In-Station Training

TM 25-23 Multiple Vehicle Fire-Highway Tunnel

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Purpose

Fires in road tunnels occur infrequently, but present a significant risk to life, damage to infrastructure, and can have a major economic impact. Tunnel fires have some similarities with fires in buildings, but tunnel fire dynamics also have significant differences that impact fire and rescue operations.

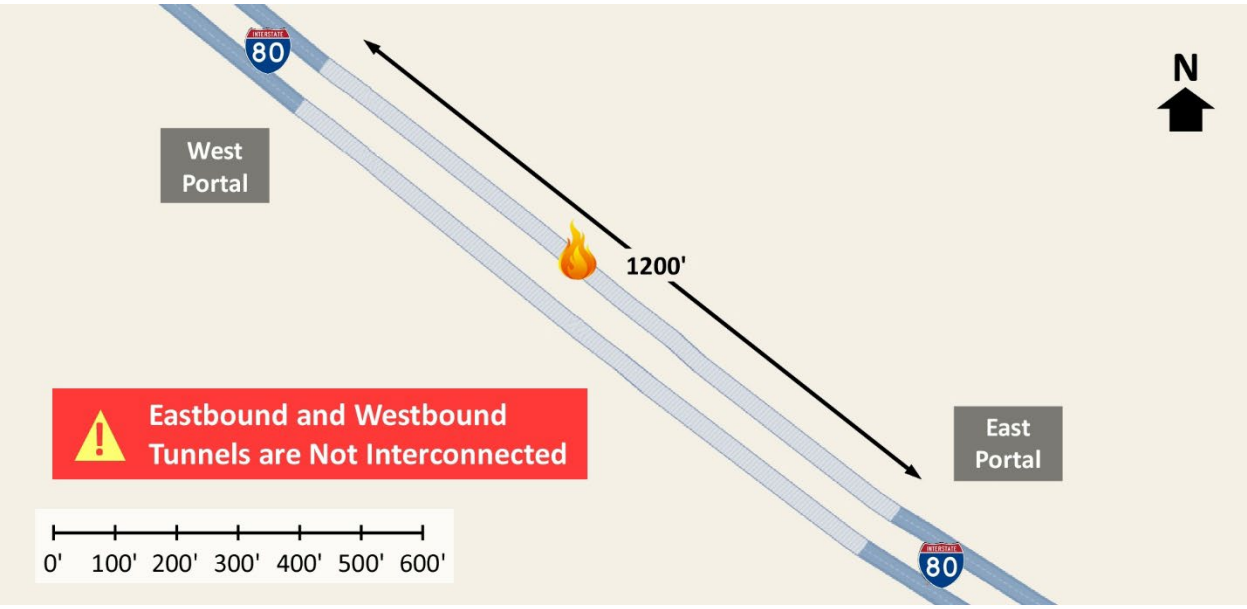
Learning Outcomes

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

Conducting the Drill

This incident involved a multiple vehicle accident and fire on Interstate 80 at the Twin Tunnel in Green River, Wyoming on Friday, February 14, 2025, at 11:37 (Fox 13 News Utah, 2025a, 2025b; abc4utah, 2025; The Travel, 2025; Wolfson, 2025; & SCSO & WHP, 2025). Review the map and photos (Figures 1-8) to gain an understanding of the area and tunnel involved.

