In-Station Training

TM 23-39 Residential Fire, Outside-In

Author

Chief Ed Hartin

Purpose

10-Minute Training 23-38 examined a fire next to a commercial building with extension to the interior. This training continues in the same theme examining a residential fire that started on the exterior with significant extension into the house. As identified in *Study of Residential Attic Fire Mitigation Tactics and Exterior Fire Spread Hazards on Fire Fighter Safety* (Kerber & Zevotek, 2014), If the fire starts on the outside, start fighting it from the outside. However, a quick transition to the interior for fire control or to check for extension is essential. What critical fireground factors should guide your strategy and tactics?

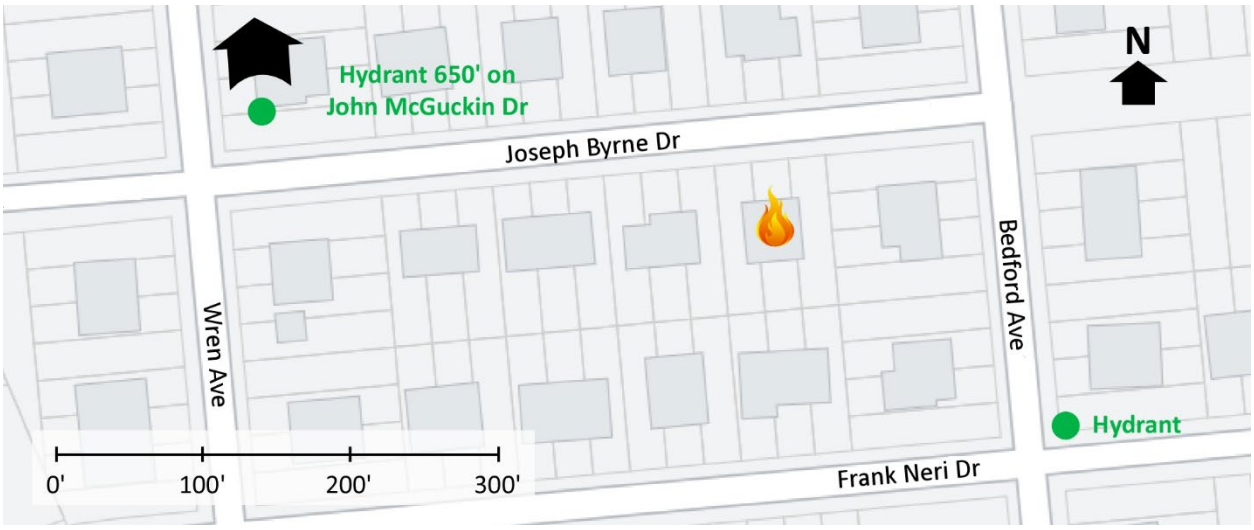
Learning Outcomes

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 residential fire at 58 Joseph Byrne Drive in Bricktown, New Jersey on September 12, 2023, at 02:30 (Jersey Shore Fire Response, 2023 & Tomsriver.org, 2023). 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. (2023a). [Map, 58 Joseph Byrne Drive, Bricktown, NJ]. https://bit.ly/3RntgSP.

Figure 2. Aerial View

Note: Adapted from Google. (2023b). [Aerial view, 58 Joseph Byrne Drive, Bricktown, NJ]. https://bit.ly/45Vj48y.

The closest hydrant is at the corner of Bedford Ave and Frank Neri Drive. A second hydrant is located on John McGuckin Drive at Wren Avenue as illustrated in Figure 1.

Figure 3. Alpha/Bravo Corner

Note: Adapted from Google. (2022a). [Street view, 58 Joseph Byrne Drive, Bricktown, NJ]. https://bit.ly/45Tcmjk.

Figure 4. Side Alpha

Note: Adapted from Google. (2022b). [Street view, 58 Joseph Byrne Drive, Bricktown, NJ]. https://bit.ly/48kTZWb.

Figure 5. Alpha/Delta Corner

Note: Note: Adapted from Google. (2022c). [Street view, 58 Joseph Byrne Drive, Bricktown, NJ]. https://bit.ly/46i4MP7.

Figure 6. 3D Aerial View Side Charlie

Note: Note: Adapted from Google. (2023c). [3d aerial view, 58 Joseph Byrne Drive, Bricktown, NJ]. https://bit.ly/3LpPDD3.

The temperature is 68° F with wind from the northwest at 3 mph (Weather Underground, 2023). You have been dispatched to 58 Joseph Byrne Drive for a report of a residential fire at 02:30. You are the company officer or AIC of the first arriving engine and have your company's typical staffing.

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

While responding, you hear a command officer and another engine with typical staffing for your agency go enroute. The second engine will arrive six minutes after you, followed by the command officer. All other units dispatched on the first alarm will arrive after the command officer. While enroute, dispatch advises that law enforcement on-scene advise that one side of the building is well involved.

