

The Father's Day Fire

By Deputy Chief John A. "Jay" Jonas, Division 7 Commander

June 17, 2021 marked the 20-year anniversary of the Father's Day Fire. This article is dedicated to the memory of Firefighters Harry Ford, Rescue 4; Brian Fahey, Rescue 4; and John Downing, Ladder 163.

Father's Day conjures thoughts of a relaxing day with family and spending time with Dad. On June 17, 2001—Father's Day—the New York City Fire Department (FDNY) experienced one of the most challenging and deadly fires in its long and illustrious history. It started out as what appeared to be a routine fire; it ended in tragedy. It left those who were in the FDNY that day believing it could not get any worse.

The Buildings

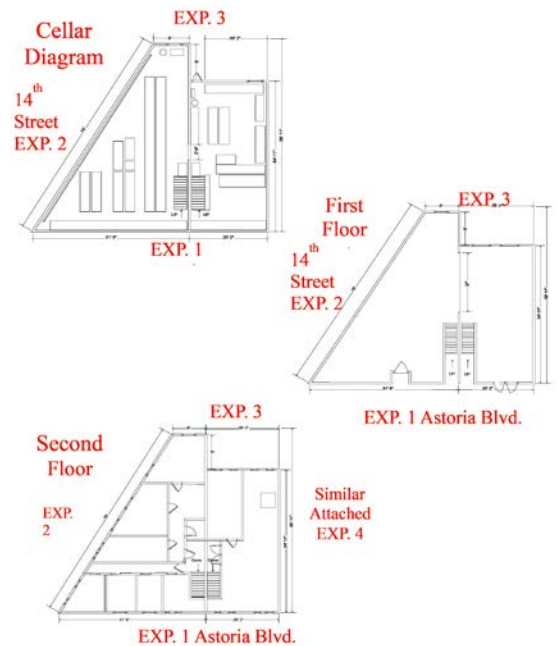
12-20 Astoria Boulevard was designated as the original fire building. It was a two-story brick and wood joist (class 3 construction) structure measuring 20 by 55 feet. Its first-floor occupancy was a hardware store called Long Island General Supply, and both the first floor and cellar of the building were interconnected with 12-22 Astoria Boulevard (Exposure #2) to form the store. There was a 27-foot opening in the common wall at the store level between the orig-

inal fire building and exposure 2. Both the second floor and the cellar of the building were used as storage for the store.

12-22 Astoria Boulevard, designated Exposure #2, was a triangular corner building that bordered on Astoria Boulevard and 14th Street. It was also a two-story brick and wood joist (class 3 construction) structure, and it measured 51 by 60 feet. Its second floor had two apartments.

The two buildings were interconnected at the first floor and cellar, with a 2.5-foot opening in the cellar walls between them. The cellar opening had a metal sliding fire door that was illegally propped open with a piece of wood so it would not activate in the event of a fire.

Neither the original fire building nor Exposure #2 was sprinklered in the cellar or on the first floor.



Because 14th Street sloped downward from Astoria Boulevard, the buildings



About the Author

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wanted to burn graffiti on the rear of the building by using gasoline. In the process, Joey Valderrama knocked over a can filled with gasoline. The gasoline flowed down the slope of the doorway entrance and underneath the rear door to the hardware store.

Island General Supply. The civilian took Captain Murphy into the cellar of Exposure #4 (12-18 Astoria Boulevard) and out into the rear yard. They crossed over to the address where the fire was reported, and Captain Murphy could hear fire crackling behind the door. There was an odor of smoke and gasoline near the door. Captain Murphy wondered how this man knew there was a fire present with relatively minor indicators; he turned out to be the father of one of the teenagers who started the fire, and he was also the person who had called 911.

were three stories in the rear. The rear of the original fire building and the Exposure #2 cellar were exposed and above ground in the rear. On the 14th-Street side of Exposure #2, a free-standing masonry wall extended from the rear corner. The wall extension, which had a roll-down security door, was in place to provide security for materials stored in the rear yard.

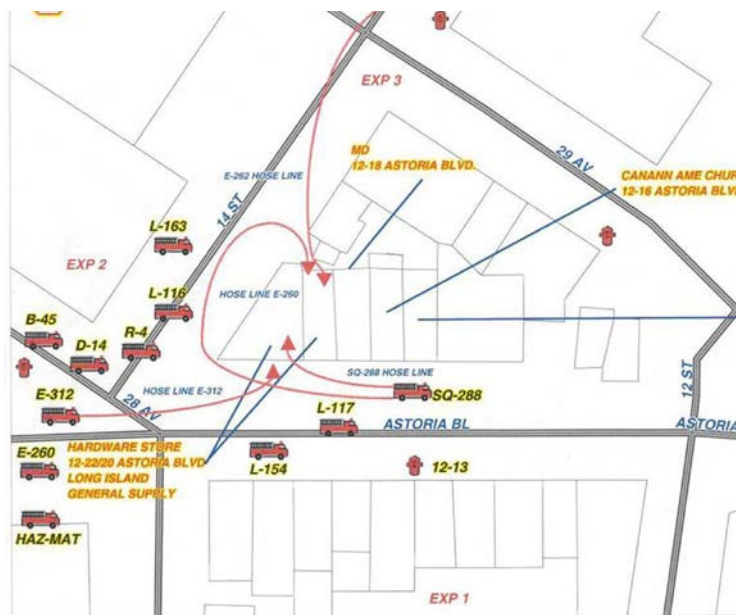
There was an inward-opening door in the rear of the fire building that provided access to the cellar; however, it was heavily fortified. It was a black metal door with a heavy padlock. Inside the door was a steel gate with two horizontal bars across the door opening. This was further fortified by two vertical metal rods against the horizontal rods; they extended from holes in the concrete floor into the concrete ceiling above.

