



Foam Lines

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Bakken Crude - Any Suggestions?



**Answers to Capt. John Gibson's questions, Chesapeake VA, Foam Task Force.
A small, two or three car job... v1.02 11/8/15**

Hi John: The City of Chesapeake is, to my way of thinking adequately prepared for a Bakken event in terms of concentrate stores, tactical equipment (foam trailers, big hose, pumps and related large appliances). Although knowing your neighborhood its variable water supply can pose some serious water challenges.

If you're invited to another out of town train wreck, IC needs to consider getting water supply stood up as you are responding. If you don't have one to two thousand gpm available when you get there you'll probably have a problem with extinguishment; not as critical for security at un-ignited wrecks. Consider getting NIMS up and running early. Bring Engine One if you can because it will need nozzle pressure for the 1000 gal. trailer's big guns.

Bakken Application Rates

Application rate is 0.10. sq. ft. If fuel has pooled in deep earthen gouges, I wouldn't hesitate to go to 0.16. It still boils down to sq. feet of involved fuel. I'd be prepared for a half acre job (20,000) sq. ft. Stream reach and scene approach will likely be an issue. At 2000 GPM your NF Gladiator has an aerated reach of 230 ft. in still air. Your Gladiator Tri-Flows at 1000 gpm will be +/-190 ft., and 150 ft. at 500 gpm. Your team may need the reach more than the firepower, as crude will be difficult to approach in terms of radiant heat. Non-aerated streams will give you 15 to 20% greater range. Don't plunge, use wreckage back-splash technique wherever possible and don't forget the range finder!

Universal Gold 1-3% will be okay at 1% for simple skin fires involving crude. Non-aerated aqueous film froth should darken down spilled pool fires on land or water. Quarter life is fast at 1%. Bump proportioner to 3% if deep-seated fuel is exposed to hot wreckage, as the solution in the 1% froth will likely boil away fairly fast if it's within a couple ft. of high radiant heat wreckage such as tank shells, rail wheels (trucks), rails, hot structural bridgework or exposed boxcars. Remember, unprotected structural steel under direct fire conditions may fail without notice (Twin Tower effect). If the wreck is ignited and exposing loaded (steel) bridge structures be very-very dubious.

Vapor Pressure

High vapor pressure of spilled crude will pose a spill security problem every bit as much gasoline, although flash point is in the thirties at laboratory temp (30 deg F - 1.1 C). Bakken's vapor pressure can be as high as gasoline. On a summer day, pressure in a rail car can be +/-25 psi with no fire exposure. Be prepared for long on scene time where crude has soaked into the earth or deep in rail ballast. Tests I've conducted show thirty minute burn time for one-inch of Bakken.



Spill Security Tests

MSDS says Bakken crude (light, sweet, rock oil) flash point is +/- 20 (6C). Another says <30F (<7) degrees. It seems to match light at <45 F (4.4 C). Might go lower, but I didn't have time to do that test. One inch of Bakken in a bucket took about thirty minutes to burn off. The same oil spilled on an 85 degree (29 C) metal surface match lit and self-extinguished in less than ten seconds. Seems the oil's lighter, more volatile constituents ignite and go out just after an open air spill from a closed storage container. I liken this oil to spilled beer or soda pop... It lets a lot of gas out when it spills and quickly goes flat, which may be why all six spill tests I conducted self-extinguished... The in-depth bucket burns continued to burn, however.

Once fires darken down, take U-Gold to 6%. Quarter life will go to +/-50 minutes between applications once hot wreckage has cooled. Half that time if using brackish or salt water. If you are supplied foam concentrate by mutual aid units, do a bottle shake tests of known support assets in advance. Hell, you can do it on scene but its probably a good idea to have done it before hand. Mil Spec (F24385) airport foam will drain in two to three minutes @ 3%; will double time at 6%. Generic three-six AR-AFFF will go in +/- 10 min. The shorter the quarter life the more frequent the security applications. This means big water supply and much water/oil runoff. NOTE - Drain time is affected by delivery device. Some exhibit better quarter life characteristics than others. See post: <https://www.facebook.com/combatproducts/photos/pcb.955259484535080/955257121201983/?type=3&theater>

Stay Safe John

Jim

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