In-Station Training

TM 23-15a Odor of Gas in an Apartment Complex

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Purpose

Absence of evidence is not evidence of absence. Firefighters frequently respond to an odor of gas inside a building without finding a potentially flammable atmosphere. This can lead to a sense of complacency which can have disastrous and potentially fatal consequences.

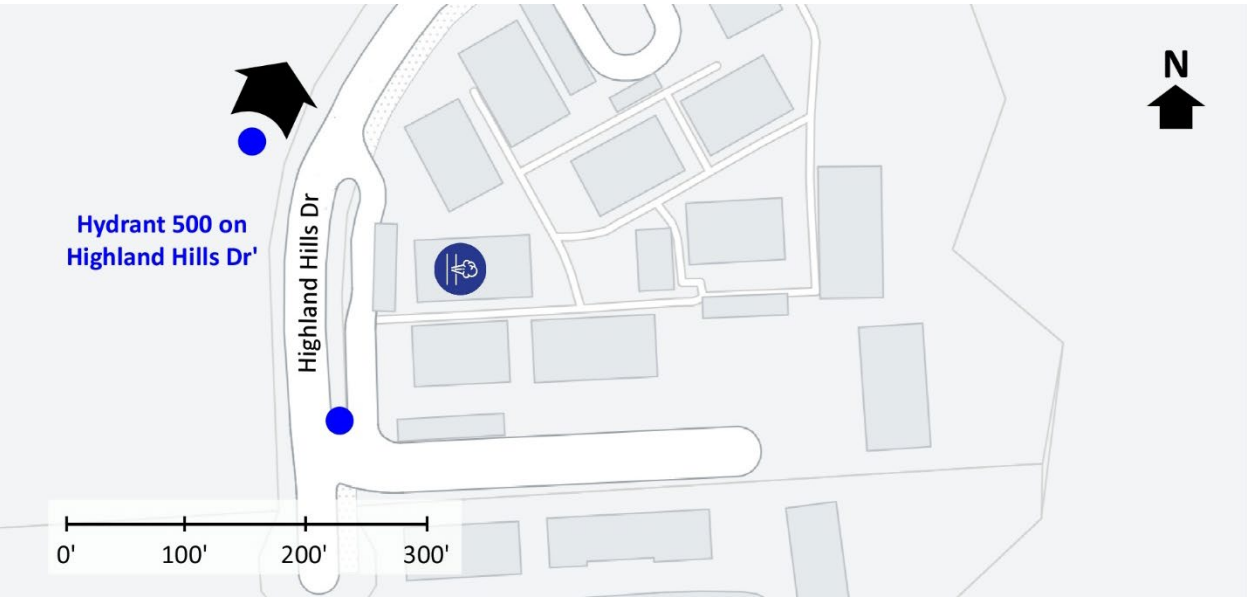
Learning Outcomes

Command officers perform effective ongoing size-up; select an appropriate strategy, and implement tactics based on the strategic decision-making model.

Conducting the Drill

This incident involved a gas leak at an apartment complex located at 5726 Highland Hills Drive, Dallas, Texas on September 29, 2021, at 10:20 (Fireground Audio Archive, 2021; Hauck, 2021; & Osborne & Eiserer, 2021). Before starting this training, make sure you have a copy of the tactical worksheet that you normally use for incident operations. Review the map and photos (Figures 1-5) to gain an understanding of area and building involved.

