In-Station Training

TM 24-40 Commercial Fire

Author

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Purpose

Cooking equipment is responsible for most restaurant fires and many of these fires are small, confined fires with limited damage (USFA, 2011). However, if the fire extends from the hood and duct system, the consequences can be severe and potentially fatal (BFD, 2008; NIOSH 2001, 2009; & NIST 2002, 2011).

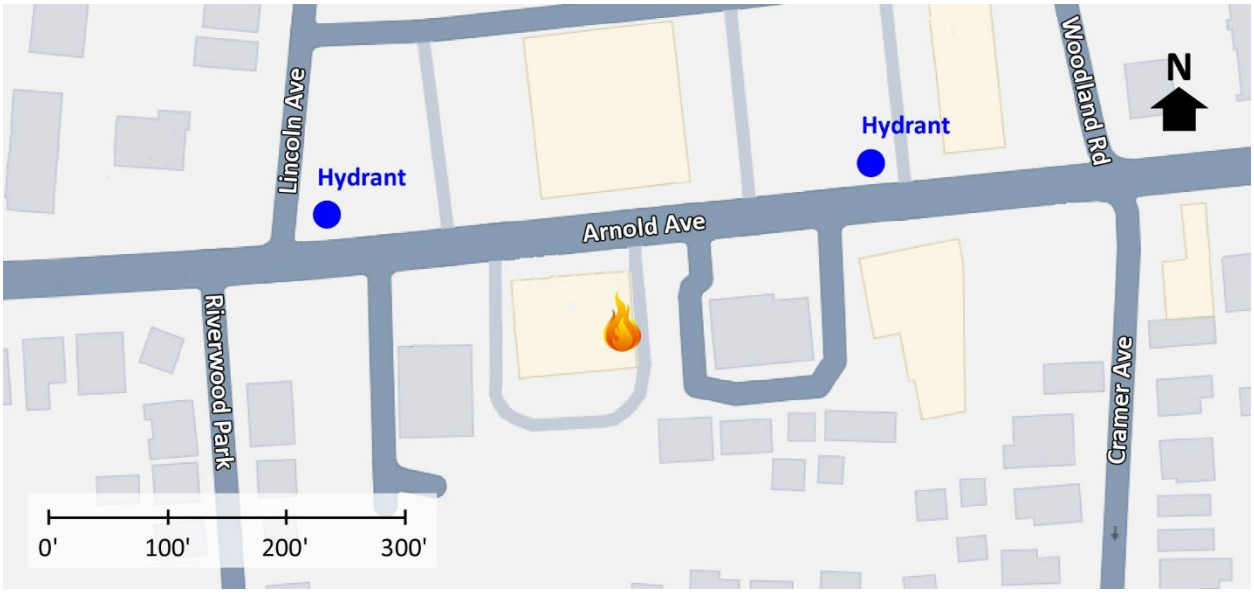
Learning Outcomes

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 816 Arnold Avenue, Point Pleasant Beach, New Jersey on August 25, 2024, at 06:55 (Jersey Shore Fire Response, 2024). Review the map and photos (Figures 1-7) to gain an understanding of the area and building involved.

Figure 1. Map of the Incident Area



Note: Adapted from Google. (2024a). [Map, 816 Arnold Avenue, Point Pleasant Beach, NJ]. https://bit.ly/3AWyajd.

Figure 2. Aerial View

Note: Adapted from Google. (2024b). [Aerial view 816 Arnold Avenue, Point Pleasant Beach, NJ]. https://bit.ly/4cMARRY.

Hydrants are located on either side of the incident location on Arnold Avenue as illustrated in Figure 1.

Figure 3. Alpha/Bravo Corner

Note: Adapted from Google. (2022a). [Street view 816 Arnold Avenue, Point Pleasant Beach, NJ]. https://bit.ly/4762wMp.

Figure 4. Side Alpha

Note: Adapted from Google. (2022b). [Street view 816 Arnold Avenue, Point Pleasant Beach, NJ]. https://bit.ly/3ZcvSa5.

Figure 5. Side Alpha-Delta Exposures

Note: Adapted from Google. (2022c). [Street view 816 Arnold Avenue, Point Pleasant Beach, NJ]. https://bit.ly/3Z2UTEx.

Figure 6. Alpha/Delta Corner

Note: Adapted from Google. (2022d). [Street view 816 Arnold Avenue, Point Pleasant Beach, NJ]. https://bit.ly/3z2oumY.

