use in Performance Assessment", ""Supports the basis for performance assessment initial conditions. Supports basis for FEP exclusion."

should be changed to:

"Not used"

<u>While conducting an effectiveness review for CR 12452, the following additional referencing errors were found:</u>

1. FEP 2.2.08.03.0B, page 6-992, second paragraph, lines 9 through end, "Modeling of colloid transport is discussed in *Particle Tracking Model and Abstraction of Transport Processes* (SNL 2008 [DIRS 184748], Sections 6.4.5, 6.5.12, and 6.5.13). The cumulative probability distribution for colloid concentrations as a function of ionic strength, based on available data, spans five orders of magnitude for water with ionic strength less than 0.05 M (SNL 2008 [DIRS 184748], Section 6.5.12, Table 6-21), indicating that variability in ionic strength below this limit will not have a strong effect on colloid transport because colloid concentrations are so variable. Colloid concentration for water with ionic strength greater than 0.05 M is set to 10^{-6}, lower than the values for water with lower ionic strength (SNL 2008 [DIRS 184748], Section 6.5.12, Table 6-21). Therefore, higher ionic strength waters would inhibit colloid transport, but such waters are expected to be present in small amounts that don't last long as described above."

should be changed to:

"Modeling of colloid transport is discussed in *Particle Tracking Model and Abstraction of Transport Processes* (SNL 2008 [DIRS 184748], Sections 6.4.5, 6.5.12, and 6.5.13). The cumulative probability distribution for colloid concentrations as a function of ionic strength, based on available data, spans five orders of magnitude for water with ionic strength below a threshold discussed in Table 6-13 of SNL 2007 [DIRS 177423], indicating that variability in ionic strength below this limit will not have a strong effect on colloid transport because colloid concentrations are so variable (SNL 2008 [DIRS 184748], Section 6.5.12, Table 6-21). Colloid concentration for water with ionic strength greater than this limit is set to 10^{-6} mg/L (SNL 2007 [DIRS 177423], Table 6-13), lower than the values for water with lower ionic strength (SNL 2008 [DIRS 184748], Section 6.5.12, Table 6-21). Therefore, higher ionic strength water would inhibit colloid transport, but such waters are expected to be present in small amounts that don't last long as described above."

2. Table A-1, Page A-11, Control Parameter 03-25, Waste Package Early Failure, Column "Control Parameter",

   delete:

   Waste Package Failure

3. Table A-1, Page A-11, Control Parameter 03-26, Waste Form Moisture Removal and Inerting, Column "Representative FEPs Relying on Design/Control Parameter", "FEP 2.2.12.04.0A"

   should be changed to:

   "FEP 2.1.12.04.0A"

4. Table A-1, Page A-11, Control Parameter 04-04, Waste Form Moisture Removal and Inerting, Column "Representative FEPs Relying on Design/Control Parameter", "FEP 2.2.12.04.0A"

   should be changed to:

   "FEP 2.1.12.04.0A"

5. Appendix J, Section J39.1 (FEP 2.2.10.14.0A), first paragraph fourth line (page J-111), "[DIRS 184454]".

   should be changed to:

   "[DIRS 174060]".

To satisfy CR 12486, Action 001:

1. FEP 1.1.01.01.0B, page 6-24, Screening Justification, first paragraph, second line, "(SNL 2007 [DIRS 179354], Table 4-1, Parameter 01-15)."

   should be changed to:

   "(SNL 2008 [DIRS 185406], Table 4-1, Parameter Number 01-15)."

2. FEP 1.1.01.01.0B, page 6-24, Screening Justification, first paragraph, lines 15-16, "(SNL 2007 [DIRS 179354], Table 4-1, Parameter Numbers 01-15 and 01-16)."

   should be changed to:

   "(SNL 2008 [DIRS 185406], Table 4-1, Parameter Number 01-15)."

3. Table 1.1.01.01.0B-2, page 6-25, last row, "SNL 2007 *Total System Performance Assessment Data Input Package for Requirements Analysis for EBS In-Drift Configuration* 179354"

   should be changed to:

   "SNL 2008 *Postclosure Design Input Parameters for Engineered Barrier System In-Drift Configuration* 185406" DIRS report should be updated accordingly.

