



In-Station Training

TM 24-49 Cargo Tank Fire



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Purpose

Flammable and combustible liquids (Department of Transportation Hazard Class 3) are the most frequently released classification of chemicals involved in hazardous materials incidents (US DOT, 2021). Firefighters and fire officers need to be familiar with tactics used for flammable liquid control.

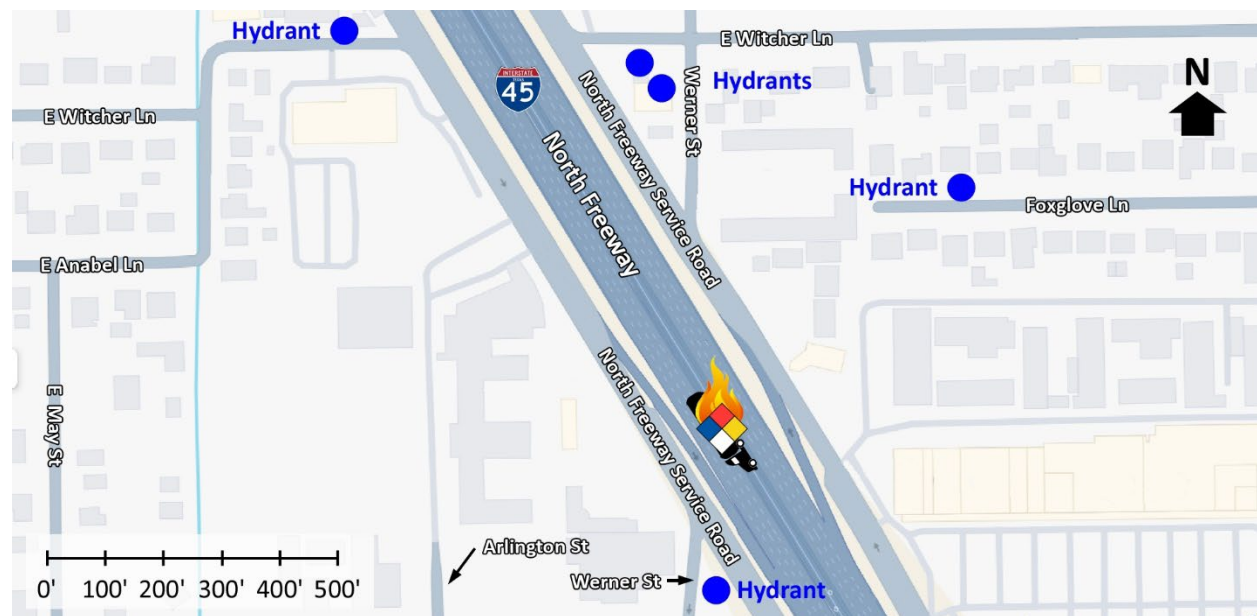
Learning Outcomes

Firefighters and officers perform an effective size-up, select an appropriate strategy, and implement tactics based on the strategic decision-making model in response to hazardous materials incidents.

Conducting the Drill

This incident involved a hazmat response to a cargo tank rollover and fire on the North Freeway (I-45) at Werner Street in Houston, Texas on Saturday, June 1, 2024, at 21:50 (OnScene TV, 2024; Turner, 2024; & Click 2 Houston, 2024). Review the map and photos (Figures 1-5) to gain an understanding of the area involved.