Watch the incident video (Jersey Shore Fire Response, 2023) from 00:38 to 01:40 and examine Figures 7 and 8 illustrating conditions on arrival (this photo has been edited to remove tactical action by the first arriving company).

Figure 7. Conditions on Arrival-Alpha/Bravo Corner

Note: Adapted from Jersey Shore Fire Response. (2023). *Pre-arrival 2 alarm structure fire Brick New Jersey 9/12/23* [video]. https://bit.ly/48bWOZD

Figure 8. Conditions on Arrival-Alpha/Delta Corner

Note: Adapted from Jersey Shore Fire Response. (2023). *Pre-arrival 2 alarm structure fire Brick New Jersey 9/12/23* [video]. https://bit.ly/48bWOZD

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?

Conditions on Side Charlie are consistent with those observed on Side Alpha. Occupants report that everyone is out of the house.

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.

Watch the incident video (Jersey Shore Fire Response, 2023) from 03:30 to 04:30. As your company goes to work, you observe the conditions illustrated in Figure 9.

Figure 9. Changing Conditions

Note: Adapted from Jersey Shore Fire Response. (2023). *Pre-arrival 2 alarm structure fire Brick New Jersey 9/12/23* [video]. https://bit.ly/48bWOZD

6. Do the changing conditions change the tactical assignment or task level action taken by your crew? If so, state your action and/or instructions communicated to your crew.

7. Engine 2 arrives and reports that they are Level 1. 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?

Watch the incident video (Jersey Shore Fire Response, 2023) from 04:30 to 06:00.

9. The first arriving company (Quint) stretched a 2 ½" attack line on the Alpha/Delta corner for fire control and exposure protection. Was this line effective? What factors influenced the effectiveness (or ineffectiveness) of this attack line?

10. Did you identify the need to check for extension in the Delta 1 exposure as part of your transfer of command CAN report? Why or why not?

Watch the incident video (Jersey Shore Fire Response, 2023) from 06:00 to 07:00.

11. The initial attack line continued in operation on the Alpha/Delta corner, but no line was stretched to the interior for fire control and primary search. Was this consistent with your incident action plan? What critical factors influenced your strategy and tactical choices for fire control and primary search?

Watch the incident video (Jersey Shore Fire Response, 2023) from 09:12 to 09:42.

12. Was the use of an elevated master stream an appropriate tactic for fire control in the attic? Why or why not?

Additional Learning: The potential for collapse of trusses under fire conditions has long been recognized as a risk to firefighters operating above or below truss structural support systems and, in some cases, operating on the exterior, but inside the collapse zone. In the mid 2000's NIST conducted research on residential roof collapse (Phoenix Fire Department, 2009 & Stroup et al., 2004) and the National Institute for Occupational Safety and Health (NIOSH) published *Preventing Injuries and Deaths of Fire Fighters due to Truss System Failures* (2004). The NIOSH truss system failure report included multiple recommendations for fire departments, firefighters, and building owners and managers. Recommendations for fire departments and firefighters included:

- Use extreme caution when operating on or under truss systems.
- Immediately open ceilings or other concealed spaces whenever a fire is suspected in a truss system.
- Ensure that firefighters performing firefighting operations under, or above trusses are evacuated as soon as it is determined that the trusses are exposed to fire (not according to a time limit).
- Use defensive overhauling procedures after fire extinguishment in a building containing truss construction. Use outside master streams to soak the smoldering truss building and prevent rekindling.

Taken literally, these recommendations are simple, but is managing the risk presented by fire involvement of structural trusses this simple? Consider the following scenarios:

- Firefighters open the ceiling and identify that fire involves roof trusses, but application of water quickly knocks down and controls the fire.
- Fire involves a truss loft in a single-family home or other highly compartmented occupancy. Do these conditions present the same risk as a building with long span trusses?
- Fire involves a limited area of a trussloft but has not yet extended to a large area or the entire volume of the trussloft.

Consider the following guidance provided in the *Fire and Rescue Departments of Northern Virgina Firefighting and Emergency Operations Manual, Fires in Garden-Style Apartments* (Northern Virginia Fire Operations Board, 2013).

> These scenarios present shades of grey in evaluating the risk of offensive firefighting operations. Collapse is always a concern… However interior crews must realize that localized collapse of the roof members (trusses) onto the top floor may occur during an attic fire. Due to the level of compartmentalization, the top-floor walls may support the section of a collapsed roof assembly.

> Rather than abandoning the entire building, a tactical withdrawal from the collapsed area may be all that is required (p. 32).

Reevaluate the actions taken by the companies operating at this incident and your own incident action plan based on these considerations related to managing the risk of truss roof collapse under fire conditions. Do these considerations change your perspective? If so, how?

While indirectly related to the topic at hand, have a look at the Fresno Fire Department *Building Construction Guide* (2020). Not all the information in this guide may relate to buildings in your response area, but it is an interesting and useful resource!

References

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