The Holland Tunnel Fire

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

Aftermath of the Holland Tunnel fire reveals the destruction, although the main structure of the tunnel was unaffected. However, interior tile and concrete ceilings and walls were severely impacted.

The New York City Fire Department (FDNY) routinely responds to large, serious fires. Sometimes, the structure fire presents unusual obstacles for members. A serious fire in the Holland Tunnel that resulted in a tragic ending is one such example.

Structure of the Holland Tunnel

Construction of the tunnel began in 1920. Running 1.6 miles long, the tunnel was opened to traffic on November 13, 1927. Due to its ground-breaking design, the Holland Tunnel is listed as a National Historic Civil and Mechanical Engineering Landmark. Clifford M. Holland was Chief Engineer of the project. Unfortunately, he never saw the final structure because the day before the two ends were to be joined together in 1924, he died from a tonsillectomy.

The tunnel featured a new concept in ventilation. There are four tunnel ventilation buildings, two on each side. Fans in the buildings provide fresh air into the tunnel from ducts under the roadway. The fresh air enters the tunnel via slots, spaced 10 to 15 feet apart, just above the curb line. Exhaust fans from the ventilation buildings pull air from the tunnel through exhaust ports in the ceiling. The exhaust air is moved in a space above the tunnel ceiling to the ventilation buildings. When operating at full capacity, air is exchanged in the tunnel every 90 seconds.

The standpipe system is fed by three New York City water mains and two Jersey City water mains. There are automatic fire pumps that ensure that pressure within the standpipe outlets is

About the Author

Deputy Chief John A. "Jay" Jonas has served the FDNY since 1979. He is assigned to Division 7 and is the Division 7 Commander. As a Battalion Chief, he was assigned to Battalion 2. Other previous assignments include Ladders 6, 11 and 27, Rescue 3 and Engine 46. He holds an AAS degree in Fire Protection Technology from Orange County Community College and a BS degree in Fire Administration from Empire State College. He writes this column regularly for *WNYF*.

125 psi. The automatic fire pumps feature a 500-gallon capacity. The standpipe system can be augmented by standpipe Siamese on the ventilation buildings.

The Incident

On the morning of Friday, May 13, 1949, rush hour was in full swing and traffic was heavy, moving slowly into the South Tube of the Holland Tunnel. The South Tube of the tunnel sends traffic from Jersey City to New York City. At about 0820 hours, a truck from Boyce Motor Lines, driven by Edmund Tyndall, was preparing to leave its Jersey City terminal. Mr. Tyndall was to deliver 80 55-gallon drums of carbon disulfide to Pier 2 on 33rd Street in Brooklyn via the Holland Tunnel. His truck had no placards.

At 0848 hours, a tunnel police officer saw traffic stopping by his Post M. He transmitted an amber signal to the control room, indicating a breakdown within the tunnel. He went to investigate. He got about 100 feet away from the stopped traffic when a loud explosion occurred. Two civilians were running toward him. The police officer directed them to a passageway to the North Tube.

Returning to the explosion area, another police officer was found. The original police officer assisted the second one to the passageway to the North Tube. There were five trucks in the immediate vicinity involved in fire, which started in the truck carrying the carbon disulfide. Some of the cargo that the other trucks were carrying included meat, bottled bleach and paint supplies. There was another group of five trucks that became involved in fire, 350 feet to the rear of the fire origin. Their cargo consisted of wax, clams, groceries, tomato juice, large paper rolls and wooden barrels.

One of the Port Authority (PA) police officers told a truck driver to get his truck out of the tunnel quickly. The truck driver made it to the New York side of the tunnel and entered the garage of the PA Emergency Crew. The driver jumped from his truck and staggered into the garage. He yelled out, "I have been gassed!" Then, the driver fell unconscious. Later, he was hospitalized.

The PA Emergency Crew responded to the South Tube and entered the tunnel. A fire alarm was transmitted by the PA patrolman at Post P. He noticed dense fumes and a lack of traffic. Another PA patrolman from Post Q noticed the smoke and ran toward the fire. Both patrolmen became overcome with the smoke and fumes.

FDNY members sift through some of the 650 tons of debris.

The PA Emergency Crew included three men with a Jeep and a tractor. They carried hose, foam, extinguishers and nozzles. As the PA Emergency Crew approached the incident, they were met by a huge ball of fire in the tunnel. Crew members did not have self-contained breathing apparatus (SCBA). The only respiratory protection they had were gas masks, which were ineffective. The PA Emergency Crew stretched a hose-line from a standpipe outlet about 75 feet from the burning trucks and began extinguishing operations. Other PA Emergency Crew members assisted in the removal of two PA patrolmen who were overcome with smoke.