The Fire

A little after 1400 hours on June 17, 2001, two teenagers—13-year-old Joey Valderrama and 15-year-old Michael Morena—were about to vandalize the Long Island General Supply hardware store. Michael Morena lived in the building next to the hardware store, and Joey Valderrama lived about a block away. According to reports, the two youths

The volatile, inflammable liquid quickly vaporized, and the vapors were ignited by the pilot light of the hot-water heater in the store cellar. This set into motion one of the most difficult fires in memory.

FDNY units were operating at a different box on 21st Street for a Freon leak at a supermarket. The incident was mitigated, and units were starting to “take up.” At 1420 hours, the Queens Fire Alarm Dispatchers transmitted box 7512 for a telephone alarm reporting a fire at 12-22 Astoria Boulevard. Engine 260, Ladder 163 and Battalion 45 were dispatched. Squad 288, led by Captain Denis Murphy, left the scene at 21st Street. While returning to quarters, they



Captain Murphy called his chauffeur, FF Adam Rand, and told him to transmit a 10-75. Engines 262 and 312, Ladder 117 and Battalion 49 would be dispatched. Ladder 116 would be assigned as the

Engine 260, Ladder 163 and Battalion 45 were dispatched. Squad 288, led by Captain Denis Murphy, left the scene at 21st Street. While returning to quarters, they were flagged down by a woman who stated that there was a fire at 14th Street and Astoria Boulevard. They notified the dispatcher and responded to the scene.

Firefighter Assist and Search Team (FAST), and Rescue 4 would be dispatched as well.

Firefighters from Squad 288 started working on the roll-down security doors at the front of the building. They also stretched a 1.75-inch hand-line to the front of the building. Captain Murphy returned to the front of the building and told his firefighters to stretch a 2.5-inch hand-line because the fire was in the store and not the occupancy on the second floor.

Upon Squad 288’s arrival, an adult male told Captain Murphy that he knew where the fire was. There was light smoke coming from behind the roll-down gates of Long

The first battalion chief (BC) to arrive was Bill Seelig of Battalion 49. He saw that Squad 288 was working on the roll-down gates. The civilian who took Captain Murphy around to the rear did the same with Chief Seelig, who identified the rear door as a good point of attack rather than



having an engine company fight its way down an interior stairway to attack the fire.

Captain Pat Horne was the officer of Ladder 116, the designated FAST truck. Ladder 116 was the first ladder company to arrive at the scene and was put to work as the first-due ladder. The company's forcible entry team, along with Squad 288, started working to gain entry to the front of the store. Captain Horne made a brief survey of the second floor and returned to his forcible entry team. Ladder 116's aerial ladder was positioned on 14th Street and raised to the roof of Exposure #2. Ladder 116's roof firefighter and its outside ventilation firefighter, Joe Vosilla, started vertical ventilation.

Engine 262, Ladder 117 and Battalion 49 all arrived within seconds of each other at around 1425 hours. Ladder 117 assumed the second-due ladder duties and went to the second floor for search and to check for extension. BC Seelig told Engine 262 to stretch a hand-line to the rear of the building. They initially started to stretch the 1.75-inch hose-line that Squad 288 had started, but the officer of Engine 262 told them to stretch a 2.5-inch hose-line. The third engine, Engine 260, arrived and helped Engine 262 in the stretch. Engine 260 would eventually finish the stretch of the 1.75-inch hose-line to the rear and man it as a backup hose-line. Engine 262 would man the 2.5-inch hose-line in the rear.

Haz-Mat 1 arrived and reported to BC Seelig. He ordered them to the security gate on the exposure 2 side, instructing them to force it open to allow easier access to the rear yard and the point of attack. Haz-Mat 1 would not be assigned to the Box. They offered their assistance to BC Seelig, and he asked them to start forcible entry on the rear door to the cellar.

Captain Horne of Ladder 116 made a brief search of the second floor of Exposure #2. There were two apartments on the floor, and he evacuated the occupants.

