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To: WND2.WNP3(agh) ~~Hamilton~~ Howell
Date: 7/26/96 3:02pm
Subject: CARBOZINC TEMPERATURES

Allen this is in response to your questions on reflood temperatures:

A question has been raised about temperatures experienced prior to a reflood of the MSB, and whether these could possibly exceed the qualified temperature of the Carbozinc 11 coating on the interior MSB surfaces. A calculation performed by Sargent & Lundy (S&L) for PBNP for reflood conditions showed that the maximum fuel temperature inside the MSB just prior to reflood could be as high as 856 degrees-F. However, the product data sheet for Carbozinc 11 shows that it is rated at 750 degrees-F for continuous use, and 800 degrees-F for non-continuous use.

There are two main points to be made that justify the continued acceptability of Carbozinc 11 under these conditions:

1. The S&L calculation is based on a 2-D model of the MSB/MTC combination, and as such, ignores the benefits of axial heat transfer. Based on a 3-D model used for its new cask design, Sierra Nuclear Corporation (SNC) has determined that the maximum temperature that the Carbozinc 11 coating will see after 48 hours is about 790 degrees-F for an ambient temperature of 75 degrees-F, and about 805 degrees-F for an ambient temperature of 95 degrees-F.
Taking into account the additional conservatisms in their analysis, SNC believes that even the 95 degrees-F ambient case would result in a maximum coating temperature less than 800 degrees-F. SNC is preparing a letter to document this.

2. Carboline, the manufacturer of Carbozinc 11, is preparing a letter to document the fact that the coating will be able to withstand temperatures greater than 900 degrees-F for the 48 hours that were assumed in the S&L analysis without suffering any adverse effects.

In summary, the temperatures that the coating will see prior to reflood are expected to be less than 800 degrees-F. Nevertheless, the coating can withstand temperatures greater than 900 degrees-F for more than 48 hours and suffer no adverse effects.

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