



'Warriors of Fire' – South Bronx NYC Firefighting Tactics 1960-70s

In the late 1960s through to the late 1970s (termed by many as the 'war years') firefighters in sections of New York City, including the South Bronx, Harlem and parts of Brooklyn, saw an incredible amount of firefighting action in what turned out to be New York's busiest ever period for fire calls in their history. During the period 1975-76, whilst I was assigned on detachment to the busiest of all areas in the Bronx, fire calls peaked, and false alarms were ever increasing. Over this two-year period, FDNY firefighters responded to 290,500 fire calls and almost half a million malicious false alarms in the 'brick farms' and burned out rows of tenements, that resulted from such a massive fire devastation akin to second world war European inner-city fire-bombed damage. Engine and ladder companies were so over-worked during this period that some firehouses were assigned additional companies and first response *weight of attack* (number of engines and ladders) were reduced in some situations (termed adaptive response) to take-in some of the workload. It was

common to see empty firehouses and several fires burning in the same street, with individual engines and ladders often assigned to building fires due to an immediate unavailability of units.

A 2003 book by FDNY South Bronx and Harlem firefighter Tom Zambrano, entitled 'Warriors of Fire', takes us right there onto the fire floor of burning tenements, describing in some detail the firefighting tactics used to deal with fires in a range of buildings common to NYC. Here is a brief review of the techniques, methods and tactics described throughout this great book that were used back then, and strangely enough are now being revived in this modern era of firefighting.

1. The coordination between entering to search for trapped occupants, getting water on the fire along with both horizontal and vertical ventilation, were aligned with having adequate staffing on-scene. However, in a time before where radio talkies were available, coordination and timing were learned through experience and through developing a second sense. As one would expect though, timings were not always as effectively coordinated as they should have been. Quite often, during the person to person transmission of a message across floors or some distance on the fire-ground, the message received rarely ever seemed that close to the one that started out! Even so, in general the system worked well.
2. On occasions, units would arrive and remain alone on-scene for several minutes, if not longer. In such cases, engines and ladders individually had to implement all roles such as water supply, fire attack, search and rescue, horizontal and vertical ventilation. In such circumstances it was important to prioritise actions that would likely save the most lives. This could mean an exterior attack to get some knockdown of a rapidly extending fire; an interior search without water; the rescue of visible occupants at windows; or the placement of an interior hose-line to protect escape routes or stairs.
3. In some situations, the simple reaching in and closing a door on the fire was all that was needed to buy time that would enable firefighters to enter an apartment to search without water, or to protect those evacuating occupants already in hallways and stairs. **Never pass or go above fire, without at least attempting to control or isolate it first**, was the mantra.
4. Use the street or apartment entrance, or fire room door, to slow or control the fire's development. These were actions of *second nature* used by these firefighters and its strange to consider that such guidance only became written down and documented more widely, following the 1980s work by Swedish firefighters and the more recent live fire research undertaken by NIST, FDNY, UL and CFD.
5. This isolation and door control is now commonly seen to impact on what then was termed VES (Vent-Enter-Search) that is now widely known as VEIS (with the I referring to 'isolate'). This tactic of entering windows to search known bedrooms and closing the room door prior to the search, is something firefighters now resort to as an increased safety measure.
6. Entering smoke filled environments with a mask was something rarely done prior to the mid-seventies. It was seen as something that might slow the task at hand and reduce visibility. Firefighters then were more used to controlling the smoke layer and keeping an area of 6-12 inches below to be able to breath and see, often using the light of the fire to enable them to quickly locate victims.

7. In this respect, they would often 'hold the water' so they were able to see for longer, avoiding disrupting the thermal layering in the smoke. However, they also needed to anticipate when an outside vent man (OVM) was about to create that horizontal ventilation in the fire room to avoid the fire flaring up suddenly. Hearing breaking glass was a good signal to open up the stream.
8. This was an action that again relied on experience and some gut feeling. For the OVM to select the correct window to vent was not always that easy without radio talkies. However, effective timing and vent selection were skills that were gained over a vast number of fire actions.
9. The use of masks by the second arriving engine was seen as an unwritten rule but eventually, more widespread use became an FDNY department order and during the late seventies, after a realisation that firefighter blood samples were showing unacceptable levels of carbon monoxide, the use of masks became more obvious.
10. There was much debate over using tank water before laying to a hydrant supply. In the South Bronx this sometimes became a primary tactic as exterior fire spread was trapping people on external fire escapes. Getting some good 'knockdown' was life critical.
11. One of the advantages of NYC residential buildings and layouts were that they followed similar patterns and were generally familiar to firefighters, such as railroad apartments, H blocks and Brownstones, as well as commercial taxpayers. Each specific building type had common floor layouts and hazards. Searching these apartments became almost second nature again and lack of visibility was less of a hinderance.
12. Something that sometimes occurred, due to the lack of radio talkies, was two hose streams battling against each other from different sides of the fire, or even aerial ladder streams heading into cocklofts above interior firefighters advancing on the fire. Something that can be uncomfortable and even dangerous for firefighters on the inside of buildings.
13. It was thought that leaving the nozzle unattended at any point, before the fire was under control, was a major error. When faced with finding a viable occupant whilst firefighting often created a conflict with this rule, but adequate staffing would enable both the rescue and the fire to be handled in unison. 'Do not abandon the line unless absolutely necessary' writes Zambrano.
14. Combined with effective door control, Ladder company firefighters were masters at limiting fire spread, ahead of a charged hose-line arriving on the fire floor, using a two-gallon (eight litre) water extinguisher with a finger over the nozzle to maximise the cooling effect. This tactic also often led to the immediate location of viable victims in the fire room.
15. It was clear that based on hours and hours of fighting fire in a range of circumstances, the experience was creating cognitive and intuitive skills and actions based on a coordinate team approach where the mission was to access, create and maintain a way into buildings. In doing so, the firefighters were also protecting their way out. This objective additionally served to provide routes of egress for remaining occupants to leave on their own.

