National Foam®

Foam Lines

Cottrell Associates, Inc. March 2012

Calculating Foam Needs

At gasoline tanker fire events *By: Jim Cottrell*

I-10 Phoenix AZ - November 2011
Successfully extinguished with two handlines.

There are no hard resource calculations for these fire events. So, I'll give you my quick two-minute version:
If we are talking about a tanker event which has lost most of the load, at highway speed, you may not have much fire left to fight after ten minutes, as gasoline/ethanol blends go off at about one inch every five minutes... This would be a 50 gallon foam event if all that was left was a few isolated pool fires still burning. Tires and fiber-glass body wreckage usually respond well to water streams.

Don't waist foam on this stuff. Unignited gasoline soaked into the earth can easily use 100+ gallons of AR foam concentrate to maintain scene security while disentangling casualties, managing body recovery or just holding off ignition while the investigators and wreckers do their thing. The extended quarter life of Universal Gold 1-3% could cut that quantity in half when it comes to scene security and is well worth the price bump over straight 3% AR-AFFFs.

Special Note: Airport Crash/Rescue trucks are no longer candidates for fighting fires involving gasoline/ethanol blends, especially E-15, E-85 and or E-95, as their mil. spec. (F-24385) AFFF is no longer appropriate for use on such fuels... Okay for diesel and kerosene/jet A.

If the subject tanker was stationary or moving slowly when hit by another vehicle and has lost perhaps one or two compartments, with ignition, a two thousand gallon spill under and around the vehicle would require perhaps 90-100 gallons of AR-AFFF concentrate to extinguish and hold secure for an hour. Figure on (minimum) 200 gpm foam solution for about 15 minutes. When the under vehicle fire is secure you can then go to the remaining topside fire. Gentle medium expansion application for this part of the job is critical if you want the remaining ignited fuel to keep from slopping over, reigniting the under vehicle spill.


Cumberland County PA

CONCENTRATE USE

As I said, there are no hard resource rules in cases of tanker spills with or without fire. In all cases, depending on stream reach requirements, wind issues and or obstructed access, I would insure (at minimum) a fifteen minute supply of water and a AR-AFFF foam concentrate with long staying power.

For gasoline spill fires, figure on solution flows for a 2,000 sq. ft. fire of 200 gpm and 500 gpm for a 5000 sq. ft. fire (based on 0.10 gpm per sq. ft.). Most books say to have resources for a fifteen minute firefight. If the wind and terrain are with you it can go much faster.

Keep in mind that there is a fair degree knockdown power in 500 gallons of properly proportioned AR-AFFF solution. A 500 gallon booster tank, three pails of 3% and a 100 gpm eductor can handle a 20 x 50 ft. (1000 sq.ft.) fire for five minutes, which may be all you need to get under vehicle fires knocked.

For a fifteen minute 3% solution flow of 200 and or 500 gpm, have at the ready, 90 to 225 gallons of 3% AR-AFFF - double that for 6% users.

For Users Of National Foam's Universal Gold 1x3%

If you have ignited diesel fuel or kerosene, I would go after it at 1% with Universal Gold, and secure it at 3%. If water is scarce, regardless of fuel, secure the spill at 6%, as Gold's drain time doubles at 6%. This tactic uses same amount of concentrate with half the water.

The author
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For more, visit
www.cottrellassociates.com/Training.html

Got Ethanol?

Gasoline grade ethanol (E-95) is often shipped in standard gasoline delivery tankers (placard 1987).

Recently a retired NY State Haz-Mat Specialist / Instructor and now volunteer fire chief in Barre, NY responded to a fatal, ignited, 10,000 gallon ethanol tanker wreck.
His firefighters, with the help of area mutual aid put it out leaving one full ethanol compartment untouched. They did it with a handline and a TFT Blitzfire, using Universal Gold, 1-3% AR-AFFF. They used perhaps 75 gallons for extinguishing and 200 gallons more for many hours of scene security.

Long Term Scene Security

When it comes to tanker incidents, the events that use the most foam are usually the unignited ones, which is about 85% of the time. Holding scene security until the event is cleared is the bang for the buck issue - and these days may be a bigger environmental issue. How long a foam blanket holds its water becomes an environmental consequence of using fast draining AR-AFFFs, since it's is the water weight in the foam blanket that holds vapors down. When the blanket gives up 25% of its water weight its time to give it another coat. You can extend that time by using low pressure, medium expansion foam appliances or nozzle attachments; proportion 3% foam at 6%; and of course, specify a UL listed, USCG approved AR-AFFF designed for fire department appliances having a long 1/4 drain time. How to test your foam's 1/4 drain time can be found on our website: www.cottrellassociates.com/Testing_Systems.html