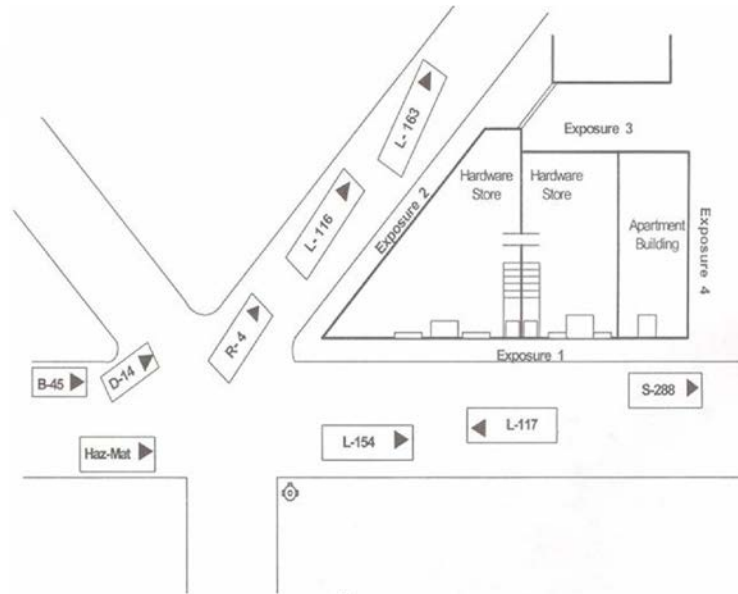
At 1427 hours, Ladder 115 was assigned to the fire to act as the replacement FAST truck.

At 1428 hours, Tower Ladder 163 arrived at the fire as the third ladder company. Lieutenant Brendan Manning was in command. Also on Tower Ladder 163's apparatus was Firefighter (FF) John Downing. He positioned the apparatus at the Exposure #2-3 side, where it was in position to vent the rear windows

it was about 30 feet inside the building from the front door. Captain Horne and Ladder 116 encountered a heavy smoke condition without a high-heat condition. Captain Horne opened the interior cellar stairway door and found flames coming up the stairway. He closed the door to keep fire from racing up the stairway. Squad

288 positioned their hose-line so it could be advanced down the stairs. The sound of popping aerosol cans coming from the cellar was almost constant.

Rescue 4 arrived at the fire at 1430 hours. The forcible entry team consisted of Captain Brian Hickey, FF Brian Fahey and FF John Gaine. They assisted in forcing the remaining roll-down security gates, making entry with Squad 288 and Ladder 116 already inside the store. Ladder 116 had performed a search of the first floor, and Squad 288 had stretched their 2.5-inch hose-line to the cellar stairway entrance. Rescue 4 performed searches and used



and reach the roof. Lieutenant Manning reported to BC Seelig and was ordered to perform forcible entry on the rear door to the cellar, the point of attack.

Engine 312 arrived at the fire as the fourth engine. They assisted in stretching hose-lines and were eventually ordered by BC Seelig to stretch a 2.5-inch hand-line to the front of the building.

Fire conditions worsened. The smoke thickened, and there came the sound of aerosol cans popping in the cellar. Inside the store on the first floor, Captain Denis Murphy of Squad 288 found the interior stairway that led to the cellar;

their thermal imaging camera (TIC) to check for fire extension to the first floor.

Captain Horne of Ladder 116 opened the cellar door a second time. This time, there was no flame, but there was a considerable black smoke condition coming up the stairway. He could hear BC Seelig say that he didn't want the stairway door opened, and that they had a hose-line coming in from the rear. He told Captain Murphy of Squad 288 to hold their posi-



tion to prevent fire from coming up the stairway.

Battalion Chief Kevin Duffy of Battalion 45 arrived at the fire at 1430 hours. Battalion 45 was the "10-75 chief." BC Seelig ordered BC Duffy to supervise the forcible entry and hose-line advancement at the rear cellar door. He would have Tower Ladder 163, along with Engines 261 and 263, assigned to his sector. At 1443 hours, Battalion 49 advised the Queens Fire Alarm Dispatcher that Squad 288 was being used as an Engine Company. Squad 41 would be dispatched as the replacement squad.

Lieutenant Manning of Tower Ladder 163 began to supervise his unit's forcible entry of the rear door. Their initial attempt to use conventional forcible-entry tools (axe and Halligan tool) on the inward opening door failed. They tried to use the "rabbit tool," a hydraulic forcible-entry tool, but that failed as well. A power saw with a metal-cutting blade was tried also. Lieutenant Manning had FF John Downing go back to the apparatus for the Hurst tool. When they tried the Hurst tool, the door was still a formidable obstacle; the arms of the tool were actually twisting, and it had minimal success in opening the door, which opened only 15-18 inches. There was a light brownish-yellowish smoke coming from the rear door. The time was 1440 hours.

Upon hearing over the handie-talkie that the forcible entry efforts on the rear door were moving slowly, Captain Horne of Ladder 116 decided to try descending

the interior stairs to the cellar. On the stairs, he encountered a sheet of plywood that had been placed so store employees could slide materials down to the cellar. The plywood was moved.

The stairway was narrow, with shelving on either side. It was hot and filled with



smoke. Captain Horne got about two-thirds of the way down the stairs, and the conditions were deteriorating. The continuous sound of popping aerosol cans could not be ignored. He retreated up the stairs, and the stairway door was closed.

The conditions inside the store continued to worsen. Smoke pushed out of cracks in the floor, and the cellar door blew open from the pressure generated by the fire. When the door blew open, blue flames filled the lower half of the doorway. The flames went out before igniting once more, this time orange in color.

