From:	Keith Axler [kaxler@cnwra.swri.edu]
Sent:	Wednesday, May 21, 2008 11:19 AM
To:	Hipolito Gonzalez
Attachments:	ReviewFEPs_kickoff.ppt

Keith Axler, Ph.D.
Manager, Corrosion Science and Process Engineering
CNWRA
Southwest Research Institute
6220 Culebra Rd
San Antonio, TX 78238-5166
Ph (210) 522-2951
http://www.swri.org/4org/d20/home/expertise/cspeserv.htm

Review of FEPs

B. Leslie and O. Pensado

Objective

- Study FEP AMRs to prepare for a LA review and implement team review strategies
  - FEP: feature, event, and process

- Identify excluded critical FEPs with screening arguments that may require additional technical basis
  - Discuss critical FEPs among relevant ISIs
    - Documentation: internal notes and power point presentations

Critical FEP

- FEP with the potential to significantly affect dose estimates

Approach

- Resolve FEP assignments to ISIs
- Read FEP Analysis Model Reports (AMR)
- Gather notes
- Discuss notes
- Identify excluded "critical" FEPs with issues in screening arguments

DOE Documents

Acronym	Title	Tracking	Public version	Date	LSO Version	Date
Bio	Evaluation of Features, Events, and Processes (FEP) for the Biosphere Model	ANL-MGR-MD-000011	REV 04	Oct-04	REV 05	Jul-05
Clad	Clad Degradation - FEPs Screening Arguments	ANL-WIS-MD-000008	REV 02	Oct-04		
Crit	Screening Analysis of Criticality Features, Events, and Processes for License Application	ANL-EBS-NU-000008	REV 01	Oct-04		
DE	Features, Events, and Processes: Disruptive Events	ANL-WIS-MD-000005	REV 02	Nov-04	REV 03	Aug-05
EBS	Engineered Barrier System Features, Events, and Processes	ANL-WIS-PA-000002	Rev 05 ACN 01	Aug-05		
SYS	Features, Events, and Processes: System Level	ANL-WIS-MD-000019	REV 02	Oct-04	Rev 02 ACN 01	Feb-05
SZ	Features, Events, and Processes in SZ Flow and Transport	ANL-NBS-MD-000002	REV 04	Aug-05		
UZ	Features, Events, and Processes in UZ Flow and Transport	ANL-NBS-MD-000001	REV 04	Aug-05		
WF	Waste Form Features, Events, and Processes	ANL-WIS-MD-000009	REV 02 ACN 01	Feb-05		
WP	FEPs Screening of Processes and Issues in Drip Shield and Waste Package Degradation	ANL-EBS-PA-000002	REV 03	Oct-04	REV 05	Sep-05
Other FEP documents						
	Analysis of Dust Deliquescence for Fep Screening	ANL-EBS-MD-000074	REV 01	Aug-05		
	The Development of the Total System Performance Assessment-license Application Features, Events, and Processes	TDR-WIS-MD-000003	REV 02	Aug-05		

Public versions available at http://www.osti.gov/bridge/advancedsearch.jsp
And at X:\FEPs, where "X" is your mapped shared NRC/Center drive

5

Spreadsheet with ISI assignments

Tracking No	FEP Title	ENG1	ENG2	ENG3	ENG4	UZ1	UZ2	UZ3	SZ1	SZ2
0.1.02.00.0A	Timescales of concern									
0.1.03.00.0A	Spatial domain of concern									
0.1.09.00.0A	Regulatory requirements and exclusions	X	X	X	X	X	X	X	X	X
0.1.10.00.0A	Model and data issues									
1.1.01.01.0A	Open-site investigation boreholes					X	X			
1.1.01.01.0B	Influx through holes drilled in drift wall or crown			X			X			
1.1.02.00.0A	Chemical effects of excavation and construction in the engineered barrier system			X	X		X	X		
1.1.02.00.0B	Mechanical effects of excavation and construction in the engineered barrier system		X							
1.1.02.01.0A	Site flooding (during construction and operation)					X				
1.1.02.02.0A	Preclosure ventilation		X				X			
1.1.02.03.0A	Undesirable materials left	X		X	X		X	X		
1.1.03.01.0A	Error in waste emplacement	X	X		X					
1.1.03.01.0B	Error in backfill emplacement		X							
1.1.04.01.0A	Incomplete closure						X			
1.1.05.00.0A	Records and markers for the repository									
1.1.07.00.0A	Repository design	X	X	X	X		X			
1.1.08.00.0A	Inadequate quality control and deviations from design	X	X	X	X					
1.1.09.00.0A	Schedule and planning									
1.1.10.00.0A	Administrative control of the repository site									
1.1.11.00.0A	Monitoring of the repository					X				

Spreadsheet available at X:\FEPs\FEPList.v01.xls

6

Approach

- ## FEPs overlap with multiple ISIs
  - Excel spreadsheet available identifying FEP-ISI correspondence
  - Each ISI should read all of the FEPs assigned to the ISI
  - AMR document indicated in the spreadsheet for each FEP
- ## ISI FEP assignment may be imperfect
  - Provide feedback on assignments
  - Provide feedback on FEP leads (leads can switch but all ISI must take some "weird" FEPs)
  - Feedback expected by <u>late October</u>
- ## One lead ISI per FEP
  - Lead in charge of consolidating input from multiple ISIs
  - The objective is to evaluate the screening arguments from multiple relevant perspectives

Possible Issues in Screening Arguments

- Lack of consideration of processes
  - Not account for invert degradation in analyses of DS and WP mechanical performance

- Lack of consideration of disruptive scenarios
  - Seismic activity could change water flow paths

- Screening argument based on QA practices to be implemented or design arguments
  - DS will be designed to withstand a "broad" range of loads
  - WP defects will be minimized through QA practices

Possible Issues in Screening Arguments

- Called "included" but not clear how the FEP was included
  - 2.2.09.01.0B, Microbial activity in the UZ: Included
    - Included in the range of Kd values
    - Is it really included?
  - 2.2.09.01.0A, Microbial activity in the SZ: Excluded
    - Excluded because there is no evidence of microbial action
    - Is it really excluded?

- Interpretation of 10 CFR 63 by DOE

Comments

- Issues in screening arguments will occur ... however
  - Not every FEP is critical
  - The most important aspect is to verify that all critical FEPs are properly addressed in the DOE analysis

Documentation

- Internal notes (ISI leads to keep track of relevant issues)
  - What constitutes a "relevant" is to be decided by discussions
  - Excluded FEPs with concerns in screening arguments should be documented in detail
  - Included FEPs with concerns on the manner they are addressed in the TSPA should be briefly documented to generate an initial record to support model abstraction review
  - Power point presentations will be delivered to ISIs to disseminate findings of review effort

Schedule

- Leslie and Rubenstone to help