HLWYM PEmails

From: Panicker, Mathew
Sent: Thursday, December 06, 2007 3:25 PM
To: Waters, Michael
Subject: Fwd: radiolytic species production inside TAD
Attachments: radiolytic species production inside TAD.txt; OPUpdate-2.doc; DRAFT TAD Table of Contents Rev2.pdf

Mike:

Attached is the email that I was talking to you about from Oleg with a proposal to change the scope of Task 3. What he is proposing is to alter the task 3 to include "radiolytic species production inside TAD" which does not seem to be included in the DOE specifications for TAD.

There are new restrictions on the Technical Library for the EPRI reports. I am copying the email that I got from the NRC Library.

I will talk to Gary Vine regarding the restrictions.

-Mathew Panicker

Hearing Identifier: HLW_YM_Public_EX
Email Number: 17

Mail Envelope Properties (DC2088DF7F51A8499309AA4A35D0C1E00CC0799A99)

Subject: Fwd: radiolytic species production inside TAD
Sent Date: 12/6/2007 3:25:08 PM
Received Date: 12/6/2007 3:25:08 PM
From: Panicker, Mathew

Created By: Mathew.Panicker@nrc.gov

Recipients:
"Waters, Michael" <Michael.Waters@nrc.gov>
Tracking Status: None

Post Office: HQCLSTR02.nrc.gov

Files	**Size**	**Date & Time**
MESSAGE	501	12/6/2007 3:25:08 PM
radiolytic species production inside TAD.txt	3059	
OPUpdate-2.doc	57920	
DRAFT TAD Table of Contents Rev2.pdf	12281	

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

	SFST ACTIVITIES	BASELINE DATE	CURRENT DATE	ACTUAL DATE	GOAL/ STRATEGY
TCB	**Operations Plan for Technical Assistance in Evaluating Transportation, Aging, and Disposal Canister Designs.** TASK 1				
Solis Products:	a. Demonstrate analysis capabilities by validating FLUENT using VSC-17 and TN-24 measured data	01/31/08	01/31/08		
	b. Document validation approach.	03/31/08	03/31/08		
	c. Identify a representative TAD proof-of-concept design, develop thermal models, and perform thermal calculations	04/30/08	04/30/08		
Final Product:	d. Analyze and document thermal results of the TAD proof-of-concept design	06/30/08	06/30/08		
	TASK 2				
Lien Products:	Project Start	09/01/07			
	Note: underlined subjects are deliverables in CNWRA OP Plan. Items **a** to **g** are interim deliverables to NRC staff.				
	a. Scope of work identification – table of contents	09/12/ 07	09/12/07	09/12/07	
	b. Interim report on regulatory and staff guidance documents survey, and topics related to drying/sealing issues.	12/15/07	12/15/07		
	c. Interim report on new drying/sealing challenges of DOE TAD specifications to existing dual-purpose cask design.	01/15/08	01/15/08		
	<u>Draft Letter Report - Survey of Potential Drying/Sealing issues for TAD Design</u>	01/31/08	01/31/08		

	Presentation to NRC peer Review group on Drying/Sealing issues for TAD Design	TBD	TBD		
	d. Interim report on SARs and CoCs for existing dual-purpose casks.	03/15/08	03/15/08		
	Final Letter Report - Survey of Potential Drying/Sealing issues for TAD Design	03/31/08	03/31/08		
	e. Interim report on thermal performance related to drying/sealing process, cross-over issues from Task #1.	04/23/08	04/23/08		
	Draft Letter Report - Recommendation of Supplemental Drying/Sealing Guidance Needs for TAD design	04/31/08	04/31/08		
	f. Interim report on potential issues with regard to high burn-up fuel	05/31/08	05/31/08		
	Presentation to NRC peer Review Group	TBD	TBD		
Final Product:	g. Generate a checklist of important issues for reviewing DOE specified canister drying and sealing operations.	06/31/08	06/31/08		
	Final Letter Report - Recommendation on Supplemental Drying/Sealing Guidance Needs for TAD design	06/31/08	06/31/08		

		BASELINE DATE	CURRENT DATE	ACTUAL DATE	GOAL/ STRATEGY
	Task 3 Survey of potential spent nuclear fuel verification and qualification issues for transportation, aging and disposal design				
Panicker Products:	Project Start	09/01/2007	1/31/08		
	Underlined items are deliverables in CNWRA OP Plan.				
	a. Finalization of Table of Contents: Detailed list of tasks identified for Task 3.	09/30/2007			
	b. Review/survey of existing literature (DOE, ORNL reports, NUREGs) and NRC guidance on SNF verification and qualification (SRPs, ISGs, etc.). 10 CFR Parts 50, 63, and 71 Regulatory Criteria Application.	11/01/2007			
	c. Determination of characteristics of SNF expected to loaded in TAD: Method, Computer programs, Validation of software, Assumptions	12/1/2007	08/31/08		
	<u>Draft letter report- Survey of potential spent nuclear fuel verification and qualification issues for TAD design</u>	01/31/2006			
	<u>Presentation of spent nuclear fuel verification and qualification issues for TAD design to NRC peer review group</u>	TBD			
	<u>Final report – Survey of potential spent nuclear fuel verification and qualification issues for TAD design</u>	03/31/2008			
	d. Develop appropriately dimensioned depletion models for SNF, and perform focused depletion analysis using	04/30/2008			

