HLWYM HEmails

From: Roland Benke
Sent: Friday, October 29, 2004 6:41 PM
To: Amitava Ghosh; Simon Hsiung; Goodluck Ofoegbu; Douglas Gute; Luis Ibarra; Troy Maxwell; George Adams; Biswajit Dasgupta; Oleg Povetko; Razvan Nes; Darrell Dunn; John Stamatkos; Sarah Gonzalez; Roland Benke
Cc: Asadul Chowdhury
Subject: Updates from the October 26th HP Meeting on Preclosure Issues G06-G10
Attachments: PREissuesG06-10update_10-29-04.wpd; Note-HP-01.wpd

All:

The subject files are attached. The first file provides a summary and makes reference to the second file with more details. Note that several HP action items were identified as having a lower priority.

Roland

-----Original Message-----
From: Roland Benke [mailto:rbenke@cnwra.swri.edu]
Sent: Wednesday, October 27, 2004 10:16 AM
To: 'aghosh@cnwra.swri.edu'; 'Simon Hsiung'; 'Goodluck Ofoegbu'; 'Douglas Gute'; 'Luis Ibarra'; 'Troy Maxwell'; 'George Adams'; 'Biswajit Dasgupta'; 'Oleg Povetko'; 'Razvan Nes'; 'Darrell Dunn'; 'jstam >> John Stamatakos'; 'Sarah Gonzalez'
Cc: 'Asadul Chowdhury'
Subject: Preclosure HP Meeting on October 26, 2004

All:

The Preclosure HP Group meet yesterday afternoon. Oleg Povetko, Mike Waters, and I were in attendance. We discussed Preclosure Issues G06-G10. See the attached email and file from October 18 for an indication of where the group was at a week and a half ago. We discussed the progress made in the past two weeks on the action items shown in the table. Mike Waters took the lead for summarizing yesterday's meeting and updating the status table, which I will forward on to you when it is available from Mike in a few days.

Roland

Hearing Identifier: HLW_YuccaMountain_Hold_EX
Email Number: 1185

Mail Envelope Properties (rbenke@cnwra.swri.edu20041029184000)

Subject: Updates from the October 26th HP Meeting on Preclosure Issues G06-G10
Sent Date: 10/29/2004 6:40:45 PM
Received Date: 10/29/2004 6:40:00 PM
From: Roland Benke

Created By: rbenke@cnwra.swri.edu

Recipients:
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Tracking Status: None

Post Office:

Files	**Size**	**Date & Time**
MESSAGE	1214	10/29/2004 6:40:00 PM
PREissuesG06-10update_10-29-04.wpd	26233	
Note-HP-01.wpd	16047	

Options
Priority: Standard
Return Notification: No

Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

Issue	Title	Lead	NRC Staff	CNWRA Staff	Comments
G06	Spent Nuclear Fuel Release Fraction	Ahn/Waters	Tae Ahn Mike Waters Chris Ryder Dennis Galvin	Roland Benke Oleg Povetko	**Comment:** Team met with SFPO materials experts. Several technical issues were identified related to high burnup fuel and hydride reorientation. Details of meeting will be discussed Discussions will continue with SFPO. (1) **Action**: Mike - Continue Review of DOE release fraction documents; Review release fraction methods in SFPO dry cask storage PRA (3) **Action**: Tae -Continue to Review SAND90-2406 with respect to hydride reorientation, release fractions for non-nuclear facilities, and high burn-up issues.
G07	Co-60 Inventory (Crud plus Activation of Assembly Hardware/Cladding)	Povetko	Tae Ahn Mike Waters Chris Ryder Dennis Galvin	Oleg Povetko	**Comment:** HP team discussed issue on 10/26 and discussed priority of issue. Oleg has performed some baseline calculations regarding cobalt impurities. See Note HP-01 for more details (1) **Action**: Mike - Review available DOE documentation at satellite office regarding Co-60 inventory - Low Priority Due to Lack of Resources (2) **Action**: Oleg/Mike - Consult with SFPO staff on Crud Inventory Information - Low Priority Due to Lack of Resources

Issue	Title	Lead	NRC Staff	CNWRA Staff	Comments
G08	Variations in Radionuclide Inventories	Waters/Povetko	Tae Ahn Mike Waters Chris Ryder Dennis Galvin	Oleg Povetko Roland Benke	**Comment:** HP team discussed issue on 10/26 and discussed priority of issue. SOURCES code version 4C is being installed on a new machine at Center. DOE source term documents have been requested. **Action**: Waters review DOE source term docuements when available. - Low Priority Due to Lack of Resources **Action**: Oleg - provide update on SOURCES code, as needed.
G09	Identification of Farming Locations	Benke	Mike Waters	Roland Benke	**ITEM G09 CLOSED -** HP team discussed issue on 10/26. Additional information may result from the planned field trip of the EIS Team to the site in November 2004. **Comments**: SECPOP2000 was used to examine potential identification of farming locations. Investigations revealed that identification of farming locations was not possible because the fraction of land used for farming is based on a county average. In addition, information identifying specific farming locations around Yucca Mountain was not found in the DOE documentation on biosphere modeling. Satellite images of the Yucca Mountain region were also examined for locations and estimates were made regarding the conservatisms of assuming a 11-km downwind farming location in Cat 1 event sequences. See Note HP-01 for more details on these issues.