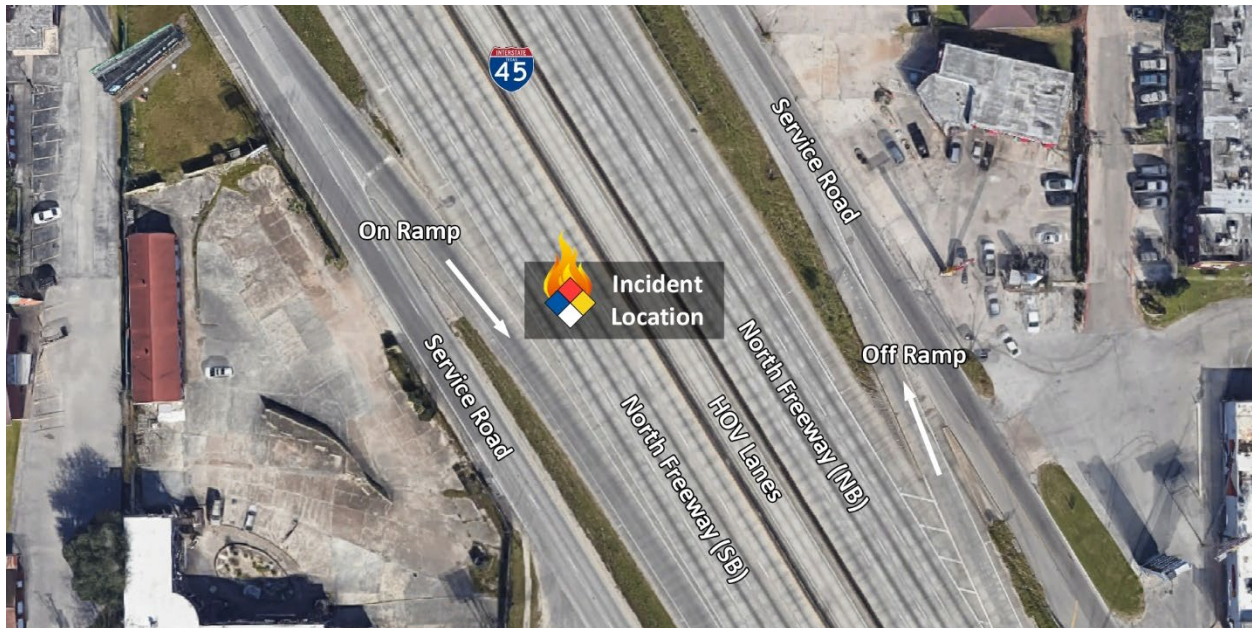
Figure 1. Map of the Incident Area



Note: Adapted from Google. (2024a). [Map, North Freeway (I-45) at Werner Street, Houston, TX].

<https://bit.ly/4hyQvUi>.

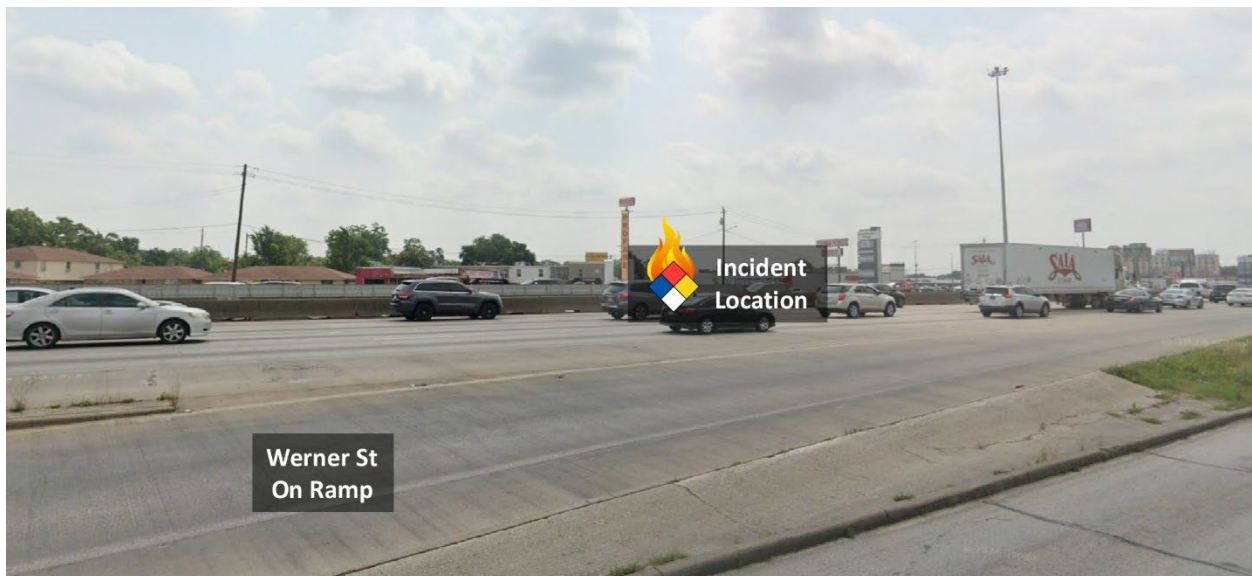
Figure 2. Aerial View



Note: Adapted from Google. (2024b). [Aerial view North Freeway (I-45) at Werner Street, Houston, TX]. <https://bit.ly/3YphLfe>.