4. FEP 2.1.09.01.0B, page 6-618, TSPA Disposition, second paragraph, lines 5-6, "(SNL 2007 [DIRS 179394], Table 4-1, Parameter Number 04-07; SNL 2007 [DIRS 179567], Table 4-1, Parameter Number 04-07)."

   should be changed to :

   "(SNL 2007 [DIRS 179394], Table 4-1, Parameter Numbers 03-01, 03-02, and 04-07; SNL 2007 [DIRS 179567], Table 4-1, Parameter Numbers 03-01, 03-02, and 04-07)."

5. FEP 2.1.11.03.0A, page 6-725, last paragraph, lines 11-12, ". . . from SNL 2007 [DIRS 179466], Table 4-1, Parameter Number 01-02))."

   should be changed to:

   ". . . from SNL 2007 [DIRS 179567], Table 4-1, Parameter Number 03-11))."

6. FEP 2.1.11.03.0A, page 6-726, first paragraph, line 4, "(SNL 2007 [DIRS 179466], Table 4-1, Parameter Number 01-02)"

   should be changed to:

   "(SNL 2007 [DIRS 179567], Table 4-1, Parameter Number 03-11)"

7. FEP 2.1.11.03.0A, page 6-728, second paragraph, lines 1-3, "*Total System Performance Assessment Data Input Package for Requirements Analysis for Engineered Barrier System In-Drift Configuration* (SNL 2007 [DIRS 179354], Table 4-4, Parameter Number 05-04)"

   should be changed to:

   "*Postclosure Design Input Parameters for Engineered Barrier System In-Drift Configuration* (SNL 2008 [DIRS 185406], Table 4-1, Parameter Numbers 01-15 and 02-03; Table 4-2, Parameter Number 05-04)"

8. Table 2.1.11.03.0A-1, page 6-729, column "Input", last row, "SNL 2007 *Total System Performance Assessment Data Input Package for Requirements Analysis for Subsurface Facilities* [DIRS 179466]"

   should be changed to:

   "SNL 2007 *Total System Performance Assessment Data Input Package for Requirements Analysis for DOE SNF/HLW and Naval SNF Waste Package Physical Attributes Basis for Performance Assessment* [DIRS 179567]". DIRS report should be updated accordingly.

   Column "Input", third row, "SNL 2007. *Total System Performance Assessment Data Input Package for Requirements Analysis for EBS In-Drift Configuration.* [DIRS 179354]"

   should be changed to:

   "SNL 2008. *Postclosure Design Input Parameters for Engineered Barrier System In-Drift Configuration.* [DIRS 185406]". DIRS report should be updated accordingly.

   Column, "Source" third row, "Parameter Number 05-04"

   should be changed to:

   "Table 4-1, Parameter Numbers 01-15 and 02-03; Table 4-2, Parameter Number 05-04" DIRS report should be updated accordingly.

   Column "Source", last row, "Table 4-1, Parameter Number 01-02"

   should be changed to:

   "Table 4-1, Parameter Number 03-11" DIRS report should be updated accordingly.

9. Table A-1, page A-2, Control Parameter 01-02, Repository Layout, column "Representative FEPs Relying on Design/Control Parameter"

   delete:

   "FEP 2.1.11.03.0A – Exothermic Reactions in the EBS (Excluded)"

10. Table A-1, Page A-4, Control Parameter 01-15, Design of Ground Support System, column "Representative FEPs Relying on Design/Control Parameter"

    add:

    "FEP 2.1.11.03.0A – Exothermic Reactions in the EBS (Excluded)"

11. Table A-1, page A-4, Control Parameter 01-16, Air Circulation Through Ground Support, column "Representative FEPs Relying on Design/Control Parameter"

    delete:

    "FEP 1.1.01.01.0B – Influx Through Holes Drilled in Drift Wall or Crown (Excluded)"

12. Table A-1, page A-6, Control Parameter 02-03, Committed Materials, column "Representative FEPs Relying on Design/Control Parameter"

    add:

    "FEP 2.1.11.03.0A – Exothermic Reactions in the EBS (Excluded)"

13. Table A-1, page A-8, Control Parameter 03-01, Waste Package Dimensions and Component Masses, column "Representative FEPs Relying on Design/Control Parameter"

    add:

    "FEP 2.1.09.01.0B – Chemical Characteristics of Water in Waste Package"

14. Table A-1, page A-8, Control Parameter 03-02, Waste Package Quantities, column "Representative FEPs Relying on Design/Control Parameter"

    add:

    "FEP 2.1.09.01.0B – Chemical Characteristics of Water in Waste Package"

15. Table A-1, page A-9, Control Parameter 03-11, Waste Package Decay Heat, column "Representative FEPs Relying on Design/Control Parameter"

    add:

    "FEP 2.1.11.03.0A – Exothermic Reactions in the EBS (Excluded)"

    column "Control Parameter Use in Performance Assessment"

    add:

    "Supports basis for FEP exclusion"

16. Table A-1, page A-10, Control Parameter 03-20, Materials Contacting the Waste Package, column "Representative FEPs Relying on Design/Control Parameter"

    add:

    "FEP 2.1.03.01.0A – General Corrosion of Waste Packages*

    FEP 2.1.03.03.0A – Localized Corrosion of Waste Packages*"

    column "Control Parameter Use in Performance Assessment"

    add:

    "Supports the basis for performance assessment initial conditions"

During the checking process for this Error Resolution Document, a number of minor consistency errors between the FEP text and Table A-1 were noted. The following modifications to Table A-1 will correct those errors:

1. Add the following Control Parameter – FEP pairs to Table A-1

Control Parameter 01-01
- FEP 2.2.07.05.0A – Flow in the UZ from Episodic Infiltration (Excluded)

Control Parameter 01-03
- FEP 1.1.07.00.0A – Repository Design

Control Parameter 01-06
- FEP 1.2.05.00.0A – Metamorphism (Excluded)

Control Parameter 01-10
- FEP 2.1.09.27.0A Coupled Effects on Radionuclide Transport in EBS (Excluded)

Control Parameter 01-13
- FEP 1.1.07.00.0A – Repository Design

Control Parameter 01-15
- FEP 1.1.02.00.0A – Chemical Effects of Excavation and Construction in EBS (Excluded)

Control Parameter 01-21
- FEP 1.5.01.01.0A – Meteorite Impact (Excluded)

Control Parameter 02-01
- FEP 2.1.09.27.0A – Coupled Effects on Radionuclide Transport in EBS (Excluded)

Control Parameter 02-02
- FEP 2.1.09.27.0A – Coupled Effects on Radionuclide Transport in EBS (Excluded)

Control Parameter 02-07
- FEP 2.1.06.05.0D – Chemical Degradation of Invert (Excluded)

Control Parameter 03-01
- FEP 2.1.02.09.0A – Chemical Effects of Void Space in Waste Package

Control Parameter 03-03
- FEP 1.1.07.00.0A – Repository Design
- FEP 2.1.06.05.0A – Mechanical Degradation of Emplacement Pallet (Excluded)
- FEP 2.1.08.15.0A – Consolidation of EBS Components (Excluded)

Control Parameter 03-04
- FEP 1.1.07.00.0A – Repository Design

Control Parameter 07-01
- FEP 2.1.09.27.0A – Coupled Effects on Radionuclide Transport in EBS (Excluded)
- FEP 2.1.09.28.0B – Localized Corrosion on Drip Shield Surfaces Due to Deliquescence (Excluded)

2. Delete the asterisk ("*") from the following FEPs:

Control Parameter 01-12

FEP 2.1.08.12.0A – Induced Hydrologic Changes in Invert (Excluded)*

Control Parameter 03-04

FEP 2.1.09.03.0B – Volume Increase of Corrosion Products Impacts Waste Package (Excluded)*

3. Add an asterisk ("*") to the following FEPs:

Control Parameter 01-01

FEP 1.1.07.00.0A – Repository Design

Control Parameter 01-06

FEP 1.4.11.00.0A – Explosions and Crashes (Human Activities) (Excluded)

Control Parameter 01-15

FEP 2.2.08.03.0B – Geotechnical Interactions and Evolution in the UZ (Excluded)

Control Parameter 02-03

FEP 2.1.09.02.0A – Chemical Interaction with Corrosion Products

FEP 2.1.09.17.0A – Formation of Pseudo-Colloids (Corrosion Product) in EBS

Control Parameter 02-05

FEP 2.1.09.02.0A – Chemical Interaction with Corrosion Products

Control Parameter 02-06

FEP 2.1.09.02.0A – Chemical Interaction with Corrosion Products

Control Parameter 02-08

FEP 2.1.09.02.0A – Chemical Interaction with Corrosion Products

Control Parameter 03-01

FEP 1.1.07.00.0A – Repository Design

FEP 1.1.08.00.0A – Inadequate Quality Control and Deviations for Design (Excluded)