Issue	Title	Lead	NRC Staff	CNWRA Staff	Comments
G10	Preparation for Worker Dose Evaluation	Benke/Waters	Mike Waters	Oleg Povetko Roland Benke	**Comment:** HP team discussed issue on 10/26 and discussed priority of issue. Oleg obtained information regarding source term and dose techniques used for the Diablo Caynon and Foster Wheeler ISFSIs. See Note HP-01 for more details ~~(1a.) **Action**: Oleg - look at Dry Cask Storage precedents for 10 CFR Part 20 evaluations - **COMPLETED**~~ (1b.) **Action**: Mike - look at potential techniques and precedents for 10 CFR Part 50 licensee assessments of worker doses (2.) **Action**: Oleg - use SOURCES code to assess uncertainties in neutron source term for shielding calculations that may be needed as part of a confirmatory review (3a.) **Action**: Roland - determine potential occupational dose calculations (e.g. facility locations & scenarios) for airborne releases of radioactive material that may be needed as part of a confirmatory review - Low Priority Due to Lack of Resources (3b.) **Action**: Oleg - determine potential shielding calculations (e.g. facility locations & scenarios) that may be needed as part of a confirmatory review - Low Priority Due to Lack of Resources

NOTE-HP-01
10/26/04

The following notes are draft & pre-decisional
This information does not reflect any findings or official position of the NRC

Item G07 (Oleg)

In order to examine a range and upper limit of the Co-60 content in CSNF assemblies, the Oleg performed preliminary depletion/decay calculations were conducted for PWR CSNF using SCALE4.4A code. SAS2H/ORIGEN-S modules were used for a limited number of depletion/decay steps.

The following parameters were used in the calculations:

Depletion/decay parameters	Typical assembly	Maximum assembly
Initial U load, kg	475	475
Initial U-235 enrichment, %	4	5
Initial Co content in the fuel region, g	50 (Zr clad for South Texas assembly)	160 (SS clad for South Texas assembly)
Burnup, GWD/MTU	48	80
Cooling time, years	25	5

The results for Co-60 activity were compared to results for typical assembly as reported in (CRWMS M&O. "PWR Source Term Generation and Evaluation". BBAC00000-01717-0210-00010 REV 01. CRWMS M&O. 1999a). Co-60 activity was estimated as 320 Ci by Oleg vs 313 Ci in the DOE report. The Co-60 activity for SS clad South Texas maximum assembly was calculated as 18,700 Ci which might be considered as an upper limit for Co-60 content, not as a bounding Co-60 source term. DOE value of 5,660 Ci could be a weighted average between Zr and SS clad assemblies. It is undetermined at this time. ~~The same SCALE model will be used to evaluate Co-60 crud inventory for typical and maximum assemblies.~~ (Oleg, need to confer with you about last sentence - Not sure what is meant by SCALE will be used to determine crud inventory? Data for crud comes from physical measurements and adjustments by decay time.)The activity of the Co-60 in crud on the surface area will be determined by multiplying the calculated assembly surface area by the Co-60 activity per unit surface area. For consistency with the spent fuel inventory calculations the assembly surface area from SCALE models (PWR and BWR) will be used to evaluate Co-60 crud inventory for typical and maximum assemblies. Then, the Co-60 crud

activity will be adjusted for 5, 10 or 25 years of decay for maximum, waste package and typical source terms, respectively.

Item G09 (Roland) CLOSED

1. SECPOP2000 is NRC software for extracting census data as described in NUREG/CR-6525, Rev. 1. Investigations revealed that, although population data can be obtained within sectors at various distances from a site, the fraction of land used for farming is based on a county average. These fractions are independent of the direction from a site (i.e., the same county-averaged value is presented for all sectors within the county).

2. Information identifying specific farming locations around Yucca Mountain was not found in the DOE documentation on biosphere modeling.

3. Satellite images of the Yucca Mountain region have identified specific locations of significant transpiring vegetation. Using these locations as proxies for areas of irrigation and farming, the closest distance from the Geological Repository Operations Area to significant transpiring vegetation is about 30 km. The closest distance from the Geological Repository Operations Area to the fence line is 11 km. Scoping calculations for a Category 1 event sequence indicate that assuming all the locally-produced food originates from a point 11-km downwind may overestimate the ingestion dose by a factor of about 3 and overestimate the total dose by a factor of about 2 compared to a case where all the locally-produced food is assumed to originate from a point 28-km downwind of a hypothetical release of radioactive material.
~~trip of the EIS Team to the site in November 2004.~~
Note: Additional information may result from the planned field trip of the EIS Team to the site in November 2004.

Item G10 (Oleg)

(1a) NRC SFPO applicants PG&E (Diablo Canyon ISFSI) and Foster Wheeler Inc. (Idaho ISFSI) used bounding source terms for their worker dose calculations. Foster Wheeler Inc. used ANSI/ANS-5.10 standard as a guidance to develop airborne sources. Foster Wheeler Inc. identified a number of off-normal events following guidance from ANSI/ANS-57.9-1984 for Design Events II, several accidents following the same guidance for Design Basis Events III and IV and several beyond design basis accidents. Consequences of the events were evaluated. For direct radiation shine, some limited parametric analyses were conducted, results were presented as dose rates vs distances. In order to comply with the public dose limit at the controlled site boundary PG&E had to incorporate the yearly cask placement schedule and locations of casks on storage pads into its calculations, so that cooling times for fuel were increased for later placed casks. PG&E relied heavily on HOLTEC HI-STORM 100 Cask System SAR, dose evaluations were conducted by HOLTEC Inc. for PG&E.