Figure 7. Bravo/Charlie Corner

Note: Adapted from Google. (2024c). [3d aerial view 816 Arnold Avenue, Point Pleasant Beach, NJ]. https://bit.ly/3MovrSm.

The temperature is currently 67° F with wind from the west southwest at 5 mph (Weather Underground, 2024). You have been dispatched at 06:55 to 816 Arnold Avenue for a commercial fire. You are the company officer or AIC of the first arriving engine and have your company's typical staffing. Shortly after going enroute, dispatch provides an update reporting a grease fire on the stove.

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

You hear a command officer, three other engines, and an advanced life support ambulance with typical staffing for your agency go enroute. You will arrive from the east on Arnold Avenue. The second engine will arrive from the same direction four 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.

Watch the incident video (Jersey Shore Fire Response, 2024) from 00:48 to 01:24 and examine Figure 8 illustrating conditions on arrival.

Figure 8. Conditions on Arrival Side Bravo

Note: Adapted from Jersey Shore Fire Response. (2024). *Pre-arrival commercial structure fire Point Pleasant Beach New Jersey 8/25/24.* https://bit.ly/4e4lfdv

Figure 9. Conditions on Arrival Alpha/Bravo Corner

Note: Adapted from Jersey Shore Fire Response. (2024). *Pre-arrival commercial structure fire Point Pleasant Beach New Jersey 8/25/24.* https://bit.ly/4e4lfdv

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?

There are multiple bystanders including a restaurant employee and several law enforcement officers. The employee reports a fire on the stove and the law enforcement officers report that they did not see any smoke in the adjacent occupancies.

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. Engine 2 arrives and reports that they are Level 1 on a hydrant on Arnold Avenue at Lincoln Avenue. State the tactical assignment you would give them exactly as you would transmit it.

7. 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 1 through 7 before answering the next six questions.

8. What was the problem?

9. What was getting in the way of achieving your tactical priorities?

10. Was there anything in this incident that could have hurt or killed you (right now)?

11. Was it reasonable to believe that the Main Fire Occupancy was occupied?

12. Was there searchable space?

13. 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 (Jersey Shore Fire Response, 2024) from 03:55 to 05:55 before answering the next several questions.

14. Based on observation of the building, smoke, air track, heat, and flame indicators, what stages of fire development and burning regime (fuel or ventilation limited) would you anticipate inside the restaurant? What leads you to these conclusions?

15. What changes in conditions would you anticipate if the fire had extended beyond the hood and duct system into structural voids?

16. The first companies arriving at this incident stretched a dry 1 ¾" attack line through the door on Side Alpha. Why might they have done so? What are the potential risks of stretching a dry attack line on the same level as the fire?

Additional Learning: Understanding the basics of commercial hood and duct systems, commercial kitchen automatic extinguishing systems, and Class K fire extinguishers is essential to effective response to a commercial kitchen fire involving the hood and duct system and/or cooking equipment. Watch *Kitchen Fire 101: Clean Commercial Hood & Duct Systems* (Society Insurance, 2020a) and *Best Methods for Stopping Cooking Equipment Fires* | Kitchen Safety (Society Insurance, 2020b). These videos are targeted for the restaurant industry but provide an excellent overview.

Tactical Considerations for Commercial Kitchen Fires

- Did the automatic fire suppression system operate and control the fire (automatic or manual activation)?
- Did the system shut off the gas to the cooking appliances in the kitchen?
- Has the fire involving the cooking appliances been controlled? If fire involvement is liminted to the appliance(s) consider use of the occupant's Class K extinguisher(s) for fire control. Do not use dry chemical extinguishers.
- Where does the ductwork run and terminate? This is a potential path for fire spread and extension to structural voids.
- Use a thermal imager and visual inspection to determine if the fire has extended to structural voids. Do not simply rely on the thermal imager!

Take the time to review the restaurant line-of-duty death incidents in Boston and Houston and engage with the lessons that can be learned.

McDonalds Restaurant Incident
Houston, TX
February 14, 2000

- *Death in the Line of Duty F2000-13* (NIOSH, 2001).
- *Simulation of the Dynamics of a Fire in a One-Story Restaurant – Texas* [video] (NIST, 2011)
- *Simulation of the Dynamics of a Fire in a One-Story Restaurant – Texas* [report] (NIST, 2002)

Tai Ho Restaurant Incident
Boston, MA
August 29, 2007

- *Death in the Line of Duty 2007-32* (NIOSH, 2009).
- *Box 4-281 Report* (BFD).

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