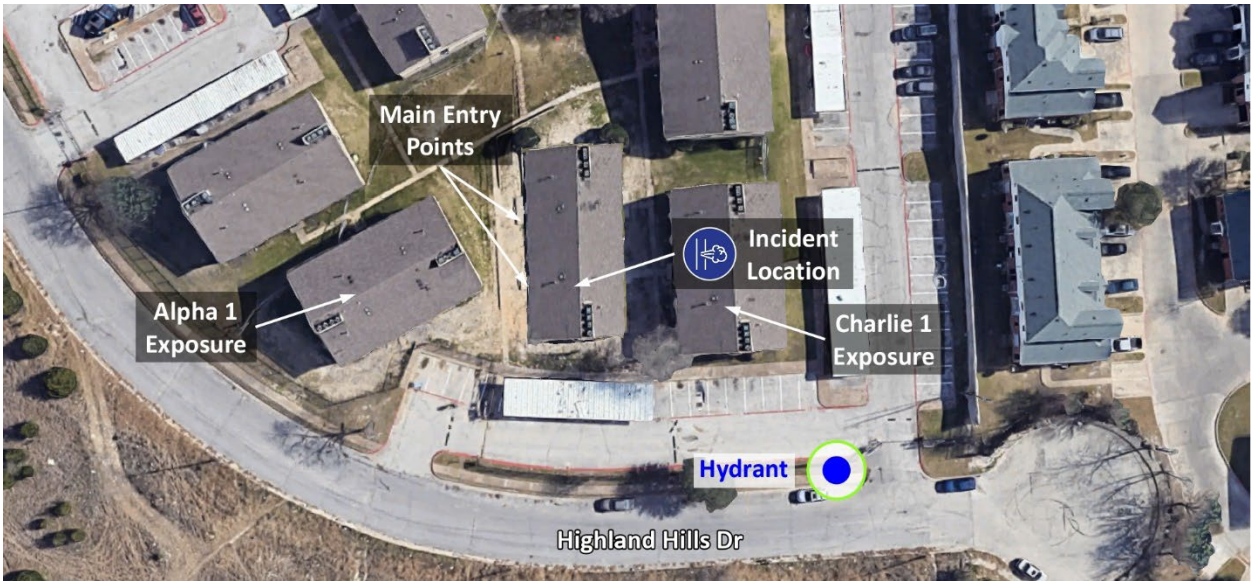
Figure 1. Map of the Incident Area



Note: Adapted from Google. (2023a). [map 5726 Highland Hills Drive, Dallas, TX]. http://bit.ly/3G5slQk.

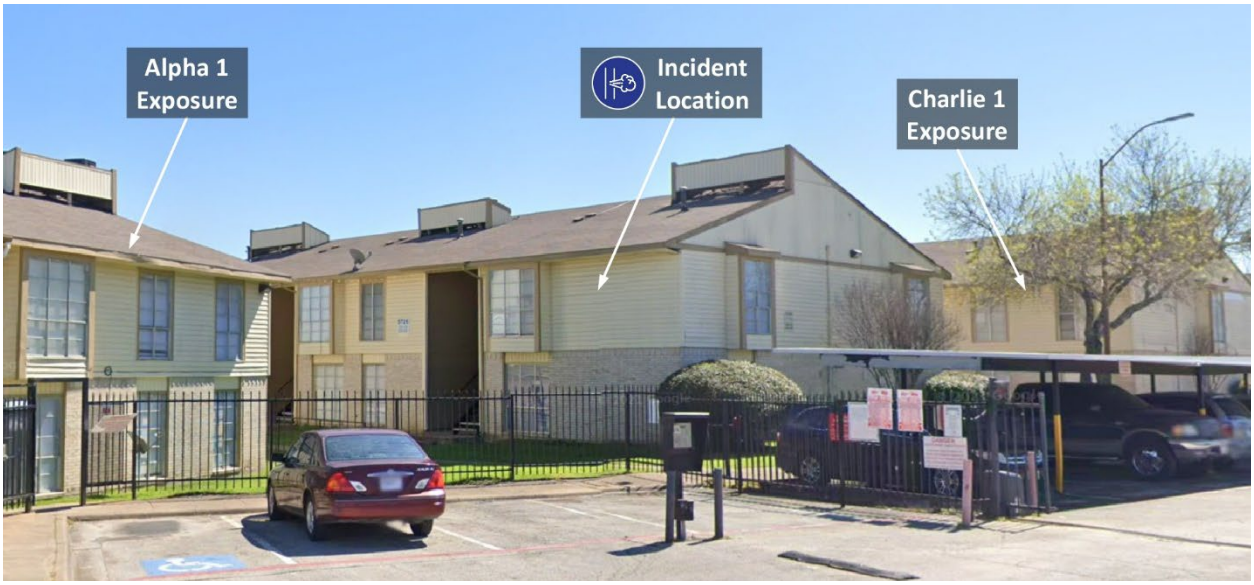
The closest hydrant is at the south entrance to the complex on Highland Hills Drive and an additional hydrant is located north of the incident on Highland Hills Drive as illustrated in Figures 1 and 2.