Fire Department Response

At 0905 hours, the Jersey City Fire Department (JCFD) was notified of a truck fire in the South Tube of the Holland Tunnel. They sent an engine, a truck, a rescue and a Battalion Chief. Arriving at the scene, the JCFD Chief of Department transmitted a second alarm for the fire. At 0912 hours, the New York City Police Department (NYPD) notified the FDNY Dispatcher that a drum had fallen off a truck and fumes were filling the tube. Manhattan Box 327 (West Street/Spring Street) was transmitted. Battalion Chief John Heaney, Battalion 5, and his Aide, Berril Johnson, and Rescue 1 were dispatched.

FDNY's Rescue 1 and Battalion 5 entered the Holland Tunnel in the North Tube (NJ-bound). They made it to the fire vicinity in the South Tube, roughly 6,000 feet from the NY entrance. They crossed over to the South Tube via one of the exits. Then, "all hell broke loose." Ten trucks were heavily involved in fire, plus the original truck's cargo of 55-gallon carbon disulfide drums were exploding into fire. When carbon disulfide burns, it gives off sulfur dioxide and carbon monoxide. On one of the other trucks, the containers of bleach were failing, adding chlorine gas to the atmosphere. The heat was extreme, with a heavy smoke condition and dense concentrations of fumes. Rescue 1 took over the hose-line from the PA.

The PA Emergency Crew and FDNY continued extinguishing efforts. Rescue 1 was equipped with SCBAs and members started searching the trucks in the tunnel for trapped occupants. Three people were found snared in the trucks and removed to safety. Chief Heaney found a phone that connected to the Holland Tunnel control center. He told them to call the FDNY Dispatcher and transmit a full first alarm for a large fire in the Holland Tunnel.

At 0920 hours, all traffic going into the North Tube was stopped. At 0930

hours, Manhattan Box 308 (Varick Street/Broome Street) was transmitted. Engines 30, 27, 13 and 24, Ladders 8 and 20, a Water Tower, Battalion Chief Gunther Beake, Battalion 3, and Deputy Chief Henry Wittekind, Division 1, responded. They took control of the FDNY's response. Chief Heaney's Aide was left at the tunnel entrance to pass on orders to responding units.

Radio communication was non-existent. Chief Wittekind ordered Engines 30 and 27 to enter the South Tube with their apparatus. They stretched supply hose-lines from the tunnel standpipe system to their pumps on the apparatus. Hand-lines were stretched from their pumpers. While entering the tunnel, Engine 30 dropped their three-inch hose for an additional water supply. Engines 30 and 27 saw a wall of fire in front of them. The lights within the tunnel went out. There was a reflection of the fire off the tiles on the ceiling and walls of the tunnel. Large sections of the tunnel ceiling failed. Engines 13 and 24 connected to the tunnel standpipe Siamese to augment the system. Once the supply to the standpipe was augmented, the engine crews made their way into the tunnel to help with extinguishment.

The ladder companies entered the tunnel to assist in searching for trapped occupants and facilitate stretching hose-lines. At 0932 hours, Rescue 3 was special-called to Manhattan Box 308. Additionally, two public ambulances and two NYPD Emergency Units were sent to the scene. Manhattan Box 710 (Dyer Avenue/West 38th Street) was transmitted. Rescue 2 was directed to go through the Lincoln Tunnel, make their way through Jersey City and assist in the operation on the New Jersey side of the Holland Tunnel. Also responding to the New Jersey side of the tunnel at 1012 hours were a Department ambulance, along with FDNY Medical Officer Dr. Harry M. Archer.

Chief Wittekind special-called two FDNY fireboats to the scene. They patrolled the area above the tunnel in the Hudson River. Marine members were looking for rising bubbles coming to the surface, which would indicate that the tunnel was failing. The fireboats' members did not see any bubbles.

Firefighters from the JCFD entered the South Tube from the New Jersey side. They had to work their way past approximately 100 cars, buses and trucks that were stuck behind the fire and carry hose-lines with them. Their progress was slowed due to the fumes in the tunnel.