The nozzle firefighter from Squad 288, FF Tim Geraghty, opened up the nozzle while the interior cellar door was open for

a few seconds. The firefighters recognized that the flames were an unusual color and there was an unusual odor, not the odor of burning wood. Throughout the building, there were reports of an odor of lacquer or paint thinner. There was a discussion about advancing down the interior cellar stairs. BC Seelig told Squad 288 to hold their

position. They were working on the door in the rear (at cellar level), and they would have water on the fire shortly.

At approximately 1439 hours, the chauffeur of Rescue 4, FF Harry Ford, started to vent the rearmost windows, giving access to the cellar on the 14th Street side (Exposure #2). He was joined by Firefighters John Downing of Ladder 163 and Joe Vosilla of Ladder 116, and they continued to perform horizontal ventilation on the front window on the 14th-Street side to provide access to the cellar.

Battalion Chief Seelig was becoming frustrated with the lack of progress on the operation in the rear. He told Captain Murphy of Squad 288 that they might need to advance down the interior cellar stairs with their hose-line.

At 1442 hours, Battalion 49 gave a progress report to the

Queens Dispatcher: "We have three lines stretched and in operation. Trucks are opening up. We have a basement fire; progress is slow due to blockage and explosions in the basement. K."

At 1443 hours, Ladder 163 succeeded in opening the rear door about 18 inches. Lieutenant Manning and BC Kevin Duffy of Battalion 45 squeezed into the cellar. Lieutenant Manning used his TIC to gauge the heat conditions in the cellar; the screen showed red, meaning it was very hot. Battalion Chief Duffy exited the cellar and told Ladder 163 to continue removing the entire door with their power saw.

Deputy Chief Artie Messbauer of the 14th Division arrived at the fire at 1445 hours. He checked the rear of the building to get an overall view of the conditions and saw Ladder 163 working on the rear door with the power saw. He walked to the front of the building and saw a smoke condition in the front and a hose-line going into the building. Captain Brian Hickey of Rescue 4 came out of the building and addressed Deputy Chief Messbauer, informing him that they had seen fire extending to the first floor through their TIC, and he requested another hose-line in the store. At this time, Deputy Chief Messbauer turned to his aide and told him to transmit a second alarm.

The Explosion

At 1446 hours, Lieutenant Manning





ion Chief Duffy transmitted a “mayday” and had fire officers account for their members.

On the 14th-Street side (Exposure #2), the entire two- to three-story masonry wall had collapsed in a curtain-wall-type collapse. It came down onto Firefighters Harry Ford of Rescue 4, John Downing of Ladder 163 and Joe Vosilla of Ladder 116. Firefighters Ford and Downing were completely buried by the bricks. Firefighter Vosilla was buried up to his chest.

In the front of the building, on Astoria Boulevard, everyone standing in the street was knocked down by the force of the explosion. Firefighters Mike Milner from Rescue 4 and Brian Kearney of Ladder 117 were on the second floor of 12-22 Astoria Boulevard (Exposure #2) when the floor exploded upward. Firefighter Kearney was thrown out a window, landing in the rubble with his head down and his legs in the air. Firefighter Milner hit the ceiling and almost fell out of the building. He saw an opening in the area where the collapsed wall once was, and he grabbed a hanging piece of carpet and a waste pipe. He was able to climb the waste pipe down from the second floor.

Firefighters operating on the roof of 12-20 Astoria Boulevard, the original fire building, felt the roof rise up about two feet. They were all knocked off their feet as a heavy smoke condition enveloped the roof. The roof firefighter from Ladder 116 noticed that the roof of 12-22 Astoria Boulevard (Exposure #2) was gone. The firefighters on the roof continued to cut holes in the roof in an attempt to provide relief from the smoke and heat inside the building; fire showed out of every hole that was cut. They continued working on the roof until Division 14 ordered them off.

Squad 288, Ladder 116 and Rescue 4 were inside the first-floor store occupancy when the explosion occurred. It was reported that the floor felt like a wave. The sound came a split second before the shock wave. Captain Murphy and Firefighters Tim Geherty and John Berna of Squad 288 all sustained fractured left legs. There was a large fireball within the store. They all crawled through the smoke, toward the light coming in where the Exposure #2 exterior wall had once stood. They crawled out onto the bricks and onto 14th Street.

Captain Brian Hickey and Firefighter John Gaine of Rescue 4 were blown in different directions. Firefighter Gaine

of Ladder 163 looked back into the rear cellar door with his TIC. He looked into the camera and saw red. He was about to tell BC Kevin Duffy of Battalion 45 what he saw, but he did not get the word “red” out of his mouth before the explosion happened. Lieutenant Manning was propelled past BC Duffy, and everyone in the rear was knocked down.

Lieutenant Manning was severely injured, sustaining severe burns to his face and a fractured orbital socket. The force of the explosion knocked him unconscious, and he was later removed to the burn unit at NewYork-Presbyterian/Weill Cornell Medical Center.

Blood ran down BC Duffy’s face. A large section of the rear wall was damaged and in danger of collapse. Battal-



was blown toward the rear of the store. He could see Captain Hickey silhouetted against the ball of fire. Once the ball of fire subsided, the heat in the store increased. Firefighter Brian Fahey of Rescue 4 was no longer there. The floor had opened near the stairway going downstairs, and FF Fahey had been swallowed into the abyss of the fire- and smoke-filled cellar.

