March 19, 2013

MEMORANDUM TO: Anthony Hsia, Deputy Director
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

FROM: Chris Allen, Project Manager **/RA/**
Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

SUBJECT: SUMMARY OF FEBRUARY 27, 2013, MEETING WITH HOLTEC INTERNATIONAL TO DISCUSS INDEPENDENT SPENT FUEL STORAGE INSTALLATION PAD DESIGN (TAC NO. L60452)

Background. On February 27, 2013, a Category I meeting was held in Rockville, Maryland between Holtec International (Holtec) and the Nuclear Regulatory Commission (NRC) to discuss the design of independent spent fuel storage installation (ISFSI) pads by Holtec. The public was provided the opportunity to ask questions and provide comments after the business portion of the meeting was concluded and prior to adjourning the meeting. Regulatory decisions were neither requested nor made at the meeting. The list of meeting attendees is Enclosure 1. A detailed agenda of the meeting is Enclosure 2, and the presentation slides are Enclosures 3 and 4.

Discussion. The discussion followed the agenda provided in Enclosure 2. The NRC briefly discussed the events at the LaSalle nuclear plant that precipitated a July 19, 2012, letter by Holtec (ADAMS Accession ML12313A354) and the subsequent response by the NRC (ADAMS Accession ML12305A243). Next, the NRC proceeded to discuss key elements 4, 6, 7 and 10 from the July 19, 2012, Holtec letter using the slides in Enclosure 4. During the discussion of Element 4, it was pointed out that the use of synthetic time histories was problematic since both the phase and amplitude of the seismic movements had been changed. It was also pointed out that American Society of Civil Engineers 4-98, "Seismic Analysis of Safety-Related Nuclear Structures," did not address rocking motions of storage casks. A discussion of Elements 6 and 7 followed. During the discussion of Element 7, the NRC suggested the possibility of performing two calculations for ISFSI pad design. One calculation would determine the margin of safety associated with a rocking cask and a second calculation would determine the load associated with a cask striking the pad. After the NRC presented possible paths to resolution, an open discussion ensued between Holtec and the NRC in which Holtec discussed their experience in evaluating the response of storage casks to seismic events and why they had chosen their analytical approach. Holtec discussed difficulties they had encountered with the use of both real time and modified time histories in seismic analyses. Their experience prompted them to propose not using seismic frequencies above five Hertz in analyses. The NRC stated performing a sensitivity analysis to justify such a cutoff frequency since higher frequencies were associated with the initiation of cask rocking and lower frequencies were associated with cask

tipover could be performed. Holtec subsequently suggested the following methodology for analyzing cask tipover. Five seismic frequencies would be analyzed and the worst case frequency would be increased by ten percent. The staff believed this was a very good approach but noted that the choice of seismic frequency could be subjective. The NRC also emphasized that the ten percent increase in seismic frequency should only be applied to analyses for cask stability and not for loads applied to the ISFSI pad. Holtec then explained they intended to use the average value of fifteen evaluations (five time histories for each of three soil values) as well as a conservative friction coefficient for evaluating seismic loads to the ISFSI pad. The NRC believed this approach would be acceptable. The NRC proceeded to discuss Element 10. After all elements had been discussed, Holtec inquired if the NRC believed the seismic evaluations performed for the ISFSI pad at the LaSalle Generating Station were acceptable. During ensuing discussions, the NRC pointed out that the time histories used in the evaluations for the LaSalle Generating Station ISFSI pad were synthetic; however, potential resolutions were identified. Holtec indicated that all of their questions had been satisfactorily addressed, and the meeting was subsequently adjourned.

Docket No. 72-1014
TAC No. L60452

Enclosures:
1. Attendees
2. Agenda
3. NRC Background Slides
4. NRC Presentation Slides

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Filename: G:\SFST\HI-STORM 100\Pad Meeting\Meeting Summary.docx
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C=Without attachment/enclosure E=With attachment/enclosure N=No copy

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MEETING ATTENDEES
Meeting Between Holtec International and the Nuclear Regulatory Commission to Discuss Independent Spent Fuel Storage Pad Design
February 27, 2013

Chris Allen	NRC
Gordon Bjorkman	NRC
Kris Singh	Holtec
Venkat Prabhala	Holtec
Terry Sensue	Holtec
Charles Bullard	Holtec
David Tang	NRC
David Pstrak	NRC
Bob Tripathi	NRC
Anthony Hsia	NRC
John Goshen	NRC
Mark Lombard	NRC
Benjamin Culbert	Worley Parsons
John Schrage	Exelon
Carlyn Greene	Ux Consulting

AGENDA

Meeting Between Holtec International and the Nuclear Regulatory Commission to Discuss Independent Spent Fuel Storage Pad Design

February 27, 2013

- Introduction – NRC
- Opening comments - NRC and Holtec
- Holtec Discussion of outstanding issues
- Discussion – NRC and Holtec
- Opportunity for Public Comment – Public
- Adjourn

·NRC Background Slides

Enclosure 3

NRC Presentation Slides

Enclosure 4