HLWYM HEmails

From: Sitakanta Mohanty
Sent: Wednesday, April 27, 2005 7:50 PM
To: Oleg Povetko; 'TSPAI-KTI'; dgute@cnwra.swri.edu; 'Randall Fedors'; 'Goodluck I Ofoegbu'; George Adams
Subject: RE: WP temperature under drift degradation scenario

Oleg,
I am interested in knowing the magnitude of the difference.
-Sitakanta

-----Original Message-----
From: Oleg Povetko [mailto:opovetko@cnwra.swri.edu]
Sent: Wednesday, April 27, 2005 6:18 PM
To: smohanty@cnwra.swri.edu; 'TSPAI-KTI'; dgute@cnwra.swri.edu; 'Randall Fedors'; 'Goodluck I Ofoegbu'; 'George Adams'
Subject: RE: WP temperature under drift degradation scenario

TPA 4.1 burnup.dat CSNF thermal output data matches Table A-17 of FEIS. The thermal output data in the table came from 1992 DOE report "Characteristics of potential repository wastes" for CSNF assemblies with representative burnup, enrichment, cooling time parameters. These representative parameters were reported in 2001 SER and, actually came from 1999 WP design bases report. Since then, due to increasing fuel burnup throughout the industry, DOE modified its waste stream projections for the repository and corresponding representative assembly characteristics. The TPA 5.1 burnup.dat CSNF thermal output corresponds to these new updated CSNF assembly representative parameters which DOE reconfirmed as recentlry as two weeks ago during one of the NRC/DOE meetings.

The bottom line is that TPA 4.1 thermal output data is outdated and has been superceeded by new data. TPA 5.1 burnup.dat CSNF thermal ouput data will not be modified. I am looking at the DOE fuel and glass thermal output now.

Oleg.

Osvaldo,

1. I am not sure why the average thermal load will change. In fact it should not (see my response #2).
2. The pay load is optimized to match the design basis thermal load.
3. Trying to have a separate thermal load for the glass waste may not be a good idea because in reality, the glass waste will be emplaced in the vicinity of the SNF packages. The glass temperature will be higher than it would be if the repository were full only with glass waste.

-Sitakanta

-----Original Message-----
From: Osvaldo Pensado [mailto:opensado@cnwra.swri.edu]
Sent: Wednesday, April 27, 2005 8:58 AM
To: dgute@cnwra.swri.edu; 'Randall Fedors'; 'Goodluck I Ofoegbu'; 'Oleg Povetko'; 'George Adams'; 'Ronald Janetzke'

Cc: 'Sitakanta Mohanty'
Subject: RE: WP temperature under drift degradation scenario

Well … the design basis is a reference value to perform computations without a final design, but chances are that after the drift spacing and the waste package distribution along drifts are defined, the average thermal load may result in a different value than the design basis.

I propose using the design basis burnup.dat that I e-mail previously as the reference file. This may be the only input file in the TPA code that is adjusted to match a design basis value (1.45 kW/m).

We should have an alternative burnup.dat, accounting for glass presence, to perform alternative analyses, without any adjusting factor.

By the way, does anyone know how the waste package payload (how much uranium per WP) was selected? Was it selected to match a target number of waste packages?

-----Original Message-----
From: Doug Gute [mailto:dgute@cnwra.swri.edu]
Sent: Wednesday, April 27, 2005 8:40 AM
To: opensado@cnwra.swri.edu; 'Randall Fedors'; 'Goodluck I Ofoegbu'; 'Oleg Povetko'; 'George Adams'; 'Ronald Janetzke'
Cc: 'Sitakanta Mohanty'
Subject: RE: WP temperature under drift degradation scenario

Osvaldo,

I'm not sure what justification, if any, there would be for using a thermal line load that is less than DOE's design basis.

Doug

-----Original Message-----
From: Osvaldo Pensado [mailto:opensado@cnwra.swri.edu]
Sent: Tuesday, April 26, 2005 6:01 PM
To: Randall Fedors; Goodluck I Ofoegbu; Douglas Gute; Oleg Povetko; George Adams; Ronald Janetzke
Cc: Sitakanta Mohanty
Subject: WP temperature under drift degradation scenario

Approach: adjusted burnup.dat to match 1.45 kW/m at 25 yr (DOE design basis)

WPSpacingAlongEmplacementDrift[m] = 5.265
WPLength[m]=5.165
Varied ThermalConductivityOfBackfillModelOne[W/(m-C)] from 0.12 to 1.0

Results: WP temperatures as high as 700 C for the low values of the thermal conductivity.

I increased the active ventilation time to 100 yr, resulting in temperatures as high as 350 C for the lowest values of the thermal conductivity.

Therefore, the scenario of active ventilation for 50 yr followed by passive ventilation for 50 yr will produce WP temperatures between 350 and 700 C.

Based on discussions with Randy, there are date supporting low values of the thermal conductivity. Thus, there is rationale to back up the selected range in thermal conductivity.

Oleg, I need you to help us to insert the glass heat source in the burnup.dat to define a better average. Probably the average load is below the 1.45 kW/m design basis.

Also, the WPs are so close to each other (10 cm apart), that only 6 subareas of the repository are populated with WPs. The 7th subarea is empty. Therefore, there is room to spread the WPs and lower the thermal output. There appears to exist some design freedom to manage lower temperatures. As of today, it appears that DOE will screen out the drift degradation scenario from the PA.

Ron, the temporary burnup.dat file is slightly different than another previously sent. Before, I did not account that TPA does logarithmic interpolation.

==========
Osvaldo Pensado, Ph.D.
Senior Research Scientist, SwRI
6220 Culebra Road. San Antonio TX 78238
(210) 522 6084
Fax: (210) 522 6081
==========

Hearing Identifier: HLW_YuccaMountain_Hold_EX
Email Number: 909

Mail Envelope Properties (00e801c54b83$c12fc720$3cc8a281)

Subject: RE: WP temperature under drift degradation scenario
Sent Date: 4/27/2005 7:49:30 PM
Received Date: 4/27/2005 7:49:41 PM
From: Sitakanta Mohanty

Created By: smohanty@cnwra.swri.edu

Recipients:
"Oleg Povetko" <opovetko@cnwra.swri.edu>
Tracking Status: None
"'TSPAI-KTI'" <TSPAI-KTI@cnwra.swri.edu>
Tracking Status: None
"dgute@cnwra.swri.edu" <dgute@cnwra.swri.edu>
Tracking Status: None
"'Randall Fedors'" <rfedors@cnwra.swri.edu>
Tracking Status: None
"'Goodluck I Ofoegbu'" <goodluck.ofoegbu@swri.org>
Tracking Status: None
"George Adams" <gadams@cnwra.swri.edu>
Tracking Status: None

Post Office: KENDER

Files	**Size**	**Date & Time**
MESSAGE	5711	4/27/2005 7:49:41 PM

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received: