

FIRE



TRAINING

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FIREGROUND OPERATIONS

RED FLAGS ON THE FIREGROUND

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Tim Klett, Lieutenant – FDNY
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As the doors open at 3am you see a deep layer of new snow and feel a stiff wind blowing, drifting the snow that's already covering the roads. The engine makes a slow but deliberate turn onto Maple Street, responding as the first-due engine to a reported house fire that's less than 3 blocks from the firehouse. As you arrive you see fire venting from three windows on the second floor of a large 2½-story residence. The ladder company is pulling in when the engine moves ahead trying to locate a good hydrant to hook up to. The members of the ladder company are already on the front porch forcing the door as two members of the engine struggle stretching the line through the knee-deep snow. The outside vent firefighter locates a severely burned civilian who has jumped from the second floor. The civilian

is reporting that there are 4 children trapped in a back bedroom on the second floor. The second- and third-due companies have radioed that they will be severely delayed due to the weather and road conditions.

Once the door is forced the ladder company immediately makes their way to the second floor to start the search for the missing children. Conditions are rapidly deteriorating when the engine operator radios to the engine officer that he has a frozen hydrant and will need a relay line from the second due engine, when it arrives. As the engine officer calls for booster water one of the two members from the ladder company, searching the second floor, finds an unconscious victim and removes the victim through the front door to begin CPR.

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ENGINE COMPANY OPERATIONS

THE FIRST LINE: FLOWING & MOVING

Nicholas Papa, Lieutenant – New Britain, CT, Fire Department

This tactic is tried and true, and one that our predecessors once relied almost exclusively on; due to their lack of SCBA and minimal thermal protection.

With the fire always having the home-field and a head-start on us, we are perpetually fighting at a disadvantage. As content loads and the use of synthetic/lightweight materials increases, the deck keeps getting stacked higher against us. There is, however, one ace we have up our sleeves that cannot just level the playing field but decimate it altogether. That is the ability to advance in on the fire with a flowing and moving handline.

This tactic is tried and true, and one that our predecessors once relied almost exclusively on; due to their lack of SCBA and minimal thermal protection. Flowing and moving was essential for them to make the push, as they needed the fresh air and the relief from the heat that the stream provided. As our PPE evolved, however, allowing us to penetrate deeper, without continuously flowing water, we largely deviated from that approach.

This gave way to an over-reliance on the hit and move advance; leading to a deterioration or even the complete loss of the previous skill-set. By charging in further, without the timely and consistent application of water, we not only put ourselves at greater risk of rapid fire-spread/flashover, but more importantly, we delay the unprotected victims the relief that they so desperately need to survive. Just because we can and have operated in



Thick, dark, turbulent smoke and vent-point is observed out the fire room window; indicating high heat and deteriorating conditions on the interior. Courtesy of NBFD.

this manner, does not mean that we always should. We must be making our decisions based on what is best for the survivability of any trapped occupants, *period*.

When on the approach, the nozzle should be opened as soon as the fire is visible and nozzle team is in position to

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FIRST LINE...CONTINUED FROM PAGE 11

make the push. The effective reach of an 1³/₄-inch stream, in a superheated environment, is about 25 feet. That distance is enough to clear any room or hallway in a residential occupancy so that ability should be used to its fullest advantage. Because of the high load of synthetic fuels, fire in the overhead (i.e., rollover) can be concealed if a large amount of thick, dark smoke is being produced. If there is no visibility and heat is experienced (either physically or a thermal imaging camera is indicating high ceiling temperatures) or turbulent smoke is discharging from the point of access, the nozzle should be opened immediately.

The nozzle should remain open throughout the advance, until knockdown is achieved or until conditions improve. If the nozzle has to be re-opened more than once, because of deteriorating conditions, it should be kept open until the seat of the fire has been reached and put in check. Conditions can immediately rebound as soon as the nozzle is shut-down, if water is not getting to the seat of the fire. Flowing and moving, however, will not only preserve the progress made throughout the advance, but has been proven to result in a faster knockdown and less cumulative water usage than a hit and move approach.

When the nozzle is opened and the stream is applied into the overhead (using a side-to-side or “zig-zag” pattern), it will pass through the hot, upper-layer-cooling the superheated gases and causing them to contract. The stream will then largely ride across the ceiling and cascade down, as it fans out and reaches the walls—coating and cooling those surfaces. Once the overhead has been addressed, the stream should be worked around in a tight O-pattern (focusing on the upper register) and then lowered downrange; periodically widening the O to capture the floor – sweeping it of harmful debris and scalding water, as well as sounding it for potential holes.

Not only will this maximize the water mapping of the stream (i.e. how well it is being distributed throughout the space), but it will increase the amount of air it entrains as well. This massive flow of fresh air—5,000 cubic feet per minute (CFM) at 150 gallons per minute (GPM)—can create a pressure front and seal off the approach corridor (i.e. the hallway) and eventually the doorway of the fire room. This can block the smoke and hot gases from exhausting overhead; tracking toward the open entry door and increase the intake input through that opening.

If the fire room is vented, the flowing and moving stream can even reverse the exhaust path of the by-products. The bidirectional flow (intake and exhaust), previously occurring at that entry doorway, can be converted

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into a unidirectional flow (full intake); flowing toward the seat of the fire. With a vent point opposite the handline's advance, the reversal can allow the flow of fresh air to extend throughout that pathway and re-direct the by-products out that opening. This will maximize the output of that opening (full exhaust) and the impact of the ventilation.

While visibility ahead of the nozzle (if there is any) will be momentarily lost, as the stream disrupts the thermal balance, it will be quickly restored as it advances forward; driving the by-products back (hopefully out an opposing vent opening). In many cases, the need to flow and move will occur in a limited visibility environment; where only the glow of the fire may be seen. Regardless, the average push is only about 10-15 feet; typically initiated from a hallway, an adjacent space (e.g. a living room or kitchen), or from the point of access (if turbulent smoke or fire is venting out the entryway). Moving at a steady pace (about one step per second), the nozzle team will likely reach the fire room in no more than 15 seconds, using less than 50 gallons of water.

Flowing and moving leverages the power of the handline's stream to overcome the fire and its by-products. By taking control of the space on the approach, you are confining the fire and reducing the thermal and toxic threat; particularly for the unprotected victims. The application of water and the additional flow of air will profoundly impact the conditions along the intake pathway. The increase in oxygen concentration and visibility (behind the nozzle), as well as the decrease in fire gas concentrations and temperatures, will greatly enhance fireground operations and victim survivability.

Visit Nick on Facebook at Fireside Training.