Heat from the fire was starting to damage the fans at the New Jersey land ventilation building. PA personnel in the ventilation building started cooling the fans with hoses. However, the ventilation fans remained operational throughout the fire. The fire damaged telephone, telegraph, radio and television connections between New York and New Jersey.

There were 100 SCBAs and canister masks available for breathing protection for FDNY Firefighters. Once Firefighters ran out of air, they dropped to their hands and knees, breathing fresh air out of the air vents near the curb line. Many FDNY Firefighters were treated for smoke and gas inhalation.

At 1028 hours, Rescue 4 was special-called from Queens to Manhattan Box 308, marking the first time in the FDNY's history that four rescue companies worked at the same incident. At 1100 hours, the FDNY Oxygen Unit was special-called. Soon after the special call for Rescue 4, a call went out for additional staffing. At 1110 hours, four engines with three-inch hose were special-called to Box 308. Chief Wittekind wanted to establish a backup water supply into the tunnel. Divisions 3, 4, 5 and 11 were ordered to send five Firefighters each to Manhattan Box 308. At 1119 hours, Chief Wittekind transmitted a second alarm for Manhattan Box 308.

The fire was largely under control by 1300 hours. The laborious task of removal of vehicles and debris began almost immediately. It was estimated that the temperature from the fire was 4,000 degrees Fahrenheit. Parts of the involved trucks fused together.

Re-flash of Fire

At 1820 hours during the recovery operation, the fire re-flashed, as the fumes still being generated from the carbon disulfide containers ignited. The re-flash produced a heavy smoke condition and greatly affected PA personnel who were conducting recovery and cleanup operations. The burning liquid went into gutters within the tunnel. Muffled explosions could be heard from a distance due to the flammable liquid entering the gutters. Hose-lines were used and a foam operation was initiated. More than 20 five-gallon containers of foam concentrate were used to gain control of the re-flashed fire.

Aftermath

The South Tube of the Holland Tunnel was opened to traffic in 56 hours. The North Tube of the tunnel was reopened to traffic at 1405 hours on the day of the fire. The main structure of the tunnel was unaffected by the fire. However, the interior tile and concrete ceilings and walls were greatly impacted. There were 650 tons of debris removed from the tunnel. Ten trucks were involved in the fire, but no private automobiles were involved. Three busloads of children were about to enter the tunnel when the fire broke out, but were stopped at the tunnel entrance. Sixty-seven people were injured at this fire, 27 of whom required hospital treatment. Seven PA sergeants, patrolmen and Emergency Crew members were injured, including PA Deputy Chief Thomas Maloney.

The FDNY sustained the greatest number of casualties. Twenty-five Firefighters were affected by smoke and/or gas inhalation. Firefighter Thomas Kelly, Engine 24, was admitted to Saint Vincent's Hospital. Captain Salvatore Rogers, Engine 30, and seven others from his company were rendered unconscious from the fumes. They were relieved from duty. Lieutenant Anthony J. Risano, Engine 27, was sent home after suffering from smoke inhalation.

The FDNY released a press release regarding the injuries sustained at this fire. It stated that most of the Firefighters were treated and sent home or returned to duty and be on an observation list for 10 days. Additionally, the effects of the smoke fumes may not be noticeable for some time. This statement was prophetic: Battalion Chief Beake, Battalion 3, returned to work for a short time when he became sick due to exposure to the smoke and fumes from the Holland Tunnel fire. His health took a rapid decline. He died from the injuries he sustained at Manhattan Box 308 on August 23, 1949. Rest in peace, Chief. Never forget!

Operations Today

- Hazardous materials transportation is not allowed in the tunnel and commercial trucking is prohibited. Most incidents within the tunnel now involve automobiles or buses. FDNY and JCFD do not enter the tunnel unless requested to do so by the Holland Tunnel Supervisor.
- Standpipe Siamese are located at the vent towers. A marine company will feed the river vent tower Siamese

and the third engine will feed the land vent tower Siamese. Another line will be stretched to cool ventilation fans.