Multiple “maydays” were transmitted over the handie-talkie. Captain Hickey and Firefighter Gaine were disoriented and dazed. However, they could hear the voice of FF Adam Rand, the chauffeur of Squad 288, and they followed the sound of his voice until they crawled out onto Astoria Boulevard.

Captain Pat Horne of Ladder 116 and his forcible entry firefighter were near the front of the building, heading out to change their self-contained breathing apparatus (SCBA) cylinders, when the explosion occurred. They were thrown several feet. They saw light in one direction, and they headed toward it. The explosion had created a hole in the Exposure #2 side, and they crawled out if it and onto a pile of brick and rubble. There was heavy fire and smoke showing on the Exposure #2 side. As the two crawled out, the forcible entry firefighter found FF Vosilla buried in the bricks and rubble.

At 1447 hours, the aide to the 14th Division called the Queens Dispatcher

and said, “Transmit a second alarm, a full second alarm. We have had a major explosion.”

Haz-Mat 1 called the Queens dispatcher immediately after the explosion and said, “Haz-Mat 1 urgent, have another rescue—two rescues—respond. We possibly have firemen trapped under collapse. K.” Rescue 2 and Rescue 3 would respond.

At 1448 hours, Deputy Chief Messbauer told his aide to call the Queens Dispatcher and transmit a full fourth alarm. Just three minutes later, Deputy Chief Messbauer transmitted the fifth alarm.

At 1450 hours, Captain Hickey of Rescue 4 conducted a roll call of his members and got no response from his chauffeur, FF Harry Ford. He did get a response for forcible entry FF Brian Fahey, who stated, “Rescue irons, I’m trapped in the basement.”

Captain Horne of Ladder 116 got out of the rubble and started walking toward the front of the building, at which point he noticed that the front parapet wall was leaning precariously and was in danger of imminent collapse. He quickly told BC Seelig of his observation, and BC Seelig immediately removed firefighters from the area. The entire front parapet wall collapsed at 1502 hours.

Citywide Tour Commander Donald Burns arrived at the scene of the fire and conferred with Deputy Chief Messbauer. Chief Burns established the command post, and Deputy Chief Messbauer went to supervise rescue efforts on 14th Street.

Chief of Department Peter Ganci responded to the fire from home. He was active in trying to get to FF Fahey by crawling through the hole that would be breached in the cellar walls. Chief Medical Officer Kerry Kelly also responded from home, later performing CPR on one of the fallen firefighters.

The Rescue Effort

Squad 41 was the first Special Operations unit to arrive at the scene after the explosion, at 1453 hours. Led by Lieutenant Rich Portello, they saw Firefighter Mike Milner climbing down the drainpipe from the second floor. Deputy Chief Messbauer was in the middle of conducting a roll call to determine who was missing and who was in need of rescue. Portable ladders were being raised on the Exposure #1 and #2 sides to evacuate firefighters from the second floor. Deputy Chief Messbauer assigned Squad 41 and Ladder 115 to the rescue



effort. Initially, both units started working on the 14th-Street side to search for Firefighters Ford and Downing.

The officer of Engine 312 spotted the bunker coat stripes of FF Brian Fahey (Rescue 4) through a hole in the floor but was unable to talk to him via radio. Battalion Chief Seelig went into the building and also saw the bunker coat.

Captain Brian Hickey and FF John Gaine of Rescue 4 started cutting the stairs and flooring leading to the second floor of 12-20 Astoria Boulevard. The heat coming up through the floor was intense and untenable, and visibility was near zero. Firefighter Gaine had lost his helmet in the explosion and only had his protective hood to shield his head from the searing heat. Firefighters manning hose-lines directed streams over his head to keep him cool.

At 1457 hours, FF Brian Fahey of Rescue 4 transmitted another "mayday" message, stating, "I'm trapped under the stairway; come and get me." Lieutenant Rich Portello of Squad 41 had his unit start working on the stairway, along with Captain Hickey and FF Gaine, to enlarge the hole in order to reach FF Fahey. However, BC Seelig removed all firefighters from the area when the threat of collapse of the front parapet wall was imminent.

Lieutenant Portello had decided on a two-pronged attack to rescue FF Fahey. He decided to breach a hole from the cellar of Exposure #4 (12-18 Astoria Boulevard), and the Stanley hydraulic system (jackhammers) was brought down. The walls were built of old stone and con-