Figure 2. Aerial View



Note: Adapted from Google. (2023b). [aerial view 5726 Highland Hills Drive, Dallas, TX]. http://bit.ly/3Kaddma.

Figure 3. Alpha/Delta Corner



Note: Adapted from Google. (2021a). [street view 5726 Highland Hills Drive, Dallas, TX]. http://bit.ly/40OWtaE.

Figure 4. Side Delta

Note: Adapted from Google. (2021b). [street view 5726 Highland Hills Drive, Dallas, TX]. http://bit.ly/3m6ZVyx.

Figure 5. Charlie/Delta Corner

Note: Adapted from Google. (2021c). [street view 5726 Highland Hills Drive, Dallas, TX]. http://bit.ly/3M9ze7a.

You were dispatched to 5726 Highland Hills Drive for an odor of gas inside the building at 10:20. You are responding to this incident as the first arriving command officer. Temperature is 81° F with a wind from the south at 10 mph (Weather Underground, 2021 & Fireground Audio Archive, 2021). While responding you hear two engines, go enroute. The engines have staffing typical of your agency. The first engine will

arrive from the north on Highland Hills Drive. The second engine will arrive from the same direction approximately six minutes after the first. Make a note of your staffing assumptions prior to continuing with this 10-Minute Training. **You will arrive from the north Highland Hills Drive after the second engine**.

Figure 6. Aerial Overview of the Incident Area

Note: Adapted from Google. (2023c). [aerial view 5726 Highland Hills Drive, Dallas, TX]. http://bit.ly/3Me9IgX.

1. What critical factors would you consider when dispatched and during response?

As you were responding Engine 1 provided the following initial radio report:

> *On-scene of a small two-story apartment complex, nothing showing, investigating, in the offensive strategy, initiating Highland Hills Command, continue the alarm.*

Engine 2 arrives and advised Highland Hills Command they are Level 1 on the hydrant to the north of the complex. Highland Hills Command provides the following orders to Engine 2.

> *We are finishing the 360, position at the north end of the complex and investigate the odor of gas reported to be in units on Side Delta, which is closest to the parking lot.*

A short time later, Highland Hills Command provides the following update.

> *360 complete, two-stories all sides, no basement, continuing offensive, and continue the alarm.*

As you arrive, you observe Engine 1 parked in front of the Charlie 1 Exposure and Engine 2 positioned in the north entrance to the complex, on the Alpha/Delta Corner of 5726 Highland Hills Drive. Figure 7 illustrates conditions on your arrival (there is no arrival video for this incident).

Figure 7. Conditions on Arrival of Chief 1

Note: Adapted from Google. (2021a). [street view 5726 Highland Hills Drive, Dallas, TX]. http://bit.ly/40OWtaE.

2. What actions will you take prior to contacting IC #1 (Engine 1) to begin command transfer?

Take a moment to document tactical operations and accountability to this point in the incident using a tactical worksheet (use the worksheet that you normally use).

As you are about to contact Engine 1 to initiate command transfer, there is an explosion, the incident occupancy is partially collapsed, and the Delta end of the building (closest to the parking lot) is significantly involved in fire. Examine Figure 8 illustrating conditions immediately post explosion.

Figure 8. Conditions Immediately Post Explosion

Note: Adapted from Hauck, G. (2021). Gas explosion at Dallas apartment complex injures 8, including 4 firefighters. http://bit.ly/3nFIo0X. Digital Combustion Fire Studio 6.0 Simulation.

Immediately after the explosion, you hear the following radio traffic:

> *Engine 2, Engine 2, we need medics, Engine 2 we've had an explosion, we're all hurt.*

Other than these initial communications, you receive no response from Engine 1 or Engine 2 if you attempt to communicate with them.

3. State the communication you would have with dispatch.

The following questions are based on request to balance the initial response to an apartment fire and subsequent request for a second alarm (your resource request in the preceding question may have been different). Engine 3, Engine 4, and Medic 1 are the next three units to arrive.

4. What action would you take prior to the arrival of additional resources?

5. State the tactical assignment you would provide Engine 3 when they advise that they are Level 1. State this communication exactly as you would transmit it.

6. State the tactical assignment you would provide Engine 4 when they advise that they are Level 1. State this communication exactly as you would transmit it.

