

## Stewart Brown

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**From:** Stefan Anton [s.anton@holtec.com]  
**Sent:** Friday, March 28, 2008 4:56 PM  
**To:** Stewart Brown  
**Cc:** Debu Majumdar; Luis Hinojosa  
**Subject:** Draft Minutes of yesterdays meeting  
**Attachments:** 3-27-2008 with NRC on non-structural RAI for LAR 1014-6.doc

Stew,

Attached is the draft of the minutes for yesterdays meeting for your review.

Stefan

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### Stefan Anton, Dr.-Ing

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# MINUTES-OF-THE-MEETING

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Holtec Project No.	5014	Date of Meeting	3/27/2008	Place of Meeting	NRC Executive Blvd. Bldg. (See NRC Meeting Notice Dated March 6, 2008)
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Participating Organizations	Holtec / NRC/NMSS/SFST	Subject of Meeting	Discuss non-structural RAIs on HI-STORM 100U LAR 1014-6
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Names of Participants (indicate those who attended part-time or by video conference). A signed attendance list may be attached in lieu of a typed list (indicate in next column if attached).	Stefan Anton	Robert Nelson
	Luis Hinojosa	Stewart Brown
	Debu Majumdar	Jorge Solis
	Kris Singh (part-time)	Michael Call
		Geoffrey Hornseth et al.

Prepared by	Luis Hinojosa	Verified by	Stefan Anton, Debu Majumdar
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**Attached Presentations:**

- Thermal RAIs-100U-March26-2008.ppt
- HI-STORM 100U RAI 3-27.ppt

### Summary of Discussions

**Start of Meeting, Introductions, Attendance**

**RAI 3-9 (Structural RAI):**

- Robert Shoemaker (NRC) clarified that the NRC has not endorsed ASCE documents fully, but as “guidance” documents. Holtec's proposed RAI response already recognized this.

(Continue on Page 2 et. seq. as necessary.)

### Commitments Made

Task	Due Date	Responsible Party
<b>Schedule Additional RAI Meeting for April</b>		<b>NRC/Holtec</b>
<b>Issue Position Letter on Thermal Matter</b>	<b>4/11/08</b>	<b>NRC</b>
<b>RAI 5-2 Write-up</b>	<b>4/4/08</b>	<b>Holtec</b>
<b>RAI 11-1 Proposed Solution</b>	<b>4/4/08</b>	<b>Holtec</b>
<b>RAI 12-4/5 propose inlet vent consideration</b>	<b>4/11/08</b>	<b>Holtec</b>

This template must be used to document and memorialize the substantive discussions that occur in a meeting on a Holtec project. The contents of these minutes must be verified by a second participant in the meeting. The verifier should preferably be from the interfacing organization. The preparer must be a meeting participant from Holtec.

## **Discussion of Thermal RAIs**

- A Holtec presentation on RAIs 4-1, 4-2, 4-3 (Topics 1 through 4) was provided with follow-up discussions.
- Topics 1: Holtec maintained that the issue of the effect of wind on the thermal performance of the HI-STORM 100U is not a technical one but regulatory. This is based on the fact that all dry air ventilated storage systems on all dockets have based the normal storage evaluations on no-wind ambient condition and a change from that established regulatory position by USNRC could affect all air ventilated casks already licensed. The HI-STORM 100U design is the most wind insensitive amongst all of these cask designs. Holtec does not disagree that artificial wind conditions will result in reduced margins to established limits; however wind with same magnitude and direction over a long time frame is not a credible normal event and as such should be considered as being off-normal. On slide 1, USNRC principally agreed, with minor wording changes, on bullets 1, 2 and 5, and disagreed on bullets 3 and 4. NRC (Jorge Solis and Ghani Zig) made technical arguments regarding the fact that low speed winds cause higher temperatures in the fuel cladding. The NRC commented that since the cask is a new design and thus the questions and concerns are appropriate. USNRC plans to formulate their position in a write-up within two weeks.
- On Topics 2 and 3, Holtec provided the technical argument that the conservative cylinder model used is well established, chokes cooling air flow to the hottest casks and appropriately allows for mixing of the ambient air and the hot air exiting the outlet of the HI-STORM 100U. This modeling approach has been validated by PNNL study on large cask arrays. The PNNL study was also reviewed and approved by USNRC. The single cask model with a hypothetical cylinder gives results with large margins to established limits without considering built-in conservatisms (e.g. use 80° F ambient temperature versus 70° F ambient temperature used by other cask vendors). USNRC will check to confirm the prediction of mixing phenomenon between cold ambient air and the hot air emanating from the VVMs in the Holtec model. On the matter of allowable magnitude of 65 °C temperature excursions, ISG-11 refers only to short-term conditions (rapid temperature excursion rates). USNRC agreed that radiation exchange between VVMs will be small and a model with cask array is not necessary to include that effect.
- NRC has no issues on Topic 3 and 4.
- Robert Nelson stated that the NRC will consider all arguments and provide its position in writing in approx. 2 weeks time with potential for another meeting on the matter.