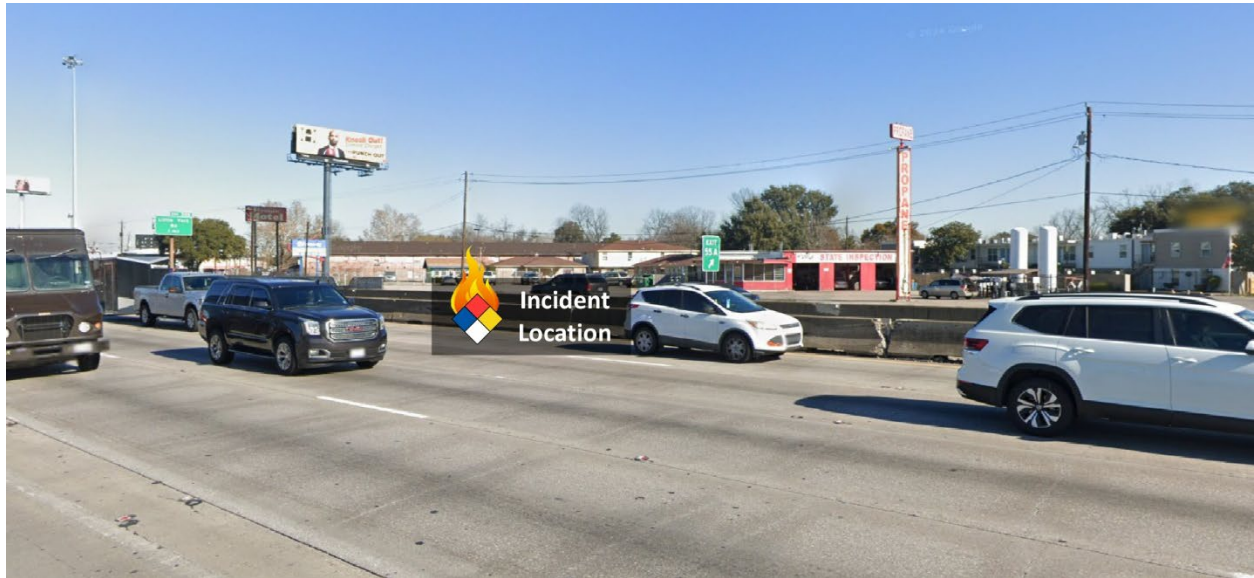
There are no hydrants on the freeway, but multiple hydrants are located on adjacent surface streets as illustrated in Figure 1.

Figure 3. Incident Location (View from the Surface Road at Werner Street)



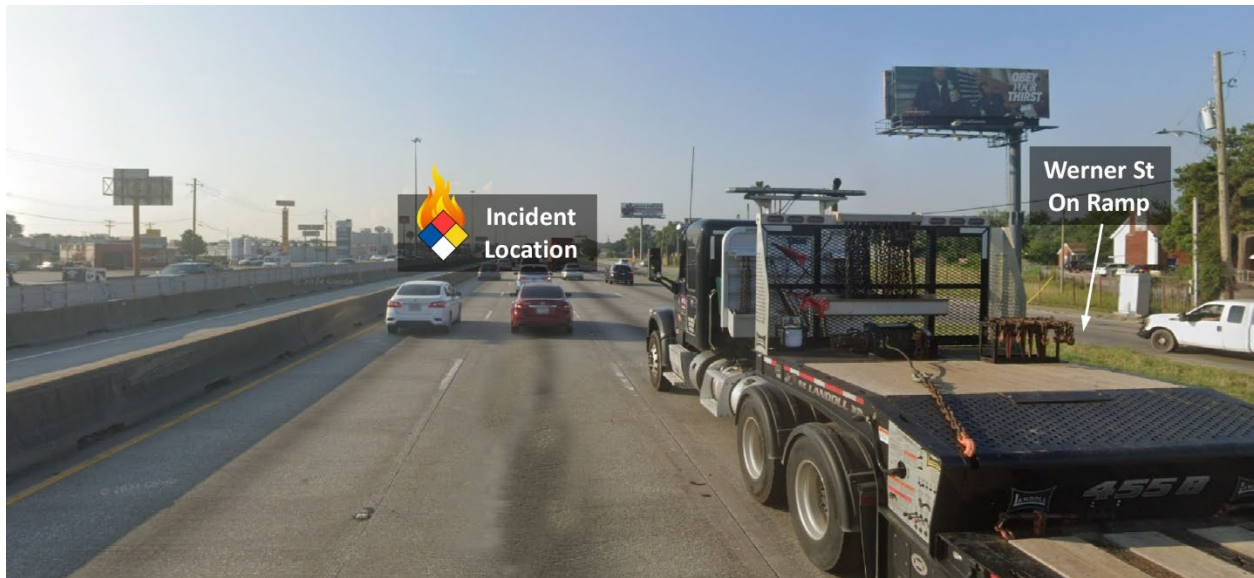
Note: Adapted from Google. (2024c). [Street view, North Freeway (I-45) at Werner Street, Houston, TX]. <https://bit.ly/40xBDji>.

Figure 4. Incident Location (View from Werner Street South of the Freeway)



Note: Adapted from Google. (2024d). [Street view, North Freeway (I-45) at Werner Street, Houston, TX]. <https://bit.ly/3YQ2PrW>.

Figure 5. Incident Location (View from North Freeway (I-45) Southbound)



Note: Adapted from Google. (2024e). [Street view, North Freeway (I-45) at Werner Street, Houston, TX]. <https://bit.ly/4ecMHpc>.