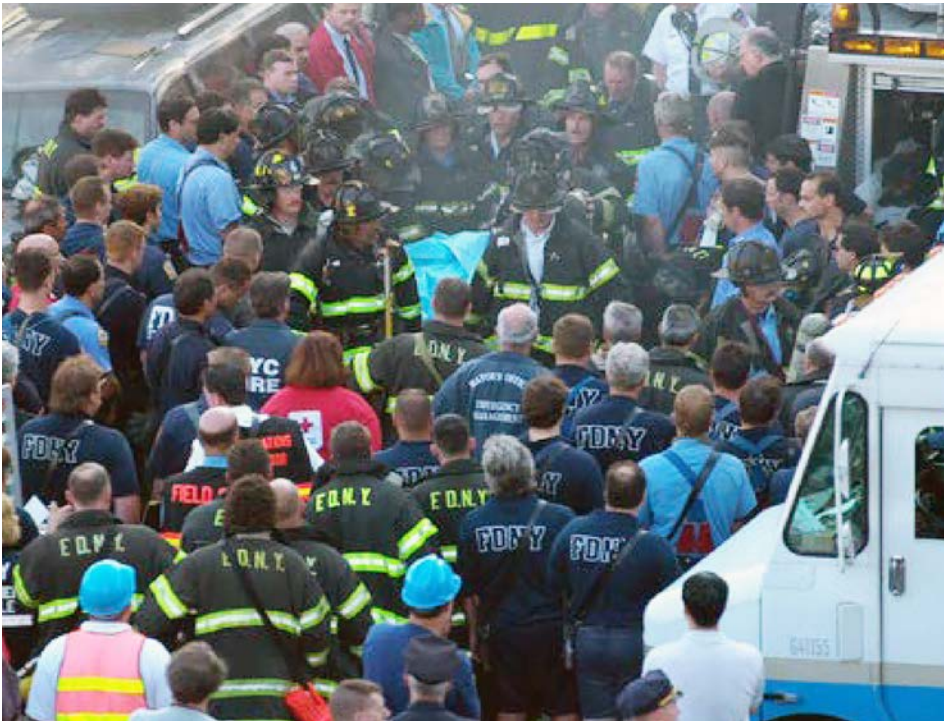
crete and were thick and difficult to break through.

After the front parapet wall collapsed, Lieutenant Portello and FF Pat Hickey returned to the first floor of the fire building to reestablish their two-pronged attack. Three members of Squad 41 continued to work on breaching the hole in the cellar wall. Supervising the rescue effort at the stairway was BC Ray Downey from Special Operations Command (SOC). Members of Rescue 4 and Squad 41 continued to work on expanding the hole near the stairway. A saw was called for to cut the front stairway, which was near vertical as a result of the explosion.

Eventually, a scissor ladder was called for in order to get down the narrow hole. Firefighter Hickey made a gallant attempt to descend through the heat coming from the cellar, along with Lieutenant Timmy Higgins from Squad 252, Lieutenant Portello and FF Gaine. Meanwhile, conditions in the store continued to worsen.

Firefighters were getting burned as they worked. A hose-line from Engine 259 commanded by Captain Sean McBrien was called for to cool the area of the stairway.

Progress in this extremely stressful situation was slow. Eventually, the breaching operation coming from Exposure #4—supervised by BC John Moran—was



panies worked feverishly to find the two missing members.

A Personal Alert Safety System (PASS) alarm was heard, and firefighters dug in that direction. Firefighter Ford was found near the white car. As he was extricated, digging continued until FF Downing was found nearby. Both were removed from the collapse at 1555 hours and transported to Elmhurst Hospital.

Rescue 3, led by Captain Bart Codd, arrived at the fire and assisted in the breaching of the cellar wall from Exposure #4. They brought down the hanging parapet wall that had been left unstable from the earlier collapse.

Firefighter Bob Knabbe from Rescue 3 crawled into the store. Visibility was still near zero; however, he was able to find the stairway going into the cellar. Fire conditions had abated enough for him to make his way down the stairs. As he crawled toward the front of the building, he found the scissor ladder from the floor above that had been used in previous attempts to rescue FF Fahey. He pushed the ladder up and out of the way, and it was then that he found FF Fahey. It was 1830 hours. A Stokes basket stretcher was called for, and firefighters from Rescue 4 carried the stretcher from their fallen comrade. A priest was on the scene; members removed their helmets and said a prayer. Firefighter Fahey was removed to Elmhurst Hospital.

Lessons Learned or Reinforced

Fire Prevention

At this building, there were several fire prevention issues:

- The propped-open sliding cellar fire door, which effectively doubled the area exposed to fire and allowed more flammable liquids to become involved in the fire/explosion
- The lack of a sprinkler system in the cellar and the store. Both floors were used for storage of flammable and combustible liquids and gases
- The obstructed stairway leading to the cellar
- The fact that the building was not, but should have been, on the schedule to be inspected annually

Reporting of Unusual Conditions

Many firefighters on the scene of this fire reported the odor of paint or lacquer in the air, as well as the constant sound of aerosol cans exploding in the cellar. Unusual flame color was reported as



Ford

Fahey

Downing

Exposure #2 side. He told his chauffeur, Bobby Anderson, to get the large spackle buckets equipped on their apparatus and help remove bricks and debris. He left two firefighters to work on the brick pile on Exposure #2, and he took Firefighters Anderson, Glen Berube and Jerry Brannigan from

Ladder 163 to the rear. They made entry through the blown-off door and into the waist-deep water with fire burning on top. Battalion Chief Bob Turner of Battalion 46 came to the rear to supervise the effort. They grabbed a hose-line to drive the fire back. The fire returned to their location.

As operations to rescue FF Fahey from the cellar were underway, a second operational front took place on 14th Street. Firefighter Joe Vosilla from Ladder 116 was found buried up to his chest, against a white car. He was extricated at 1510 hours.

