

STRATEGIC AND TACTICAL GUIDANCE FOR RAIL INCIDENTS INVOLVING CRUDE OIL

The Office of Fire Prevention and Control has developed the strategic and tactical guidance for fire department operations during the initial phases of a rail incident involving crude oil. This guidance is available at the link below:

www.dhSES.ny.gov/ofpc/documents/crude-oil-guidance.pdf

As any significant derailment involving a crude oil spill or fire will likely require a large scale and multi-agency response from all levels of government and the involved railroad, the planning, preparedness and response efforts will obviously exceed what is contained here. This document is intended to build upon existing training and the guidance available through readily available resources such as the Emergency Response Guidebook (ERG) to assist fire department personnel with making strategic decisions about offensive and defensive operating modes and provide tactical guidance and recommendations for the tactics appropriate for a crude by rail incident.

This guidance includes contact information for relevant State and Federal agencies which should be notified and will assist with mitigating any crude oil incident, along with the emergency contact numbers for the Class I railroads which are known to transport crude oil by rail across New York State.

The guidance also includes estimates of the foam and water supplies needed for scenarios including a single rail car involved in fire with exposure to two additional cars and a three car scenario with exposures. These scenarios serve to illustrate the level of resources that may be required to provide for effective Class B foam operations for fire and vapor suppression and can support both pre-incident planning and response efforts.

This guidance document will be updated and redistributed as necessary. Current plans include adding basic spill confinement guidance for fire departments.

Please contact OFPC's Special Operations Branch at 518-474-6746 with any questions or requests for additional information.



Distributed by the
NYS Division of Homeland Security and Emergency Services

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SIZE UP/INITIAL PROTECTIVE ACTIONS:

Verify Product: UN ID# 1267 Petroleum Crude Oil. See 2012 NAERG Guide 128.

Note placards and obtain a train consist from crew or RR. Are cars loaded or empty?

Notify NYS DEC, the State Watch Center (OEM, OFPC), the National Response Center and the railroad involved (see contact information on reverse).

If SPILL but NO fire:

SMALL Spill: Isolate 150 ft. in all directions.

LARGE Spill: Also evacuate 1,000 ft. downwind.

Secure potential ignition sources; use air monitoring; apply foam for vapor suppression; and begin spill confinement operations (diking, damming and boom deployment) to limit spread of spilled product.

(See **FIRE SUPPRESSION** for foam and air monitoring guidance).

If FIRE: Isolate 1/2 MILE in all directions and shelter downwind.

EXTINGUISH vs. LET IT BURN: Do you need to extinguish the fire?

- Evaluate life hazard, property/critical infrastructure at risk and environmental impact (in that order).
- If a life hazard exists: Focus available foam operations or use water fog patterns on oil fires to protect rescue operations. Conduct structural firefighting as necessary and from uphill and upwind if possible. Beware of any running spill or spill fed fire which may cut off routes to safe zones. Consider defensive operations once life hazard is addressed.
- If NO life hazard and more than 3 tank cars are involved in fire OFPC recommends LETTING THE FIRE BURN unless the foam and water supply required to control is available (See **FIRE SUPPRESSION**). Withdraw and protect exposures, including cooling exposed tank cars with unmanned monitors if possible (See **FIRE SUPPRESSION**).
- If 3 tank cars or fewer are involved, do you need to extinguish the fire? (Evaluate hazard to property and environment.)
- If YES, are foam and water resources available to extinguish the fire? (See **FIRE SUPPRESSION**)

FIRE SUPPRESSION:

Estimate the foam and water requirements for vapor suppression, extinguishment and post fire security.

OFPC estimates for crude oil rail scenarios are listed below.

Polar solvents such as Ethanol may require greater amounts of foam and water and higher application rates (0.2gpm/ft²).

- **1 tank car** on fire = 600 gallons of foam concentrate; apply solution at a target rate of 660 gpm for **15 minutes**; and reapply as necessary to maintain foam blanket;
 - **Total water supply required = (+/-) 38,000 gallons** for foam and cooling water.
 - **NOTE:** Stream reach for single 600 gpm foam nozzle = 150' max
- **3 tank cars** on fire = 1,500 gallons of foam concentrate; apply solution at a target rate of 1,680 gpm for **15 minutes**; and reapply as necessary to maintain foam blanket;
 - **Total water supply required = (+/-) 80,000 gallons** for foam and cooling water.
 - **NOTE:** Stream reach for single 1000 gpm foam nozzle = 200' max
- Use cooling water on exposed and involved cars; minimum rate = 200 gpm applied to the exterior of the vapor space of **each car during extinguishment and maintain for 30 minutes thereafter**. Note water application may interfere with the foam blanket. Continue to re-apply foam as needed to maintain post-fire security (vapor suppression).
- **ALL RESOURCES MUST BE AVAILABLE PRIOR TO BEGINNING SUPPRESSION (FOAM OPS)**

USE AIR MONITORING. Withdraw at **10% LEL (Combustible Gas Indicator)** or **800ppm Photoionization Detector**.

The following information is provided to assist with determining pump discharge pressures needed to provide required inlet pressure at foam master stream appliances:

- Friction loss for 4" LDH at flows noted above: 7 psi/100' at 600 gpm; 19 psi/100' at 1000 gpm.
- Friction loss for 5" LDH at flows noted above: 3 psi/100' at 600 gpm; 7 psi/100' at 1000 gpm.

To determine Foam requirements for a specific crude oil surface spill use the following formula:

Spill Area (ft²) X Application Rate (0.10 gpm/ft²) = GPM Foam Solution x 15 mins.

NOTE: Large storage tank fires require higher application rates for longer duration.

NOTIFICATIONS/CONTACT INFO:

- DEC Spill Response: 1-800-457-7362
- New York State Watch Center (OEM): 518-292-2200
- OFPC 24 hr. Technical Assistance/Response: 518-474-6746
- National Response Center (EPA/USCG): 1-800-424-8802
- Chemtrec: 1-800-424-9300
- CP Rail: 1-800-716-9132
- CSX Transportation: 1-800-232-0144
- NORFOLK SOUTHERN (NS): 1-800-453-2530



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