7. State the tactical assignment you would provide Medic 1 when they advise that they are Level 1. State this communication exactly as you would transmit it.

8. What assignment will you give Chief 2 when they advise that they are Level 1. State the communication exactly as you would transmit it. What additional communication would you have with other on-scene resources based on Chief 2's assignment. State these communications exactly as you would transmit them.

Listen to the first 10:00 of the incident audio (Fireground Audio Archive, 2021) before answering the remaining questions. Keep in mind that the audio was captured from the City of Dallas Fire and Rescue audio feed on Broadcastify. This feed includes DFR1 (Fire), DFR2 (Rescue MICU), DFR Fire Ground Staging, SIMPLEX DFR Fire Ground 12. Automated Station Dispatching is not included in this feed.

The actual incident differed from this 10-Minute Training in that IC #2 (Battalion) was not on-scene when the explosion occurred presenting a significant change in context. There was also a subsequent transfer of command later in the incident.

9. Much the same as the tendency for on-scene resources to want to self-deploy when a mayday occurs, multiple units asked dispatch to assign them to the incident and it was some time before dispatch began to advise those companies that resources be dispatched as requested by the IC. How would self-assignment of resources impact incident operations? How should this be managed?

10. It is likely that much of the fireground communication was taking place face-to-face. Why might this have occurred and what was the likely impact of this approach to communications?

11. Did the incident commanders in this incident have good command presence (based on listening to the audio recording)? Why or why not? How does command presence impact fireground operations, particularly during a mayday or other adverse event?

Additional Learning: This incident provides a jumping off point for multiple avenues of additional learning including procedures for response to odor of gas emergencies and management of maydays.

Listen to the following stories of the firefighters and officer from Dallas Fire and Rescue Ladder 25 who were involved in this incident:

- Firefighter Pauline Perez
- Firefighter/Engineer Ronald Hall
- Captain Chris Gadomski

Think about the impact of the injuries on the firefighters' and captain's career, life, and families.

Review the characteristics of natural gas and propane with your crews. Focus specifically on the difference in vapor density (0.55 for natural gas and 1.5 for propane). Also discuss the atmospheric monitoring instruments carried on your apparatus and the conversion factors for methane and propane (if your instruments are calibrated for pentane) or the conversion factor for propane (if your instruments are calibrated for methane). If you use the MSA Altair, review the *Operating Manual ALTAIR® 4 – Four Gas Multigas Detector* (MSA, n.d) and *ALTAIR® 4X Multigas Detector Cross Reference Factors Addendum* (MSA, n.d).

Discuss the following tactical best practices for response to fuel (flammable) gas incidents including odor of gas and reported leaks of natural gas or propane.

- The first arriving company should position at least 300' (or two houses in a suburban or urban environment) away and preferably uphill and up wind from the reported location. Later arriving units to Level 1 stage at a greater distance.
- Turn on atmospheric monitoring instruments and zero before approaching the incident location and monitor the atmosphere on approach. Whenever possible, perform 360-detree reconnaissance and monitoring prior to assessing hazards on the interior. If not possible due to size of the building, monitor downwind and on the exterior in the area of the reported odor or leak.
- Have an on-deck company before committing to the interior and sequence your monitoring low, middle, and high based on the anticipated product involved (propane start low and natural gas start high). Take your time and allow for the atmospheric monitoring instrument to respond (if using tubing to monitor at a distance, remember that this adds to instrument response time).
- If you have any reading of % of the lower explosive limit (LEL) exit the area (there will be 100% of the LEL closer to the leak) and provide a priority traffic radio message. When providing a conditions, actions, and needs (CAN) report, state the % LEL and oxygen concentration.

Reflect on your answer to this 10-Minute Training. Would you have maintained command presence and been confident in your response if you were IC #2 at this incident. Engage in mental practice to rehearse your actions and communications if confronted with this type of incident. Consider that this may occur

prior to or after your arrival. Seek out a mentor or peer and engage in deliberate practice to improve your skill level in decision-making and communications related to managing a mayday. Consider use of audio recording so that you can listen to yourself.

References

Fireground Audio Archive - a 911 ERV Channel. (2021). Dallas Gas Explosion Fire Audio w/Mayday 9/29/2021 [Texas]. Retrieved April 2, 2023, from https://bit.ly/3U6hv2f.

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