



# In-Station Training

## TM 24-14a Gas Leak and Explosion



### Author

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### Purpose

Report of an odor of gas outdoors is often considered to be less serious than when the odor of gas is detected inside a building. However, this is not always the case. **There are no routine incidents!**

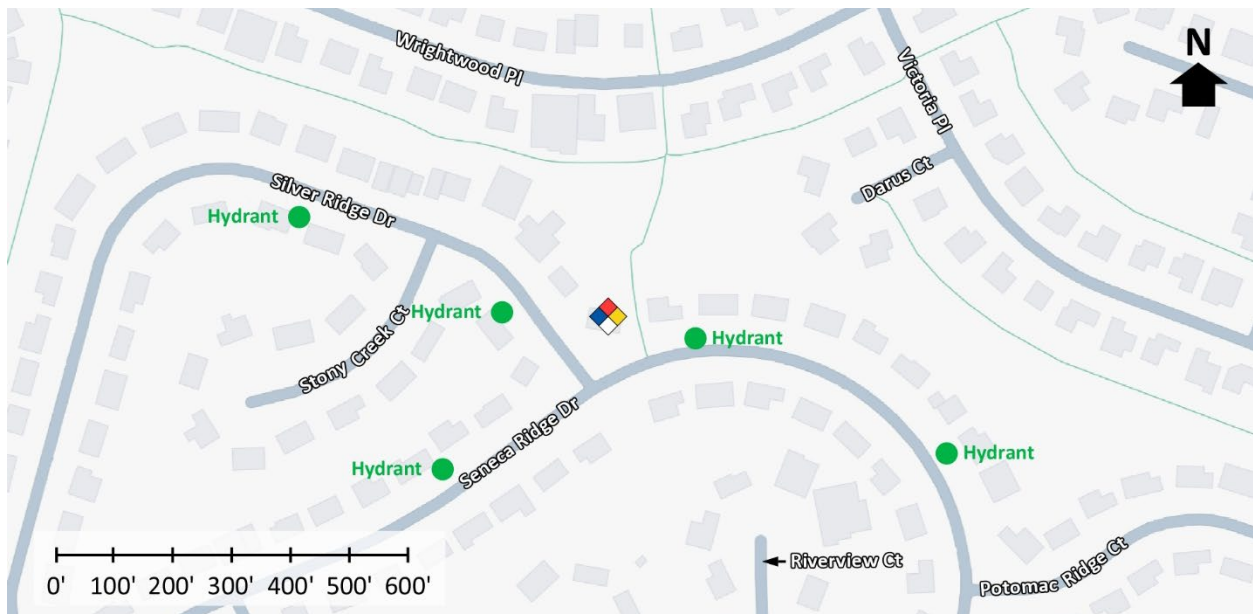
### Learning Outcomes

Command officers perform an effective size-up, select an appropriate strategy, and implement tactics based on the strategic decision-making model when responding to flammable gas incidents.

### Conducting the Drill

This incident involved an outside odor of gas at 347 Silver Ridge Drive, Sterling, Virginia on February 16, 2024, at 19:40 (Fox 5 DC Digital Team, 2024; Corliss, Lyons, & Vitka, 2024; Volou, 2024; LoudounNow, 2024; & LC-CFRS, 2025). Review the map and photos (Figures 1-6) to gain an understanding of the area and building involved.

Figure 1. Map of the Incident Area



Note: Adapted from Google. (2024a). [Map, 347 Silver Ridge Drive, Sterling, VA].

<https://bit.ly/3OMZpkG>.

The closest hydrant is to the west southwest on Seneca Ridge Drive with additional hydrants on Silver Ridge Drive and Seneca Ridge Drive as illustrated in Figure 1.

Figure 2. Aerial View



Note: Adapted from Google. (2024b). [Aerial view 347 Silver Ridge Drive, Sterling, VA].

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

Figure 3. Side Alpha



Note: Adapted from Redfin. (2015). 347 Silver Ridge Dr. Sterling, VA 20164. <https://bit.ly/3T1upQ9>.