Figure 1 Map of the Incident Area

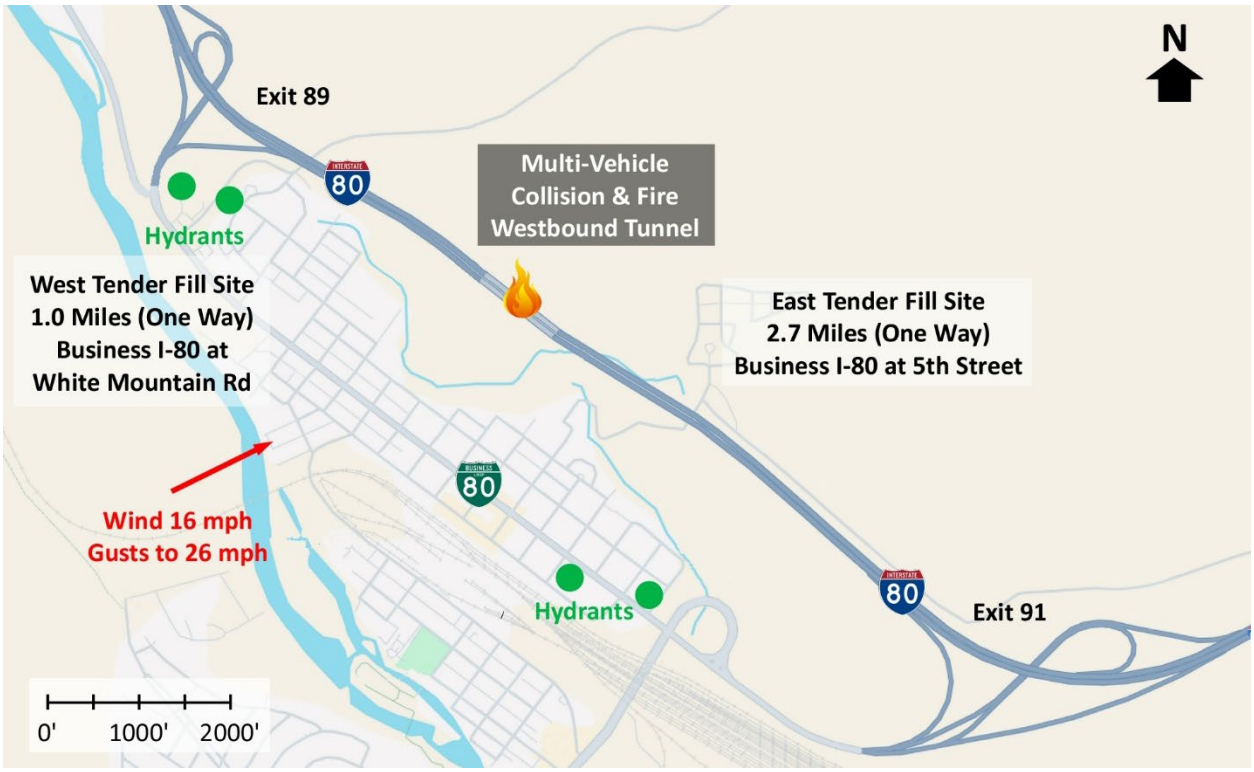


Note: Adapted from Google. (2025a). [Map, Interstate 80 Twin Tunnel, Green River, WY]. https://bit.ly/4i76N6j.

Figure 2 Aerial View

Note: Adapted from Google. (2025b). [Aerial view Interstate 80 Twin Tunnel, Green River, WY]. https://bit.ly/41qd4Vy,

Figure 3. Area Map



Note: Adapted from Google. (2025c). [Map Interstate 80 Twin Tunnel, Green River, WY]. https://bit.ly/41kya7z.

There are no hydrants on Interstate 80. The closest water tender fill points are at I-80 Business Loop and 5th Street on the east side of the incident (via Exit 91) and I-80 Business Loop and White Mountain Road on the west side of the incident (via Exit 89).

Figure 4. I-80 West Portal

Note: Adapted from Google. (2024a). [Street view Interstate 80 Twin Tunnel, Green River, WY]. https://bit.ly/431K5s4.

Figure 5. West Portal Aerial

Note: Adapted from Google. (2025e). [3d aerial view Interstate 80 Twin Tunnel, Green River, WY]. https://bit.ly/4bf4coL.

Figure 6. I-80 East Portal

Note: Adapted from Google. (2024b). [Street view 534 Interstate 80 Twin Tunnel, Green River, WY]. https://bit.ly/4gJ5DNj.

Figure 7. I-80 East Portal Aerial

Note: Adapted from Google. (2025d). [3d aerial view Interstate 80 Twin Tunnel, Green River, WY]. https://bit.ly/418utRd.

Figure 8. Interior of the Tunnel (Westbound)

Note: Adapted from Google. (2024c). [Street view Interstate 80 Twin Tunnel, Green River, WY]. https://bit.ly/4gP2Q5e.

The temperature is currently 32° F with wind from the west southwest at 16 mph with gusts to 26 mph (Weather Underground, 2025). **You are the company officer of an engine company**. It is Friday, February 14th, and you have been dispatched along with a ladder company, two other engines, a medic unit, and command officer at 11:37 to the east portal of the twin tunnel on I-80. The engines and ladder have four-person staffing[1].

Time starts now! Answer the first eight questions within the next 10 minutes. Decide and put your answers in the form of communication you would have with your crew, other companies, and the first arriving command officer. Save discussion for after answering the first eight questions.

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

You hear a command officer, ladder company, two engines, and an advanced life support ambulance go en route. You will arrive first at the west portal of the tunnel on I-80. The ladder company will arrive from the same direction two minutes after you. You anticipate that the second engine will arrive from

[1] If your first alarm deployment is different, use your own resource assignment and staffing with the first and second arriving resources typical for your agency (e.g., two engines vs. engine and ladder).

the east several minutes after the ladder company. The command officer will arrive from the west after the second engine. All other units dispatched on the first alarm will arrive after the command officer.

While responding, dispatch advises multiple callers reporting a collision and fire involving multiple passenger cars and tractor trailers in the westbound tunnel. Examine Figure 9 illustrating conditions on arrival.

Figure 9. Conditions on Arrival-West Portal

Note: Wyoming Department of Transportation photo.

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?

You encounter multiple vehicle drivers and occupants that report multiple trucks and passenger cars involved in a collision inside the tunnel with people trapped. You can hear yelling and screaming from inside the tunnel.