The search for Firefighters Harry Ford and John Downing was hampered by a considerable amount of fire and smoke. Aerosol cans were exploding and being propelled into the air. Firefighters from Haz-Mat 1, Rescue 2 and other com-

Never forget!

Dozens of firefighters were injured at the "Father's Day Fire," some seriously. Firefighters Harry Ford, John Downing and Brian Fahey perished. Firefighter Ford was a 27-year veteran of the FDNY and was married with three children. Firefighter Fahey was a 14-year veteran and was also married with three children. Firefighter Downing was an 11-year veteran and was married with two children.

successful. The cellar contained about three feet of water from the operating hose-lines, and on top of the water was burning fuel, with the fire spreading in all directions. A foam operation was set up.

Ladder 154, led by Lieutenant Dan Buckheit, arrived after the explosion. Lieutenant Buckheit would later say that this was the worst fire he had ever responded to. He surveyed the scene and saw the rescue operation on the



well. Any unusual conditions should be reported to the Incident Commander. Do not assume that he or she is aware of it.

Aerosol Cans and the Backdraft

We normally associate carbon monoxide with being the primary fuel in backdraft explosions. At this fire, it was widely reported that aerosol cans were continuously exploding well before and up to the time of the backdraft. Generally speaking, aerosol cans are domed and have working pressures between 240–400 psi. The propellants in the aerosol cans are mostly hydrocarbons. The benefit of using the hydrocarbons as a propellant is that they maintain a constant pressure for discharge of the product. Hydrocarbons from ruptured cans containing aerosol propellant, along with the flammable or combustible product in aerosol

cans, greatly increase the likelihood of an explosion when the fire is in a confined space such as a cellar. This is true especially when numerous aerosol cans are exploding.

- A Level 1 aerosol product has a total chemical heat of combustion of 8600 Btu/lb. or less.
- A Level 2 aerosol product has a total chemical heat of combustion of more than 8600 Btu/lb. or less than or equal to 13,000 Btu/lb.
- A Level 3 aerosol product has a total chemical heat of combustion of more than 13,000 Btu/lb.

Storage of large quantities of Level 2 or 3 aerosol cans requires sprinkler protection. These aerosol cans can be propelled like rockets when exposed to the heat of a fire. In addition to the exploding aerosol cans, it was reported that liquified

petroleum gas (LPG) cylinders and cans of paint thinner failed and contributed to the force of the explosion.

Secondary Collapse

At this fire, the explosion caused the collapse of the bearing wall on 14th Street, and the fire then intensified. After any collapse, there is the potential for a “secondary collapse” hazard. Building components rely on each other to resist the pull of gravity; if any of them are radically displaced, the remaining components are no longer fully supported. In fact, the remaining components may be resisting gravity by an undesigned load (e.g., simple beams may now be cantilevered beams). At this fire, the front parapet masonry wall was no longer plumb, and the masonry was no longer in a straight line. This created an undesigned load on the wall, and it collapsed. The longer firefighters have to work within a collapse zone for rescue, the greater the danger of a secondary collapse.

Wall Collapse

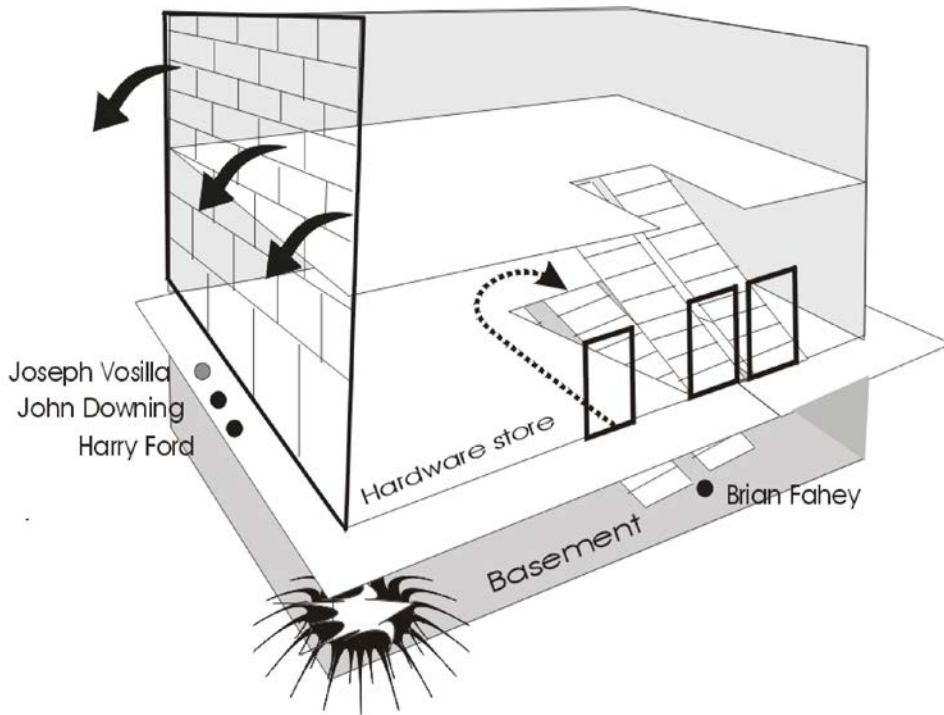
The wall collapse of the Exposure #2 wall (14th Street) was a curtain-wall type of collapse. The wall fell straight down and created a large pile of bricks on the sidewalk, several feet deep. The peak force of the explosion at the fire was 7–8 psi, enough to knock down a brick wall. One psi is enough to knock down a firefighter.