FEP 2.1.02.08.0A – Pyrophoricity from DSNF (Excluded)

FEP 2.1.03.06.0A – Internal Corrosion of Waste Packages Prior to breach (Excluded)

FEP 2.1.03.11.0A – Physical Form of Waste Package and Drip Shield

FEP 2.1.09.03.0B – Volume Increase of Corrosion Products Impacts Waste Packages (Excluded)

FEP 2.1.09.09.0A – Electrochemical Effects in EBS (Excluded)

FEP 2.1.11.07.0A – Thermal Expansion/Stress of In-Drift EBS Components (Excluded)

FEP 2.1.12.03.0A – Gas Generation (H_2) from Waste Package Corrosion (Excluded)

FEP 2.1.13.01.0A – Radiolysis (Excluded)

Control Parameter 03-03

FEP 1.1.08.00.0A – Inadequate Quality Control and Deviations from Design (Excluded)

FEP 1.2.03.02.0A – Seismic Ground Motion Damages EBS Components

Control Parameter 03-06
- FEP 2.1.03.07.0A – Mechanical Impact on Waste Package (Excluded)
- FEP 2.1.13.01.0A – Radiolysis (Excluded)

Control Parameter 03-10
- FEP 2.1.13.01.0A – Radiolysis (Excluded)

Control Parameter 03-18
- FEP 2.1.03.02.0A – Stress Corrosion Cracking (SCC) of Waste Packages

Control Parameter 03-20
- FEP 2.1.09.09.0A – Electrochemical Effects in EBS (Excluded)

Control Parameter 03-26
- FEP 2.1.02.09.0A – Chemical Effects of Void Space in Waste Package
- FEP 2.1.03.06.0A – Internal Corrosion of Waste Packages Prior to Breach (Excluded)
- FEP 2.1.13.01.0A – Radiolysis (Excluded)
- FEP 2.1.14.15.0A – In-Package Criticality (Intact Configuration) (Excluded)[1]
- FEP 2.1.12.04.0A[2] - Gas Generation (CO_2, CH_4, H_2S) from Microbial Degradation (Excluded)

Control Parameter 04-01
- FEP 2.1.03.06.0A – Internal Corrosion of Waste Packages Prior to Breach (Excluded)
- FEP 2.1.11.07.0A – Thermal Expansion/Stress of In-Drift EBS Components (Excluded)

Control Parameter 04-04
- FEP 2.1.02.09.0A – Chemical Effects of Void Space in Waste Package

Control Parameter 04-07
- FEP 2.1.01.01.0A – Waste Inventory
- FEP 2.1.01.02.0A – Interactions Between Co-Located Waste (Excluded)
- FEP 2.1.02.29.0A – Flammable Gas Generation from DSNF (Excluded)
- FEP 2.1.03.06.0A – Internal Corrosion of Waste Packages Prior to Breach (Excluded)
- FEP 2.1.11.07.0A – Thermal Expansion/Stress of In-Drift EBS Components (Excluded)
- FEP 2.1.14.15.0A – In-Package Criticality (Intact Configuration) (Excluded)

Control Parameter 04-09
- FEP 2.1.02.10.0A – Organic/Cellulosic Materials in Waste (Excluded)
- FEP 2.1.09.03.0B – Volume Increase of Corrosion Products Impacts Waste Package (Excluded)
- FEP 2.1.12.04.0A – Gas Generation (CO_2, CH_4, H_2S) from Microbial Degradation (Excluded)

Control Parameter 06-01
- FEP 1.1.09.00.0A – Schedule and Planning
- FEP 2.2.01.03.0A – Changes in Fluid Saturations in the Excavation Disturbed Zone (Excluded)

[1] "(Excluded)" comes from ACN-01 and will not be in the main ANL-WIS-MD-000027
[2] Changed from FEP 2.2.12.04.0A in this ERD.