The temperature is 81° F with wind from the east southeast at 3 mph (Weather Underground, 2024). You have been dispatched to a report of a commercial vehicle accident and fire on the North Freeway southbound at Werner Street at 21:50 on a Saturday. You are the company officer or AIC of the first arriving engine and have your company's typical staffing. Reference materials include the [Emergency](#)

[Response Guidebook](#) (US DOT, 2024), [Pocket Guide to Hazardous Chemical Hazards](#) and [CAMEO Chemicals](#) (NOAA, 2024)

1. What critical factors would you consider when dispatched and during response and what conversations would you have with your crew while responding?

You hear three other engines, an advanced life support ambulance, and command officer go enroute. You will arrive from the north on I-45 southbound or on the southbound service road. The second engine and the paramedic unit will arrive approximately five minutes after you from the opposite direction on the I-45. The command officer will arrive several minutes after the second engine. Dispatch provides an update that the accident involves a tank truck and sport utility vehicle (SUV) and that the tank truck is on fire.

Watch the [incident video](#) (OnScene TV, 2024) from 00:15 to 00:35 and examine Figures 6 and 7 illustrating conditions on arrival on the Service Road at Werner Street. One sport utility vehicle (SUV) is on its side with major damage and on top of the barrier between the southbound lanes and the HOV lanes of the North Freeway. A second SUV was also involved in the collision and is in the median between the southbound lanes of the North Freeway and the southbound service road.

Figure 6. Conditions on Arrival (View from the Service Road at Werner Street)



Note: Adapted from OnScene TV (2024). *Tanker with unleaded fuel burns In Houston* [video]. Retrieved November 3, 2024, from <https://bit.ly/3Yy9SEt>.

Conditions illustrated in Figure 7 are post-fire control and may not fully represent the conditions encountered on arrival.

Figure 7. Other Vehicles Involved (south of the burning cargo tank)



Note: Adapted from OnScene TV (2024). *Tanker with unleaded fuel burns In Houston* [video]. Retrieved November 3, 2024, from <https://bit.ly/3Yy9SEt>.

2. State your initial radio report (IRR) exactly as you would transmit it to dispatch.
3. What specific actions would you take (as the company officer) immediately upon arrival and exiting the apparatus and what task orders would you give your crew?

The driver of the truck has minor injuries and had self-extricated prior to your arrival. He tells you that he is carrying 8,800 gallons of unleaded gasoline. The driver of the Tahoe is severely injured and entrapped in the vehicle which is located south of the burning cargo tank (as illustrated in Figure 6).

4. Would you change the action you are taking or modify the assignments given to your crew? If so, what task orders would you provide?

5. State your update report exactly as you would transmit it to dispatch.

6. What action will you take at this point?

7. Engine 2 and Medic 2 arrive and report they are Level 1 northbound on the North Freeway. State the tactical assignment you would give them exactly as you would transmit it.

8. Based on the anticipated effectiveness of your tactical operations, state your conditions, actions, and needs (CAN) report that you would provide to the first arriving command officer as part of command transfer to IC #2.

Reflect on your strategic decision-making and responses to questions 1 through 8 before answering the next three questions (these questions usually apply to structure fires but consider how they apply to a hazmat incident such as encountered in this 10-Minute Training).

9. What was the problem?

10. What was getting in the way of achieving your tactical priorities?

11. Was there anything in this incident that could have hurt or killed you (right now)?

12. Command has tasked your company with fire control. Do you have the capability to accomplish this assignment (think about foam concentrate, water supply, and foam application equipment). If so, how would you approach this tactical assignment? If not, what additional resources would you need (put this in the form of priority traffic conditions, actions, and needs (CAN) report to IC #2)

13. What other product control considerations would need to be addressed, given the IC's decision to extinguish the fire? How might this be accomplished?

Additional Learning: Strategy comes before tactics. When faced with a flammable liquid fire, the two basic tactical options are to actively extinguish the fire or to protect exposures (if any) and permit the fire to burn out. The Incident Commander must consider the following questions when determining an appropriate strategy:

- Can we put the fire out (given the available resources)?
- What are the life, environmental, and property exposures?
- Which tactical option will result in the least harm?

Answering the first question requires knowledge of the characteristics of the burning flammable liquid and the fire suppression capability of the available resources. Key considerations in flammable liquid fire control operations include the type of fuel (non-water-soluble hydrocarbon or water-soluble polar solvent), the surface area of the burning flammable liquid, obstructions, the required foam solution application rate (based on surface area), the type and quantity of foam concentrate available (on-scene or otherwise available), and the foam solution application capability.

Discuss the capabilities and limitations of the resources available on your apparatus and other first alarm companies with the members of your crew. East County Fire and Rescue members should review the Training Bulletin on Novacool UEF that accompanies this 10-Minute Training.

References

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