In-Station Training

TM 25-06 Commercial Fire-Storage Facility

Author

Chief Ed Hartin

Purpose

Firefighting in self-storage facilities presents unique challenges due to the unknown contents of each unit, lack of barriers between units, potential for hazardous materials, limited access, and the rapid spread of fire.

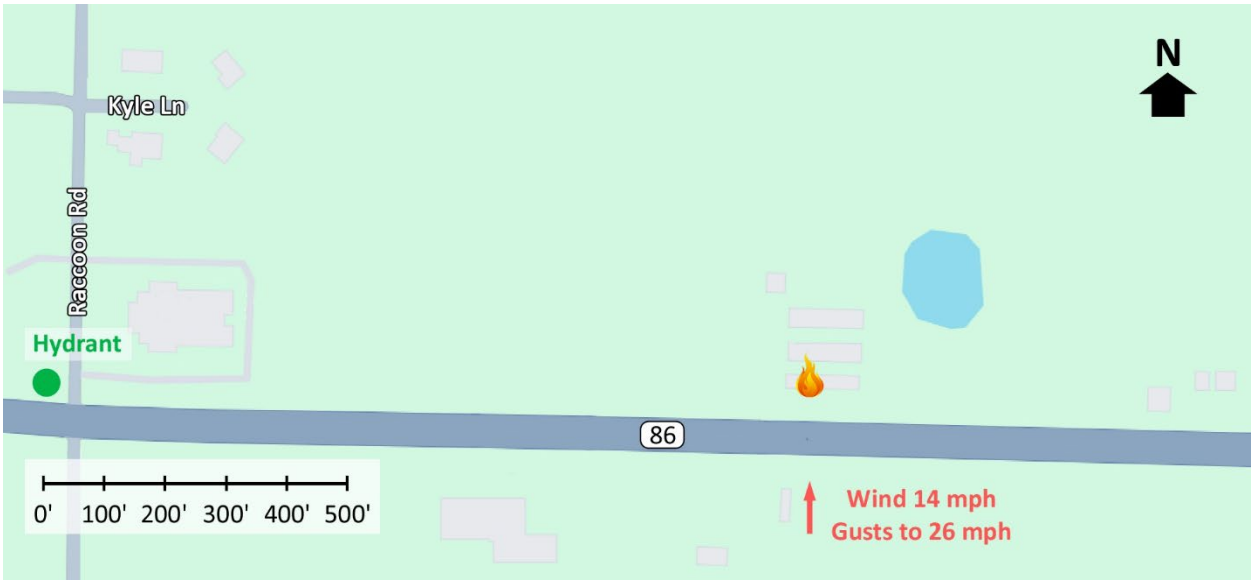
Learning Outcomes

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

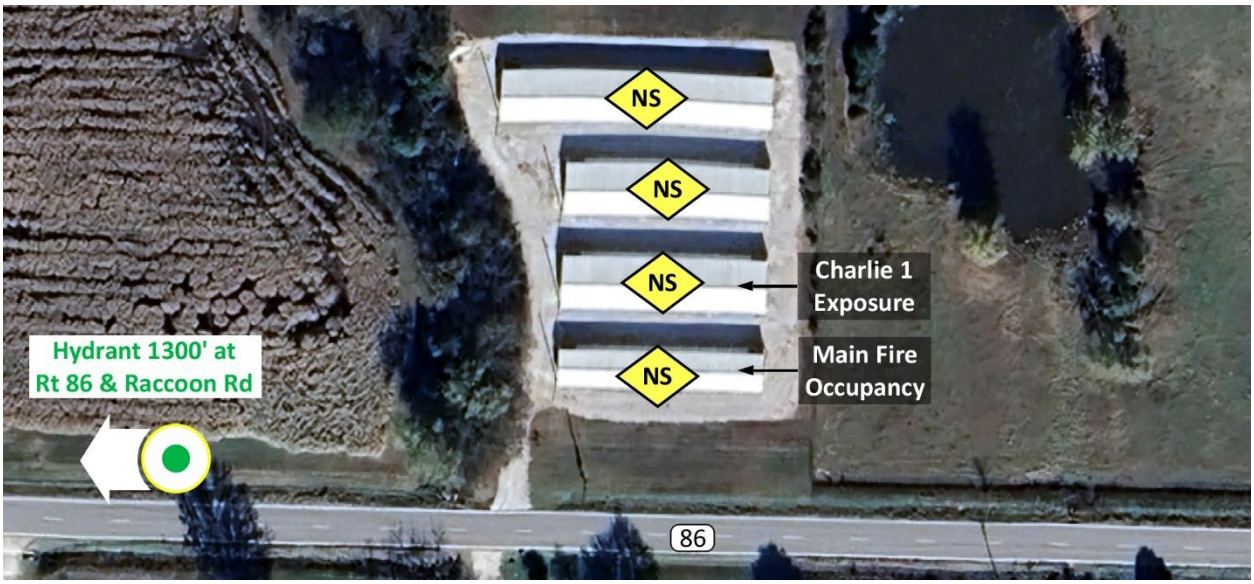
This incident involved a commercial fire at Laughlin Storage Units, 23186 State Hwy 86, Granby, Missouri on Monday, December 23, 2024, at 01:30 (4 State News and Weather, 2024). Review the map and photos (Figures 1-4) to gain an understanding of the area and building involved.