## **Discussion on Material RAIs**

### **RAI 3-2**

- Holtec presented proposed response to RAI 3-2 in detail (including proposed drawing markups attached).
- NRC (Geoffrey Hornseth) agrees that the proposed response answers the RAI appropriately.

## **Discussion on General RAIs**

RAI G-1- Approach accepted as presented

RAI 1-1 - Approach accepted as presented

### **Discussion of Shielding RAIs**

#### General Comments on Shielding RAIs

Holtec presentation and general discussion on RAI history, purpose of Chapter 5, and certain RAI wording.

- With respect to request for input files, NRC seeks not to verify accuracy but to understand the modeling based on the features described on the licensing drawings.
- With respect to “features and parameters” to be included in the COC/Tech Spec, the NRC is looking to identify critical items that belong there.

#### RAI 5-1

- Discussion regarding dimensions in the context of shielding analyses and potential 72.48 changes
- Approach accepted as presented

#### RAI 5-2

- Discussion on purpose of calculations. It is recognized that absolute bounding source terms and dose rates are not necessary in the FSAR since ultimately compliance is demonstrated in site specific 72.212 evaluation.
- Holtec to provide a proposed write-up on the selection of burnup and cooling times in the context of allowable content and regionalized loading, and the on the MPC-32 and MPC-24.

#### RAI 5-3

- Discussion on streaming issue
- NRC will accept qualitative argument that streaming is not significant, with support by references to previous analyses (e.g. streaming through ribs in HI-STAR 100)

RAI 5-4 - Approach accepted as presented

### **Discussion of Criticality RAIs**

RAI 6-1 - Approach accepted as presented

### **Discussion on Operation RAIs**

RAI 8-1 - Approach accepted as presented

### **Discussion on Acceptance Criteria and Maintenance Program RAIs**

RAI 9-1 - Approach accepted as presented

### **Discussion on Radiation Protection RAIs**

RAI 10-1 - Approach accepted as presented

#### RAI 10-2

- Approach accepted as presented, except that Holtec will discuss the additional operational steps for bolting of the outlet vent cover of the 100U in Section 10.I

RAI 10-3

- Approach accepted as presented.
- Holtec notes that conservatively an open cavity will be analyzed.

RAI 10-4 - Approach accepted as presented

### **Discussion on Accident Evaluations for HI-STORM 100U System RAIs**

RAI 11-1

- NRC expects discussion of accidents during construction/excavation in FSAR, not just as 212 issue
- Holtec to review and propose solution

### **Discussion on Operating Controls and Limits RAIs**

RAI 12-1. - Approach accepted as presented

RAI 12-2. - Approach accepted as presented

RAI 12-3. - Approach accepted as presented

RAI 12-4 and 12-5

- Extensive Discussion
- NRC clarified that no new calculations are expected, just proper justification of the currently proposed approach
- Holtec to review the issue of dose rate measurements for the inlet vents, and to propose whether to be included in TS or not.

RAI 12-6

- Holtec to provide additional discussion in FSAR regarding the Basis of the RPS

RAI 12-7 - Approach accepted as presented

### **Discussion on CoC RAIs**

RAIs C-1, C-3, C-4, C-6 – Structural, not discussed

RAI C-5

- Structural, not discussed
- Write-up on proposed resolution provided to NRC

RAI C-7 - Approach accepted as presented

RAI C-8 - Approach accepted as presented

Scheduling of Next Meeting and Meeting Closure