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. Ladder 1 advises that they are Level 1 west of the incident. State the tactical assignment you would give them exactly as you would transmit it.

7. Engine 2 arrives and reports that they are Level 1 at the east portal of the tunnel. State the tactical assignment you would give them exactly as you would transmit it.

If you request a report on conditions at the east portal, have a member of your crew examine Figure 14 on the last page of this 10-Minute Training and provide you with a report on observed conditions. If you are completing this 10-Minute Training by yourself, go to the last page and examine Figure 14.

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 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.

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. Was it reasonable to believe that the tunnel was occupied by vehicle drivers and occupants?

13. Was there searchable space?

14. If you believed it was reasonable that the tunnel was occupied and there was searchable space, what could you do about it?

At the time this 10-Minute Training is being developed, there is limited information available about the tactical operations performed by the Green River Fire Department and other agencies operating at this incident other than that they rescued multiple people from the tunnel and provided medical care for those who escaped under their own power and who were rescued. Should additional information become available, this training will be updated to include lessons learned.

15. Given the 1200’ length of the tunnel and unknown exact location of the fire, how did you approach initial fire control and search operations? What critical factors influenced your decisions?

16. As IC #1 working with your crew, how would you have addressed multiple victims inside the tunnel in need of assistance in exiting or requiring physical rescue?

Blue Card identifies 175’ as the limit for depth of penetration into the hazard zone during structural firefighting operations to provide adequate air supply for entry, work time, and egress, prior to the end of service life indicator (EOSTI) or low air alarm sounding (at 33% of full cylinder pressure). Several studies have been conducted examining fire and rescue operations in tunnels. Palm, Kumm, Storm, & Lönnermark (2022) examined breathing air consumption during firefighting operations in a mining environment under live fire conditions and Lambert & Merci (2024) examined search and rescue operations with participants’ facepieces covered to provide zero visibility (but no fire, smoke, or elevated temperature conditions). The breathing apparatus used in these studies are slightly different than those typically used by the fire service in the United States (see Figure 10). In Lambert’s and Merci’s study, the participants wore a single cylinder compressed air breathing apparatus with a capacity of 2040 L at 300 bar. In the study conducted by Palm et al. participants wore twin cylinder compressed air breathing apparatus with capacities of either 2430 L or 4020 L at 300 bar.

The breathing apparatus used in these studies can be compared to breathing apparatus used in the United States such as the Scott X3 Pro. A “45-minute” cylinder has a capacity of 67 ft3 (1886 L) at either 4500 psi or 5500 psi (depending on the specific cylinder).

Figure 10. Self-Contained Breathing Apparatus Used in Tunnel Tests

Note: Adapted from Lambert, K. & Merci, B. (2024). Analysis of air consumption and moving speed by firefighters during full-scale search & rescue experiments in a tunnel. *Fire Safety Journal*, 150 (B) and Palm, A., Kumm, M., Storm, A., & Lönnermark, A. (2022). Breathing air consumption during different firefighting methods in underground mining environment. *Fire Safety Journal*, 133.

Palm et al. identified that with lower capacity cylinders (2040 L), penetration depth should be limited to 75 m (246’) during firefighting operations. Lambert & Merci identified that penetration depth should be limited to 275 m (902’) for rescue operations (known victim location, working without a hoseline, and using a stretcher with wheels on one end for victim removal).

17. Considering similarities and differences between the arrangement and layout of buildings (particularly large buildings) and tunnels, how would you address the need for air management when operating at an incident such as that presented in this 10-Minute Training?

Additional Learning: Watch the following videos:

- *First Responders Reflect on Deadly Wyoming I-80 Tunnel Crash* (KUTV 2 News Salt Lake City,2025a).
- *Driver who Escaped Green River Tunnel Explosion Describes ...* (KUTV 2 News Salt Lake City, 2025b).
- *Truck Driver Escapes from Green River Tunnel Fire* (American Truck Drivers, 2025).

Read Tunnel Fire Dynamics (Hartin, 2025) and examine Figures 11, 12, and 13 illustrating post fire conditions.

Figure 11. Westbound Tunnel (Fire area)

Note: Wyoming Highway Patrol photo.

Figure 12. Westbound Tunnel (Uninvolved Area)

Note: Wyoming Highway Patrol photos

Consider variations in smoke and thermal conditions encountered by escaping civilians and firefighters operating in different areas of the tunnel.

After examining Figure 13, consider how you would approach deploying long attack lines for fire control or to support primary search in a tunnel. What alternatives could you use to maximize effectiveness while minimizing impact on air consumption?

Figure 13. Westbound Tunnel (East Portal)

Note: Wyoming Highway Patrol photo.

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Figure 14. Conditions on Arrival of Engine 2 at the East Portal

Note: Wyoming Department of Transportation photo.

There are multiple vehicle occupants and drivers who escaped the tunnel along with bystanders outside the east tunnel portal. The vehicle occupants and drivers are covered in soot and some are experiencing difficulty breathing.