	the selected software (eg. SCALE 5.1). Consideration of issues from Tasks 1, and 2				
	e. Examination of TAD loading approach at loading sites to ensure compliance with 10 CFR 63, Reliance on reactor/shipper records, Quality assurance/Inspection at SNF loading sites, Experience of SNF transportation to assess SNF condition, Summary and Conclusion	06/30/2008			
	Draft final report – Recommendation on supplemental spent nuclear fuel verification and qualification guidance needs for TAD design	07/31/2008			
	Presentation of draft report on Recommendation on supplemental spent nuclear fuel verification and qualification guidance needs for TAD design	TBD			
Final product	Final report – Recommendation on supplemental spent nuclear fuel verification and qualification guidance needs for TAD design	08/31/2008			
	rt				
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DRAFT Rev2 9/12/07

Table of Contents

1 Evaluating Transportation, Aging, and Disposal Canister Design Thermal Analysis

Abstract

1.1 Introduction
- 1.1.1 Background
- 1.1.2 Literature Survey
- 1.1.3 Objective and Scope of Work

1.2 Summary of Validation Exercise for FLUENT 6.3 Flow Solver

1.3 Brief Description of the Selected Cask (VSC-17), Associated Geometry, and Available Data

1.4 Development of the Coarse- and Medium-Grid Model Constructions for VSC-17
- 1.4.1 Computation Domain and Grid Generation
- 1.4.2 Selection of Model Parameters (Solution Schemes, Turbulence Models, Radiation Modeling, Techniques)
- 1.4.3 Parametric Studies to Establish the Adequacy of Selected Parameters
- 1.4.4 Limited Study of Grid Independence

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- 1.5.1 Storage Configuration with Vacuum
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- 1.7.2 Selection of Model Parameters Based on the Previous Validation Study
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2 Dry Cask Storage and Transportation Utilizing the Transportation, Aging, and Disposal Canister Drying and Sealing Issues

2.1 Introduction

2.2 An Initial Review of Regulatory and Staff Guidance Documents
- 2.2.1 CFR Parts 71 and 72 to Identify Regulatory Requirements With Respect to Drying and Sealing
- 2.2.2 NUREGs and ISGs Dealing with Evaluation of Cask Sealing and Drying Operations (NUREG-1536, ISG-5, ISG-11, ISG-15, and ISG-18)
- 2.2.3 Interface with Part 63 Requirements
  e.g., Cladding performance

2.3 Survey of Topics Related to Drying and Sealing
- 2.3.1 Sealing (Types of Welding Configurations)
- 2.3.2 Drying Processes (Vacuum Drying, Forced He dehydration/convection (NUREG-1536))
- 2.3.3 Leak Testing (ANSI 14.5)
- 2.3.4 Other Topics (Operational Experience, NRC Staff Experience, Inspections)

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- 2.4.1 Vendor 1 (HOLTEC-Hi-Star 100)
- 2.4.2 Vendor 2 (TransNuclear-NuHOMS 24)
- 2.4.3 Vendor 3 (NAC-UMS)
- 2.4.4 Vendor 4 (BNFL-Fuel Solutions W-21)

2.5 Thermal Performance
- 2.5.1 Consider Crossover Issues From Thermal Analysis Results (Task #1) During Drying
  e.g., Limits on vacuum drying times due to cladding T limits
- 2.5.2 Potential Issues With Regard to High BurnUp Fuel
  - 2.5.2.1 Forms of Damaged Fuel
  - 2.5.2.2 Cladding Integrity
  - 2.5.2.3 Spallation and Creep
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2.6 Summary and Conclusions
- 2.6.1 Checklist of Important Issues for Reviewing DOE-Specified Canister Drying and Sealing Operations

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- 3.1.2 Misloads and Their Potential Consequences
- 3.1.3 Objectives and Scope

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- 3.2.1 NRC Guidance on SNF Verification and Qualification (SRPs and ISGs)
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- 3.2.3 Examination of Relevant NRC SERs and Recurring RAIs with Respect to SNF Verification and Qualification

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- 3.3.1 Method
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- 3.3.3 Validation of Software and Parameter Inputs
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- 3.4.1 Quality Assurance Programs and Inspections of SNF at Loading Sites
- 3.4.2 Risk-Informed Assessments (If Applicable)
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3.5 Summary and Conclusions

3.6 References