Figure 1. Map of the Incident Area



Note: Adapted from Google. (2024a). [Map, 23186 State Hwy 86, Granby, MO]. https://bit.ly/3BVsTJL.

Figure 2. Aerial View



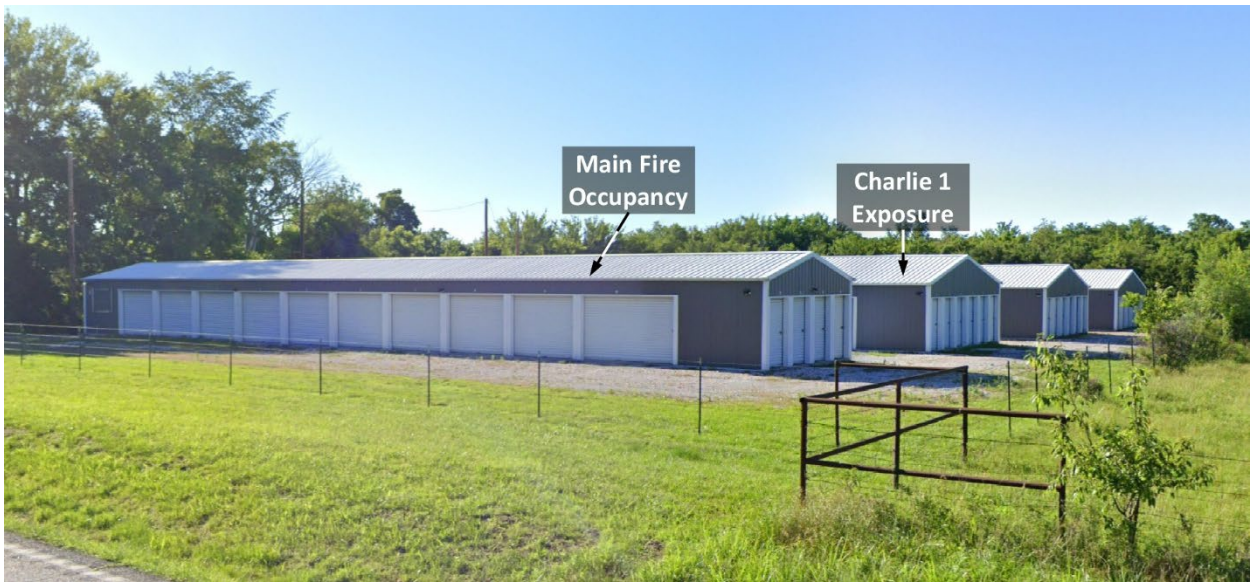
Note: Adapted from Google. (2024b). [Aerial view 23186 State Hwy 86, Granby, MO]. https://bit.ly/421McM1.

The closest hydrant is located at Route 86 and Racoon Road as illustrated in Figures 1 and 2.

Figure 3. Alpha/Bravo Corner

Note: Adapted from Google. (2024c). [Street view 23186 State Hwy 86, Granby, MO]. https://bit.ly/4h05V32.

Figure 4. Alpha/Delta Corner



Note: Adapted from Google. (2014d). [Street view 23186 State Hwy 86, Granby, MO]. https://bit.ly/3WuTWmr.

The temperature is currently 47° F with wind from the south at 14 mph with gusts to 26 mph (Weather Underground, 2024). **You are the company officer of an engine company**. It is Monday, December 23rd, and you have been dispatched along with two other engines, a ladder company, two water tenders, medic unit, and command officer at 01:30 to Laughlin Storage Units, 23186 State Hwy 86 for a commercial fire. 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, two other engines, a ladder company, and an advanced life support ambulance go en route. Your engine will arrive first, approaching from the west on Route 86. The ladder company will arrive from the same direction shortly after you. The second engine and a water tender

[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).

will arrive from the west two minutes after you. The command officer will arrive shortly after the second engine. All other units dispatched on the first alarm will arrive after the command officer.

While responding, dispatch advises that they have a report of flames and smoke from Laughlin Storage Units. Watch the first 00:25 of the incident video (4 State News and Weather, 2024) and examine Figure 5, illustrating conditions on arrival.