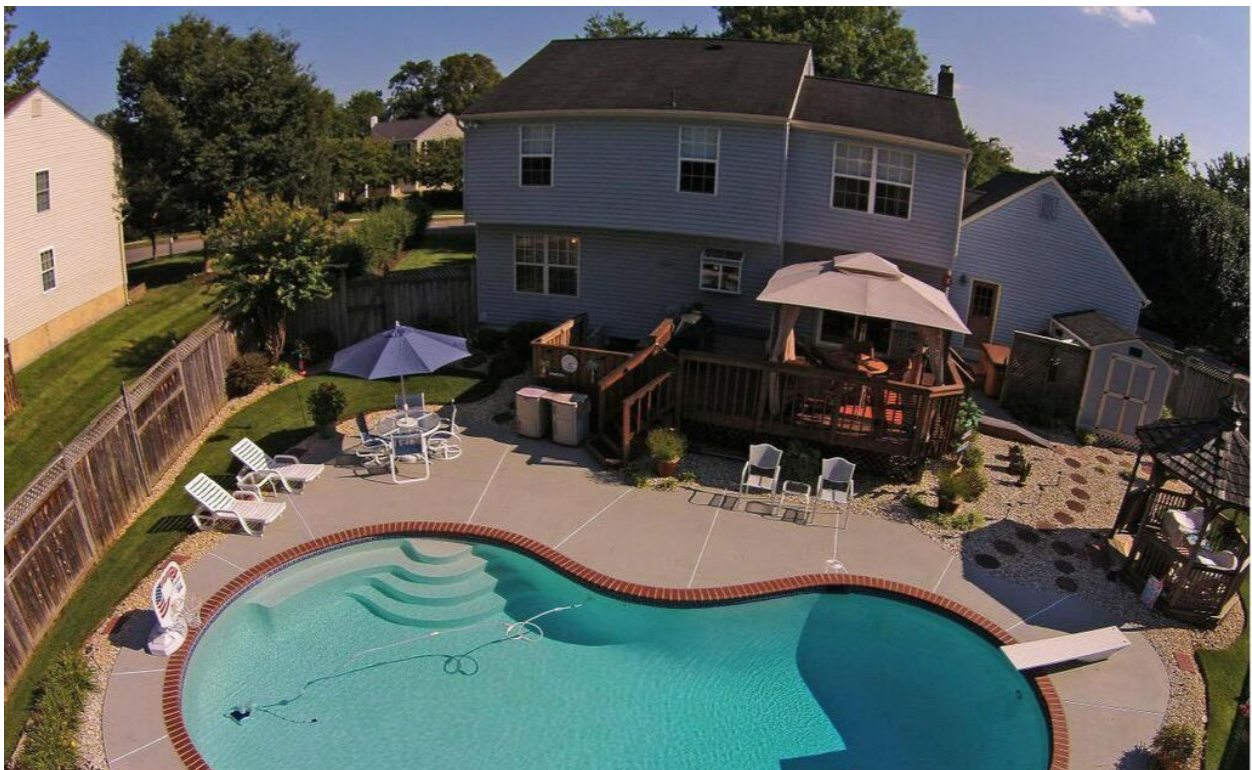


Figure 4. Alpha/Bravo Corner



Note: Adapted from Redfin. (2015). 347 Silver Ridge Dr. Sterling, VA 20164. <https://bit.ly/3T1upQ9>.

Figure 5. Side Charlie



Note: Adapted from Redfin. (2015). 347 Silver Ridge Dr. Sterling, VA 20164. <https://bit.ly/3T1upQ9>.

Figure 6. Bravo/Charlie Corner



Note: Adapted from Redfin. (2015). 347 Silver Ridge Dr. Sterling, VA 20164. <https://bit.ly/3T1upQ9>.

**Important!** This 10-Minute Training is based on the incident that occurred at 347 Silver Ridge Dr. Sterling, Virginia on February 16, 2024, that resulted in the line-of-duty death of Firefighter Trevor Brown of the Sterling Volunteer Fire Company and injury to 11 other members of Loudoun County Fire and Rescue. Data for this training was developed from news reports, incident radio traffic, and the serious incident investigation report (LC-CFRS, 2025). This training is dedicated to the memory of Firefighter Brown and to the other members of Loudoun County Fire and Rescue injured in this incident.