Control Parameter 06-06
- FEP 1.1.02.00.0A – Chemical Effects of Excavation and Construction in EBS (Excluded)

Control Parameter 07-01
- FEP 2.1.03.04.0B – Hydride Cracking of Drip Shields (Excluded)
- FEP 2.1.06.06.0A – Effects of Drip Shield on Flow
- FEP 2.1.03.11.0A – Physical Form of Waste Package and Drip Shield

Control Parameter 07-02
- FEP 2.1.06.06.0A – Effects of Drip Shield on Flow

Control Parameter 07-04
- FEP 1.1.07.00.0A – Repository Design
- FEP 2.1.03.05.0B – Microbially Influenced Corrosion (MIC) of Drip Shields (Excluded)
- FEP 2.1.09.28.0B – Localized Corrosion on Drip Shield Surfaces Due to Deliquescence (Excluded)

Control Parameter 07-07
- FEP 2.1.03.04.0B – Hydride Cracking of Drip Shields (Excluded)
- FEP 2.1.03.09.0A – Copper Corrosion in EBS (Excluded)

Control Parameter 07-12
- FEP 2.1.03.04.0B – Hydride Cracking of Drip Shields (Excluded)

Control Parameter 07-16
- FEP 1.2.03.02.0B – Seismic-Induced Rockfall Damages EBS Components (Excluded)

Control Parameter 08-01
- FEP 1.2.03.02.0B – Seismic-Induced Rockfall Damages EBS Components (Excluded)
- FEP 2.1.03.09.0A – Copper Corrosion in EBS (Excluded)
- FEP 2.1.08.07.0A – Unsaturated Flow in the EBS
- FEP 2.1.11.07.0A – Thermal Expansion/Stress of In-Drift EBS Components (Excluded)

Control Parameter 08-02
- FEP 2.1.03.09.0A – Copper Corrosion in EBS (Excluded)
- FEP 2.1.08.07.0A – Unsaturated Zone Flow in the EBS

Control Parameter 08-03
- FEP 2.1.03.09.0A – Copper Corrosion in EBS (Excluded)

Control Parameter 09-01
- FEP 1.1.09.00.0A – Schedule and Planning

Control Parameter 09-03
- FEP 1.1.01.01.0A – Open Site Investigation Boreholes (Excluded)

To satisfy CR 13051, Action 001:

1. FEP 2.1.03.10.0A, page 6-459, last paragraph, third line, "[DIRS 183148]"

   should be changed to:

   "[DIRS 185275]"

2. FEP 2.1.03.10.0A, page 6-459, last paragraph, seventh line, "[DIRS 183148]"

   should be changed to:

   "[DIRS 185275]"

3. FEP 2.1.03.10.0A, page 6-460, first paragraph, fifth line, "[DIRS 183148]"

   should be changed to:

   "[DIRS 185275]"

4. Table 2.1.03.10.0A-1, page 6-464, row 1, "[DIRS 183148]"

   should be changed to:

   "[DIRS 185275]". DIRS will be updated accordingly.

5. FEP 2.1.03.10.0B, page 6-474, third paragraph, fifth line, "[DIRS 183148]"

   should be changed to:

   "[DIRS 185275]"

6. Table 2.1.03.10.0B-1, page 6-478, after the entry for MO0501BPVELEMP.001

   add:

DTN: MO0703PASDSTAT.001. Statistical Analyses for Seismic Damage Abstractions. [DIRS 185275]	file: *DS Damaged Area with Rubble.xls*, worksheet: "1.05 ms PGV – Case 2 BCs," cells: M57 to M68 and worksheet: "1.05 ms PGV – Case 1 BCs," cells: M54 to M65	The drip shields are not subject to SCC damage from the 1.05 m/s PGV level ground motions.

   (DIRS will be updated accordingly.)

7. FEP 2.1.14.19.0A, page 6-821, first paragraph after numbered list, fifth line, "[DIRS 183148]"

   should be changed to:

   "[DIRS 185275]"

8. Table 2.1.14.19.0A-3, page 6-822, caption, "[DIRS 183148]"

   should be changed to:

   "[DIRS 185275]"

9. Table 2.1.14.19.0A-10, page 6-829, fourth row, "[DIRS 183148]"

   should be changed to:

   "[DIRS 185275]". DIRS will be updated accordingly.