Figure 5. Conditions on Arrival

Note: Adapted from 4 State News and Weather. (2024). *Large Storage units on Fire. 86 Highway near Granby, Mo. 12-23-2024* [video]. https://bit.ly/423T3oe.

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?

Watch the incident video from 01:02 to 01:19 and 01:35 to 01:55. Examine Figure 6 illustrating conditions on the Bravo/Charlie Corner.

Figure 6. Conditions on the Bravo/Charlie Corner

Note: Adapted from 4 State News and Weather. (2024). *Large Storage units on Fire. 86 Highway near Granby, Mo. 12-23-2024* [video]. https://bit.ly/423T3oe.

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 on Route 86, 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 on a hydrant Route 86 and Racoon Road. 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 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 Main Fire Occupancy was occupied?

13. Was there searchable space?

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

Watch the incident video (4 State News and Weather, 2024) from 02:35 to 08:40 before answering the next several questions.

15. Given the wind speed, direction, and observed fire conditions, what were the potential means of fire spread to the Charlie Exposures? Was this a significant critical concern? Why or why not?

16. The companies operating at this incident appeared to be using nurse tender operations, pumping water from a tender to the attack engine. Was this consistent with your approach to water supply? What factors influenced your water supply tactics?

17. What would be the advantage of using a relay from the hydrant at Route 86 and Raccoon Road versus using water tenders to shuttle water? Based on the diameter and length of supply line carried on your apparatus, how would you approach establishing a relay? Think about which engines you would use to establish the relay and what assignments you would provide these companies to ensure timely completion of hose lays and establishment of a continuous water supply?

18. As with the previous question, use the type and length of supply hose carried on your engines and identify what flow rate could be developed using a relay?

Additional Learning: Watch *Constructing a New Self Storage Facility from the Ground Up - Interview w/ Charlie Kao* (REtipster, 2023) and *Building a 30' x 100' Self Storage | Post Frame Construction | Mini Storage* (Backyard Mayhem, 2022). Consider how each of these two construction methods would influence fire behavior and structural stability under fire conditions.

Review calculation of relay capability. Determining relay capability is straightforward if you stipulate several factors including length of hose between the supply engine and attack engine (two engine relay), standard discharge pressure at the supply engine, minimum residual pressure at the attack engine, and friction loss values for the supply line used in the relay. For example:

Length of Lay:	1300’
Standard Discharge Pressure in a Relay:	120 psi
Minimum Residual Pressure at the Attack Engine:	20 psi
Total Friction Loss in the Supply Line (Discharge-Residual):	100 psi
Friction Loss/100’:	7.69 psi

If using 5” hose, a friction loss of between 7 psi/100’ and 8 psi/100’ would provide a relay flow capability of approximately 950 gpm. A flow rate of over 1000 gpm could easily be achieved by slightly increasing the discharge pressure. With 4” hose, the relay capability (given the same parameters would be slightly over 600 gpm, with the ability to achieve 750 gpm with a moderate increase in discharge pressure. With 3” hose the flow capability would be not much over 300 gpm with a single line or 600 gpm with dual 3”

lines. Your calculations may vary slightly depending on the specific friction loss characteristics of your supply hose.

Consider pre-calculation of relay capability for 50%, 100%, 150%, and 200% of the supply hose length carried on your apparatus. This provides a basic framework for relay capability with the hose carried on two engines.

References

4 State News and Weather. (2024). *Large Storage units on Fire. 86 Highway near Granby, Mo. 12-23-2024* [video]. Retrieved January 10, 2025, from https://bit.ly/423T3oe.

Backyard Mayhem. (2022). *Building a 30' x 100' self-storage | post frame construction | mini storage* [video]. Retrieved January 10, 2025, from https://bit.ly/40qM1IW.

Google. (2014d). [Street view 23186 State Hwy 86, Granby, MO]. Retrieved January 10, 2025, from https://bit.ly/3WuTWmr.

Google. (2024a). [Map, 23186 State Hwy 86, Granby, MO]. Retrieved January 10, 2025, from https://bit.ly/3BVsTJL.

Google. (2024b). [Aerial view 23186 State Hwy 86, Granby, MO]. Retrieved January 10, 2025, from https://bit.ly/421McM1.

Google. (2024c). [Street view 23186 State Hwy 86, Granby, MO]. Retrieved January 10, 2025, from https://bit.ly/4h05V32.

REtipster. (2023). *Constructing a new self-storage facility from the ground up-interview w/ Charlie Kao* [video]. Retrieved January 10, 2025, from https://bit.ly/3DOue5I,

Weather Underground (2024). *Webb City, MO weather history* [historical weather December 23, 2024]. Retrieved January 10, 2025, from https://bit.ly/4h7MLs2.