Cellar Fires Strategy

The progression of cellar fire strategy is as follows:

1. **Hose-lines**—This involves advancing a hose-line down the cellar stairs to the cellar floor. Depending on conditions, this act can require great tenacity. If a hose-line is advanced down a cellar stairway, a backup line must be in place to protect the firefighters advancing the hose-line down the stairs. Fire would show at the interior cellar stairway door (rollover). This backup hose-line would also extinguish extending fire. If there is an outside cellar entrance door due to a change in grade, it would be a good choice for mounting an attack, since the advancing firefighters would not have to descend through the thermal layers to get to the cellar floor.

The success of hose-lines advancing down into a cellar fire may depend on ventilation. Cutting a hole near a window on the first floor will provide relief for the engine company advancing the hose-



line. The hole in the floor should be away from the stairway down which the hose-line is advancing. In so doing, the heat and smoke will be drawn to the ventilation hole and away from the firefighters.

2. Indirect method—If hose-line advancement fails, the indirect method of attack—i.e., use of cellar pipes or distributors as a makeshift sprinkler system—is

needed. Cut a hole in the floor as close to being over the fire as safety permits, and deploy the cellar pipe. If the Bresnan distributor is used, a shutoff must be placed in-line so the water flow can be controlled. An additional hose-line should be stretched as a protection line for the firefighters operating the cellar pipe or distributor. This strategy will not completely extinguish the fire; however, it will stop its expansion.

Deployment of the cellar pipe or distributors in a highly heated area may break up the explosive atmosphere. In preparation for using a cellar pipe or distributor, provide as much ventilation on the first floor as possible.

3. High-expansion method—If the indirect method fails, then the high-expansion (high-ex) method is called for. Before a high-ex foam operation is started, there must be enough foam concentrate on the scene for a sustained operation. If high-ex foam is used, it must

fill two thirds of the height of the cellar. If done properly, this will extinguish 80 percent of the fire. Firefighters will still have to advance hose-lines into the cellar to extinguish the remaining 20 percent of the fire.

4. Master streams—If the high-ex foam method fails, we can use master streams to “flow the floor,” or flood the first floor. This method is used if the first floor is too dangerous for firefighters to operate on. If this method is used, protection lines or master streams must be positioned to protect the exposures.

Change of Strategy

When an Incident Commander decides to change strategy, an “urgent” will be transmitted over the handie-talkie.

Chiefs who are Sector Commanders must ensure that units under their command comply with the orders. All units removed from a building for a change in strategy should be prepared to answer a roll call.

Due to the lack of access and the punishing nature of extinguishing cellar fires, the failure rate of cellar fires is high. We should be proactive and prepare for our next strategy as soon as we begin to mount an attack with a hose-line. As soon as a hose-line is advanced into a cellar, initiate the cellar pipe/distributor evolution. If the hose-line advance fails, we are already taking steps toward the next strategy. Alternate strategies take time to implement; e.g., holes must be cut and hose-lines stretched, high-ex foam concentrate must be called for and delivered, etc.

Foam

While most flammable liquid vapors have a gas-specific gravity greater than one (heavier than air), the specific gravity of flammable liquids is less than one (lighter than water). At this fire, flammable liquid was floating on top of three feet of water in the cellar, and it was burning. A foam-line operation should be called for when flammable liquids are burning on top of water.

Quenching, Venting, Flanking

When backdraft conditions exist, firefighters can protect themselves by quenching, venting and/or flanking.

Quenching is the act of deploying a hose stream into a doorway or window to break up superheated gases. This action may break up an explosive atmosphere.

Venting can relieve the pressure in a





structure that has an explosive atmosphere. If a backdraft does occur, some of the pressure will be diverted upward.

Flanking is the act of positioning hoses and appliances away from doorways and windows. Depending on conditions, the entire front and/or side of a building may have to be cleared if there is a collapse danger.

Historical note: Many members of the FDNY who operated with great distinction at the "Father's Day Fire" were killed in the line of duty almost three months later, on September 11, 2001. ■

Resources:

1. The New York Times
2. The New York Daily News

3. Eisner, Harvey. "Remembering the Father's Day Fire." Firehouse Magazine, December 5, 2014.
4. FDNY Safety and Inspection Services Command Investigative Report, Queens Box 5-5-7512
5. Dunn, Vincent. Strategy of Firefighting. Fire Engineering Books & Videos.
6. NFPA Fire Protection Handbook, 19th Ed.
7. Dunn, Vincent. Safety and Survival on the Fireground, 2nd Ed. Fire Engineering Books & Videos.
8. Dunn, Vincent. Collapse of Burning Buildings, 2nd Ed. Fire Engineering Books & Videos.

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