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September 4, 2008  
Contract No. NRC-02-06-021  
Account No. 20.14004.01.001

U.S. Nuclear Regulatory Commission  
Attn: Mr. Chris Bajwa  
NMSS/FCSS/SPIB  
Two White Flint North  
11545 Rockville Pike  
Mail Stop T-8F42  
Washington, DC 20555

SUBJECT: Submission of deliverable 20.14004.01.001.820, Final Letter Report—Analysis of Structural Materials Exposed to a Severe Fire Environment

Dear Mr. Bajwa:

Attached is the Center for Nuclear Waste Regulatory Analyses document entitled Analysis of Structural Materials Exposed to a Severe Fire Environment—Final Letter Report. This document fulfills the requirements for the subject deliverable, which is due September 5, 2008.

Samples of the steel girders obtained from the collapsed sections of the I-580 overpass were examined to estimate temperatures witnessed by the girders during the fire. Changes to the microstructure of welds, grain size of the base metal, and damage to paint were determined to be dependent on exposure temperature. Based on a comparison of the samples collected from hot regions and the test samples that were thermally exposed, it appears that the girders close to the fire reached a temperature near 1,000 °C [1,832 °F]. In the vicinity of the truck, evidence collected including partially melted aluminum alloys, alteration of hardened steel fasteners and no observed melting of copper alloys or cast iron, suggests that the exposure temperature varied but the maximum temperature of the samples during the fire was less than 800 °C [1,472 °F].



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Mr. Chris Bajwa  
September 4, 2008  
Page 2

If you have any questions concerning this deliverable, please contact me at 210.522.5151 or Darrell S. Dunn at 210.522.6090.

Sincerely yours,



Asadul H. Chowdhury, Manager  
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