It is Friday, February 16<sup>th</sup>, and you hear Ladder 1 and Engine 1 dispatched to 345 Silver Ridge Drive for an outside odor of gas at 19:40. Thirty-nine minutes later, at 20:19 you are dispatched to 347 Silver Ridge Drive along with Engine 2 and the Hazmat Unit. You are responding to this incident as the first arriving command officer and anticipate that your response time will be approximately 10 minutes. Temperature is 41° F with wind from the east southeast at 5 mph (Weather Underground, 2024). While en route, you are advised that the source of the leak is an underground propane tank and that 125 gallons of propane had been delivered earlier in the day. **You will arrive from the southwest on Seneca Ridge Drive after Engine 2**



Time starts now! Answer the first eight questions within the next 10 minutes. After answering question 1, decide and put your answers in the form of communication you would have with the companies assigned to this incident. Save discussion for after answering the first eight questions.

If needed, you may use the [Emergency Response Guidebook](#) (US DOT, 2024), [Pocket Guide to Hazardous Chemical Hazards](#) and [CAMEO Chemicals](#) (NOAA, 2024) to inform your strategic and tactical decision-making.



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

Approximately five minutes before you arrive at the incident, you hear the following radio transmission from Engine 1

*We just had a cat..ta...catastrophic explosion.*

Immediately after Engine 1's radio transmission you hear the following radio transmission from an Engine 1 firefighter:

*Mayday, mayday, mayday Engine 1 Firefighter, I just got trapped in an explosion, I'm in the basement, Engine 1 I'm in the basement, oh no!*

The apparatus operator of Engine 1 reports a structural explosion, and you hear the following radio transmission from the company officer of Ladder 1:

*Mayday, Mayday, Mayday, Ladder 1, Ladder 1 Ladder 1, I'm in the basement...trapped by debris.*

The Engine 1 firefighter transmits a second mayday:

*Mayday, mayday, mayday, mayday, mayday, mayday.*

2. What actions will you take while continuing your response to the incident?

Engine 2 arrives and provides the following initial radio report:

*Engine 2 is on-scene of a house explosion with significant damage, the house is pretty much leveled, forward lay from a hydrant on Seneca Ridge Drive, establishing command.*

3. What additional actions if any will you take while continuing response?

Shortly after Engine 2 arrives and establishes command you hear the following transmission:

*Mayday, mayday, mayday, Engine 1 firefighter, I'm stuck in the basement, come get me out.*

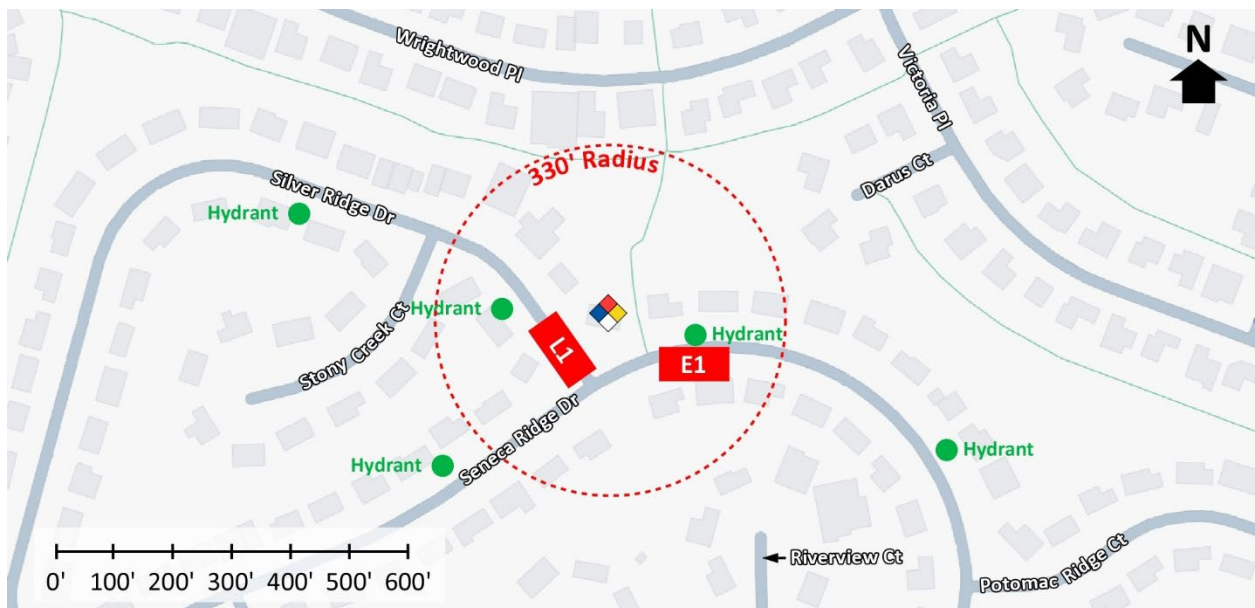
You arrive at the intersection of Silver Ridge Drive and Seneca Ridge Drive and observe the conditions illustrated in Figure 7 and apparatus positioning illustrated in Figure 8.

