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December 14, 1999

Emile L. Julian, Assistant for
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Office of the Secretary
U.S. Nuclear Regulatory Commission
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DOCKET NUMBER
PROPOSED RULE PR 72
(64FR51271)

Re: **Correction to Page 6 of the State of Utah's Comments on NRC's Proposed Approval of the Holtec Hi-Storm 100 Cask System, Docket No. 72-1014**

Dear Mr. Julian;

Page 6 of the State's Comments on NRC's Proposed Approval of the Holtec Hi-Storm 100 Cask System, submitted on December 6, 1999, contains an inadvertent reference to "Exhibit 3." Reference to Exhibit 3 should be deleted because the substance of the conversation between Matthew Lamb and Dr. Hashem Akbari was discussed on page 6 under the heading "Oversimplified Concept of 'Ambient Temperature.'"

Accordingly, the State requests that a corrected page 6 be substituted for the original. The corrected page, as well as a page showing the correction on page 6, are attached.

The attached pages may contain information claimed by Holtec to be proprietary and should be treated accordingly. *See* cover page of the State's Comments.

We regret any inconvenience this may have caused you.

Yours truly,

Denise Chancellor,
Assistant Attorney General

Enclosure: as stated
cc: Brian Gutherman, Holtec International
Sherwin Turk, NRC Staff Counsel
Jay E. Silberg, Shaw Pittman Potts & Trowbridge

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Oversimplified Concept of "Ambient Temperature"

The "ambient temperature" is an important assumption in the Holtec thermal calculations, and an important design element in the CoC. The Holtec analysis assumes an ambient temperature of 80 degrees. The SER states that the ambient temperature under normal conditions must be less than 80 °F. Despite the importance of this term, it is not defined by Holtec or the NRC Staff.

Holtec, with the approval of the Staff, has grossly oversimplified the concept of ambient temperature, to the extent of rendering the Holtec thermal analysis completely useless.

Holtec assumes that the ambient temperature at the intake and outlet vents is the same. However, the temperature in any environment in which the surface of the ground absorbs solar energy will be significantly higher near the ground than it will be some distance above. This is significant with respect to the Holtec thermal analysis, because the HI-STORM 100 cask system is designed to take advantage of air convection through the cask. The intake vent is placed near the ground, where cooler air is assumed to enter the overpack and rise to an outlet valve approximately 5 meters higher than the air inlet valve. The cooling of the casks depends on this upward flow of air. If the air temperature at the ground or intake level is higher than the air temperature five meters above, this will greatly interfere with both the velocity and the temperature of the convective cooling air flow.

The temperature of the air at the intake vent may be much higher than the 80 °F "ambient" temperature assumed by Holtec, and much higher than the temperature five feet off the ground. According to Dr. Hashem Akbari, the leader of the Heat Island Group, a research group at Lawrence Berkeley National Laboratory, a desert may have a surface temperature of 180°F. According to Dr. Akbari, approximately 50% of the temperature gradient will occur within the first 1 to 2 cm above the ground. He estimates the air temperature 2-3 cm above the ground to be 140°F, the temperature 0.5m above ground to be 130°F, and the temperature 2m above ground to be 115-120°F. At 2m above ground, the maximum temperature difference between the air above a hot surface and that above a cooler (*e.g.* grass) surface would be at most 1-2 degrees. The temperature gradient that may occur at the various sites that store fuel in the HI-STORM 100 is completely lacking in Holtec's assumed ambient temperature and therefore is a significant flaw in Holtec's analysis.

According to diagram 1495, no. 2, (HI-STORM TSAR), the air inlets are at the surface of the concrete pad. Therefore, the inlet temperature is more likely to be closer to 180 °F, rather than 80 °F normal conditions, or 125 °F off-normal conditions. If the inlet

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