10. Page 8-76, entry for 183148

    should be changed to:

    185275 MO0703PASDSTAT.001. Statistical Analyses for Seismic Damage Abstractions. Submittal date: 03/17/2008.

11. Page C-3, Section C.2.2, first paragraph, fifth line, "[DIRS 183148]"

    should be changed to:

    "[DIRS 185275]"

12. Page C-4, Section C.2.2, last paragraph, third line, "[DIRS 183148]"

    should be changed to:

    "[DIRS 185275]"

13. Page C-5, Section C.2.2.1, second paragraph, fourth line, "[DIRS 183148]"

    should be changed to:

    "[DIRS 185275]"

14. Page C-5, Section C.2.2.1, third paragraph, fifth line, "[DIRS 183148]"

    should be changed to:

    "[DIRS 185275]"

15. Page C-6, Section C.2.3.1, last line, "[DIRS 183148]"

    should be changed to:

    "[DIRS 185275]"

16. Page C-7, Section C.2.3.1, second paragraph, fourth line, "[DIRS 183148]"

    should be changed to:

    "[DIRS 185275]"

17. Page C-15, Table C-2, second row, "[DIRS 183148]"

    should be changed to:

    "[DIRS 185275]"

18. Page C-16, Table C-2, first row, "[DIRS 183148]"

    should be changed to:

    "[DIRS 185275]"

19. Page C-16, Table C-2, entry for DIRS 185275,

    add an entry:

    Source: "Files: *DS Damaged Areas with Rubble.xls* and *Nonlith Damage Abstraction for DS.xls*"; Description: "Seismically damaged area on the drip shield as provided by the seismic consequence abstraction analysis".

Other Changes:

As a result of this ERD, an update was submitted to DTN: MO0706SPAFEPLA.001.

Section 8.4 Output DTN: MO0706SPAFEPLA.001 submittal date should be updated to 1/27/2009.

Impact Evaluation/Results:

The corrections to the individual FEPs, their respective input tables and Appendices A, C, and J do not impact the conclusions or output from *Features, Events, and Processes for the Total System Performance Assessment: Analyses* or any of its downstream documents. The Safety Analysis Report will require updating, specifically to Table 2.2-3, to reflect the changes made to Table A-1. *Postclosure Nuclear Safety Design Basis Document* (ANL-WIS-MD-000024) will have an Error Resolution Document (ERD) to address these and other changes as stated in CRs 12452 and 12486. *Total System Performance Assessment Data Input Package for Requirements Analysis for Transportation Aging and Disposal Canister and Related Waste Package Physical Attributes Basis for Performance Assessment*, TDR-TDIP-ES-000006 and *Total System Performance Assessment Data Input Package for Requirements Analysis for Subsurface Facilities*, TDR-TDIP-PA-000001 are being replaced by analysis reports ANL-EBS-PA-000011 and ANL-EBS-PA-000012. The analysis reports will address the changes noted in this ERD. An update will be required for DTN: MO0706SPAFEPLA.001, *FY 2007 LA FEP List and Screening*.

The following controlled documents that cite ANL-WIS-MD-000027 REV 00 [DIRS 183041] were checked for impacts as a result of these corrections:

- ANL-EBS-MD-000033, Rev 06, *Engineered Barrier System, Physical and Chemical Environment*
- ANL-EBS-MD-000049, Rev 03, Addendum 01, *Multiscale Thermohydrologic Model*
- ANL-EBS-PA-000011, Rev 00, *Postclosure Design Input Parameters for Engineered Barrier System In-Drift Configuration*
- ANL-NBS-HS-000057, Rev 00, *Postclosure Analysis of the Range of Design Thermal Loadings*

- ANL-WIS-MD-000024, Rev 01, *Postclosure Nuclear Safety Design Bases*
- ANL-WIS-MD-000026, Rev 00, *Features, Events, and Processes for the Total System Performance Assessment: Methods*
- CAL-DN0-NU-000002, Rev 00C, *Waste Package Flooding Probability Evaluation*
- MDL-MGR-HS-000001, Rev 00, ACN 01, *Irrigation Recycling Model*
- MDL-MGR-MD-000001, Rev 02, *Biosphere Model Report*
- MDL-NBS-HS-000011, Rev 03, *Saturated Zone Site Scale Flow Model*
- MDL-WIS-PA-000005, Rev 00, *Total System Performance Assessment Model/Analysis for the License Application – Volume I*
- MDL-WIS-PA-000005, Rev 00, *Total System Performance Assessment Model/Analyses for the License Application – Volume III*
- TDR-PCS-SE-000001, Rev 05, Addendum 01, *Performance Confirmation Plan*