Figure 7. Conditions on Arrival of Chief 1



Note: Adapted from Loudoun County Combined Fire and Rescue System (LC-CFRS). (2025). *Significant incident investigative report, firefighter line of duty death, Incident #2024-00006869, 347 Silver Ridge Drive, February 16, 2024.* <https://bit.ly/4jxlbXi>.

Figure 8. Apparatus Positioning and Blast Radius



Note: Adapted from Google. (2024c). [Map, 347 Silver Ridge Drive, Sterling, VA]. <https://bit.ly/3OMZpkG>.

You hear an additional mayday transmission from the Engine 1 Firefighter:

*Mayday, mayday, mayday.*

4. What actions will you take prior to contacting IC #1 (Engine 2) to begin command transfer?
5. State your command transfer communication after IC #1 acknowledges your radio contact (exactly as you would transmit it).

When you request a conditions, actions, and needs (CAN) report, IC #1 provides the following CAN:

*The house is leveled and there is fire burning in the debris. Attempting to access the crew of Engine 1 in the basement.*

6. State the communication you would have with IC #1 and dispatch to complete the command transfer (exactly as you would transmit it).
7. What action would you take based on the CAN from IC #1. State the communications you would have with Engine 2 exactly as you would transmit them.

You receive the following radio transmission from Ladder 1:

*I'm trapped in the basement under heavy debris. I'm in a void space; however, I've got fire going on down here and it's slowly making its way towards me. I am unable to make my way out. I need you guys to get down here and put this fire out ASAP.*

8. At present, you do not have accountability for all of the members assigned to Engine 1 and Ladder 1. What steps will you take to establish accountability and identify the location and condition of the members of these two companies?



Reflect on your strategic decision-making and responses to questions one through eight before answering the next six questions. Give some thought to what cues, patterns, or anomalies (differences from conditions that you would anticipate) inform your answers.

The next several questions are based on having upgraded the resource determination based on the critical factors presented by this incident and resulting mayday.

9. What was your resource determination (e.g., first alarm, second alarm, special call for specific resources or resource types)?
10. How would you improve your situational awareness?
11. What are the tactical assignments that you will give the next two first alarm companies who arrive and Level 1 Stage?
12. What tactical assignment will you give the next arriving command officer?
13. What are your next steps?



**Additional Learning:** Project Mayday examined occurrence of maydays in career fire departments based on the duration of incident operations and based on the number of and type of companies on-scene. Only 0.5% of maydays occurred in the first 10 minutes and 6.5% occurred within the first 15 minutes of incident operations. Maydays also typically occurred on multi-company responses with a chief officer on-scene (Abbott, 2021). However, what if a mayday occurs prior to your arrival?

1. Listen to the [incident audio](#) (Metro Fire, 2024). *This audio recording has the dead space removed from the radio traffic and as such the timeframe is compressed.*
2. Ask yourself, how would your crews have handled this incident if they were involved in the mayday or were arriving as the first uninvolved unit (IC #1)? How would you have handled this incident if you were IC #2? If you were presented with this incident today, are you prepared? Are your crews prepared? Be honest with yourself. If the answer is no, now is the time to develop and/or refine your knowledge and skills.

Read the [Loudoun County Significant Incident Investigation Report](#) (LC-CFRS, 2025) on this incident and discuss the observations, recommendations, and analysis with the companies you supervise. How can the lessons learned from this incident be implemented within your agency and what actions can you take to improve the safety and effectiveness of your company when responding to flammable gas incidents?

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