16. To do this, there was a combination of fire isolation in closing doors, placing hose-lines between the fire and the egress routes, and venting vertically to clear stairs early in a fire.
17. If needing to pass fire quickly and advance further in to control fire spread or reach victims, it was important to place a secondary back-up line where possible, to prevent reignition behind the first crew. The second or third arriving engine would often do this.
18. The use of premature water streams was frowned upon back then, quite in contrast to European tactics in gas cooling the overhead to reduce flashover potential. However, both can be achieved and personally, I always saw the benefit in holding off just long enough to use the clear zone, where one existed, at the base of the smoke layer to get a quick view of the layout and the possible location of the fire.
19. One thing US firefighters are particularly good at is hose management, using the hose-line to drive nozzle reaction into the floor and advance high-flow lines effectively using two firefighters. This was obvious in the South Bronx and European firefighters would do well to search out these hose movement techniques on you-tube.
20. Basic things like bleeding the line of air away from the fire before directing a stream are often missed by inexperienced firefighters.
21. There was no obvious awareness of 'flow-paths' back then and this is certainly something that is changing now. However, it is suggested that even now few firefighters fully appreciate how pressure differentials, occurring in different configurations of floor and storey layouts, will influence fire development.
22. Wind driven fires are a recent research driven topic amongst firefighters and researchers, but unsurprisingly the firefighters of the past experienced such fire development back then too!
23. It is well known by some, but less by others, that well involved 'bowling alley' fires usually demonstrate severe backdrafts and flashovers! Just a thought where we have large CLT fire engineered buildings in the not-too-distant future!
24. Another tip Zambrano leaves with us, following their own experiences, is never stand directly in front of large glass shopfronts. You will surely appreciate why!
25. There are so many similarities explained by Zambrano that were reminders of life in the London Fire Brigade back in the early seventies; solid bore high-flow streams, large hose-lines crewed by several firefighters, aggressive interior attacks without the protection of masks, plenty of ladder work on the outside of buildings, searching ahead of the hose-line. Do not get me wrong, improvements in safety are welcomed but there was something about learning how to survive in smoke if things went bad and reading the fire in such a way, that is sometimes hard to do with a mask on. It wasn't only about *seeing* but also about *listening* *smelling* and *feeling*. Honing the senses was a required part of becoming a great firefighter.
26. Zambrano was clear, going above a fire was dangerous. You needed to know that it was part of the plan, that firefighters may be above you. When opening a door into a stair you had

better think twice and those firefighters might have needed to force entry into an apartment first, if just to ensure they *had a refuge* should things turn bad.

27. The use of 'Rapid Water' (Polyethylene Oxide) fitted as a water additive and friction loss reducing agent, installed on specially adapted pumps on some of the busiest Engine Companies, enabled the flow of a 2½" hose line to be achieved through the more manoeuvrable 1¾" lines was quite an innovation. However, its popularity waned as pumps began to break down and politics became involved in the belief that delivering equivalent water through smaller hose meant less manpower required (even though *Rapid Water* Engines had increased staffing to six). Cuts in staffing were already taking place during the mid-seventies as the city faced financial crises. Besides, the injury rate amongst firefighters began to soar as they slipped and slid on the rapid (slippery) water that mirrored an ice-rink once it ran back across linoleum floor coverings. Zambrano was full of praise about Rapid Water Engines and I too can attest to its suppressive capability, however the innovation was short lived. There are some great online articles if you want to search them out around FDNY's Rapid Water systems in the 'war years'.
28. Backdrafts – FDNY were calling them 'backblasts' in Zambrano's words. He always said, when creating an opening to enter and conditions look bad, wait a few seconds before entering as things can suddenly change.
29. Hey – FDNY also called apartments 'flats' back then! Perhaps they still do.
30. Another good story about horsehair mattresses and how they would flare up like gasoline if you turned one over to receive air! Some of us may remember this enlightening experience!

**You can buy Tom Zambrano's book via Amazon; or via the publisher
orders@trafford.com**

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