- Ventilation of the tunnel is controlled by the Tunnel Operations Desk. There are seven zones in the tunnel. The zone where the fire is located will be on "exhaust." Other zones will be on "intake." This will clear the smoke near the fire. However, it will draw the smoke toward responding fire apparatus.
- SCBA and thermal imaging cameras may have to be used for a heavy smoke condition.
- For communications within the tunnel, a handie-talkie relay can be used. Post radios can be used. (Channel 2, "Command Channel," can be used to contact JCFD.) PA radios can be picked up at the tunnel entrance.
- The initial assignment includes first and second engines, first ladder and second Battalion Chief, who enter the tunnel against traffic. The second-due Battalion Chief establishes "Operations." The first-due Battalion Chief establishes "Command" at the tunnel entrance. The remainder of the assignment "stands fast." The ranking EMS Officer will make contact with the first Battalion Chief and apprise him/her of the EMS resources available on-scene. The first engine stretches two hand-lines; one solid stream and one fog stream. Simultaneously, the second engine stretches supply lines from two separate standpipe outlets to the first engine. Blue reflectors in the roadway indicate the location of a standpipe outlet.
- Evacuation of people can be handled via the roadbed or the tunnel vent towers. If there is an incident, the traffic ahead of the involved vehicles will exit the tunnel. Traffic will be stopped behind the incident. This allows units to approach against traffic. Generally speaking, the FDNY will be the lead responding agency for the NY-bound tube. JCFD will be the lead responding agency for the NJ-bound tube.
- At incidents where the 45- and 60-minute cylinders would be inadequate, rebreather units can be used. These units can provide Firefighters with additional operation time. It must be kept in mind that Firefighters in bunker gear and performing lifesaving operations will become fatigued while operating for the longer duration provided by the rebreather unit. A Rebreather Task Force (RTF) will be dispatched for incidents in tunnels.

The vent fans housed in the Holland Tunnel provide fresh air. Operating at full capacity, the air is exchanged in the tunnel every 90 seconds.

The RTFs are comprised of members from Rescue Operations, Haz-Mat Co. 1, Haz-Mat Engines, Special Operations Command (SOC) Support Ladder Companies, Rescue Battalion, Safety Operating Battalion, Communications Engines and trained Battalion Chiefs. The RTF mission is to provide the Incident Commander IC) with a communications network, conduct air monitoring, establish a safe rescue and evacuation corridor and a team to reach the area of impact.

References

1. "The Holland Tunnel," by then-Deputy Chief Paul Cresci, in the 2nd/2008 issue of *WNYF*.
2. "Holland Tunnel Fire," by Firefighter Robert A. McDermott, in the July 1949 issue of *WNYF*.
3. "The Holland Tunnel Chemical Fire," by the National Board of Fire Underwriters.
4. SOC Overview of Drager Rebreather Units, by Deputy Chief Joseph M. Cunningham (Special Operations Command).
5. *FDNY Training Bulletin*, SCBA, Addendum 4.
6. *FDNY Pre-Incident Guidelines*, Holland Tunnel.
7. *NY Times*.
8. *NY Herald*.
9. *One Hundred Years of Valor–Rescue Company 1*, by Firefighter Paul Hashagen.
10. *The Last Alarm*, by Michael L. Boucher, Gary R. Urbanowicz and Frederick B. Melahn, Jr.
11. "Rebreather Task Force (RTF): The Rise of the Intelligent Operation," by Lieutenant Robert J. Brown, in this issue of *WNYF*.
12. "Tunnel Construction Post-Holland Tunnel," by then-Deputy Chief Paul Cresci and Deputy Chief Michael O'Keeffe (retired), in the 1st/2009 issue of *WNYF*.
13. "Ventilating Road Tunnels at Fires," by then-Deputy Chief Paul Cresci and Deputy Chief Michael O'Keeffe (retired), in the 2nd/2011 issue of *WNYF*.
14. "On Guard Below, Special Equipment in New York's 22 Tunnels Provides Protection Against Fire Hazards," by Jerry Daly, in the 4/43 issue of *WNYF*.
15. "Manhattan-Brooklyn Tunnel," by Firefighter Robert A. McDermott, in the 1st/51 issue of *WNYF*.
16. "Queens Midtown Tunnel, Fire Protection Features of the New East River Underpass," in the 1st/41 issue of *WNYF*.
17. Division 1 SOP #10, Holland Tunnel Operational Procedure.
18. "Using the FDNY Post Radios," by then-Battalion Chief Peter J. Hart, in the 1st/2007 issue of *WNYF*.

Thanks to the following people who contributed to this article: Deputy Chief Joseph M. Cunningham, Special Operations Command; Deputy Chief Robert Carroll, Division 1; Manhattan Fire Alarm Dispatcher Herbert Eysser (retired); Katy Clements, FDNY Photo Unit; Firefighter John Paulson, Mand Library; Deputy Chief Vincent Dunn (retired); and Firefighter Christopher Roberto, Engine 48. ■