

From: Jack Guttman
To: Bajwa, Christopher; Hodges, M. Wayne; Solis, Jorge
Date: Thu, Jun 13, 2002 12:33 PM
Subject: Re: Preliminary Calc

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Chris,

I NIST trying to assess the burn rate that are consistent with preliminary results (e.g., the fire is not oxygen deprived, given that the hottest temperatures occurred at the break location (not up or downstream of the broken tanker), and that the neighboring tanker's temperatures were in the neighborhood of 700 F)? Can they model the flow rate exiting the tanker (1.5 and 2 inch break diameters)? Jorge, can you calculate the flow rate of fuel exiting the tanker? The pressure in the tanker will increase as the temperature of the gas void insider the tanker increases.

Jack.

>>> Christopher Bajwa 06/10/2002 3:04:38 PM >>>
Wayne,

For 28,700 gallons of Tripropylene (78,800 Kg), it looks like we would have a fire of 154 MW, for a pool 27 feet in diameter.

To heat approximately 7 layers of brick in a 30 foot section of the tunnel from 70°F to 1500°F, it would take approximately 10 MW of energy, according to my calculation.

I'll go over my numbers again, just to be sure. This is a fairly conservative (and crude) calculation, because it is unlikely that all 7 layers will see the peak fire temperature, and heat to 1500°F, AND this was not a radiation calculation, this was a strictly $Q=mC_p \Delta T$ calculation.

More later.

-Chris Bajwa

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