L.I.R.R. FIRE

Photos this article by C. Justice and, J. M. Shanus, F.D.N.Y. Photo Unit

. . . Holban Yard 5th Alarmer

by ALBERT K. SCHAFFNER
Deputy Chief, 13th Division

May 27, 1980, was a clear, warm day. The temperature had reached a comfortable 76°F., and a brisk breeze, coming out of the northwest at about 20 mph, promised the continuation of a beautiful Spring day in New York City.

The members of Engine Co. 301 were routinely performing their firehouse duties when, at 1549 hours, they were interrupted by a special-call for an "engine only." They immediately responded to what was reported as a minor fire at the Holban Railroad Yard, located at 183rd Street and Liberty Avenue in Queens. Little did they realize that the fire they were responding to would eventually require the concerted efforts of a 5th alarm assignment before it would be brought under control and extinguished.

THE HOLBAN YARD

The Holban Yard, located in the Hollis section of Queens, is the largest freight marshalling yard in the Long Island Railroad system. It is bounded on the north by a row of commercial and residential buildings that front on Archer Avenue, on the south by Liberty Avenue, on the east by 183rd Street, and on the west by 177th Street.

The area south of Archer Avenue, for approximately 400′, contains commercial and residential buildings, four electrified main line tracks, and twelve non-electrified lay-up tracks. The balance of the yard is the maintenance-of-way area. The maximum distance between Archer Avenue and Liberty Avenue is about 525′, and the distance between its east and west boundaries is approximately 1800′. (See illustration.)

The only access to the area is through one set of gates on Liberty Avenue. All operations and responses were, therefore, directed to this side. And, it was toward Liberty Avenue that the fire was traveling.

The yard contains a hydrant system that is comprised of four hydrants, connected to a 4″ main. Each hydrant has two 2½″ outlets.

A SMALL BEGINNING

A small fire, probably caused by a carelessly discarded cigarette, originated in a remote area (425′ from Liberty Avenue) where cable reels and drums containing combustible liquids were being stored on flat skids. There was an accumulation of rubbish and debris under the skids, and the ground was saturated with oils from spills and leaks. This condition allowed the fire to spread rapidly.

The fire was still in its incipient stage as the incoming shift of railroad employees was arriving and the off-going shift was preparing to leave, and was apparently ignored by those employees who did notice it. It was not until the reels became ignited, and large quantities of thick, black smoke began to generate that one of the employees hurried some 900′ to the office at the other end of the yard to report the fire.

PROBLEMS FROM THE START

When Engine Co. 301 arrived at the gate to the complex, it was obvious that a large amount of material was involved in fire.

Lieutenant Annitto, commanding Engine Co. 301, immediately transmitted a 10-75. The time was 1558

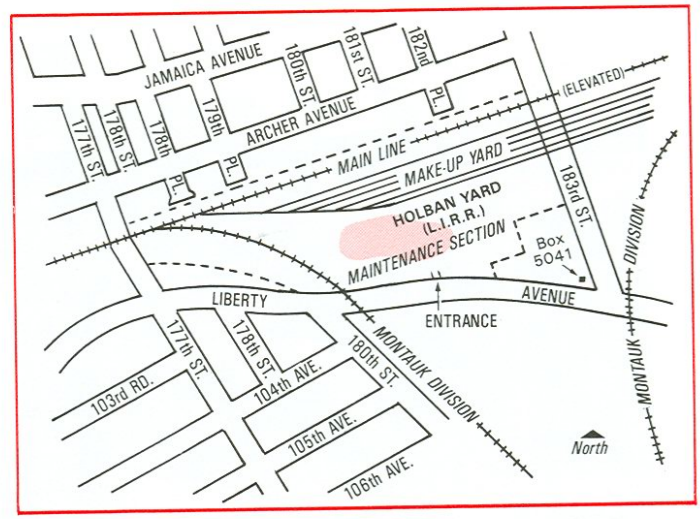
hours. However, prior to his transmission, a Class 3 for Box 5041, Terminal 3, an automatic alarm for the Holban Yard, was received at Queens Communications at 1553 hours. Box 5041 was transmitted at 1554 hours.

When the alarm for Box 5041 was received, an "all hands" was in progress at Box 4784, located about nine blocks from the Holban Yard fire. Several companies that would normally respond to Box 5041 were operating at that all hands. This necessitated the response of relocated companies to the Holban Yard fire.

The first due ladder company was Tower Ladder Co. 135 (acting as Tower Ladder Co. 127), and the second ladder company was Ladder Co. 150. However, Ladder Co. 150 was out-of-service, and a portion of her crew had responded with Engine Co. 301 on the "engine only" transmission. In Ladder Co. 150's place, the dispatcher special-called Ladder Co. 125 to the scene. Battalion Chief Frank H. Buckheit, 54th Battalion, was also special-called, as was Engine Co. 314 (acting as Engine Co. 303) and Engine Co. 317; both assigned on the 2nd alarm.

Upon reaching the scene, Engine Co. 301 found fire involving a large number of reels of copper cable, drums of kerosene, and a wood frame locker room; approximately 17′ x 25′ in size. The members of Engine Co. 301 stretched in-line from a yard hydrant using a 3½″ line, and operated their apparatus mounted Stang and a 2½″ handline. Their immediate objective was to reduce the radiant heat that was threatening a large drums of hydrocarbon liquid used to thaw out frozen number of 55 gallon drums of kerosene, and several switches. A major fire was developing rapidly.

Tower Ladder 135 was able to take a position on the west side of the fire. They used their heavy calibre

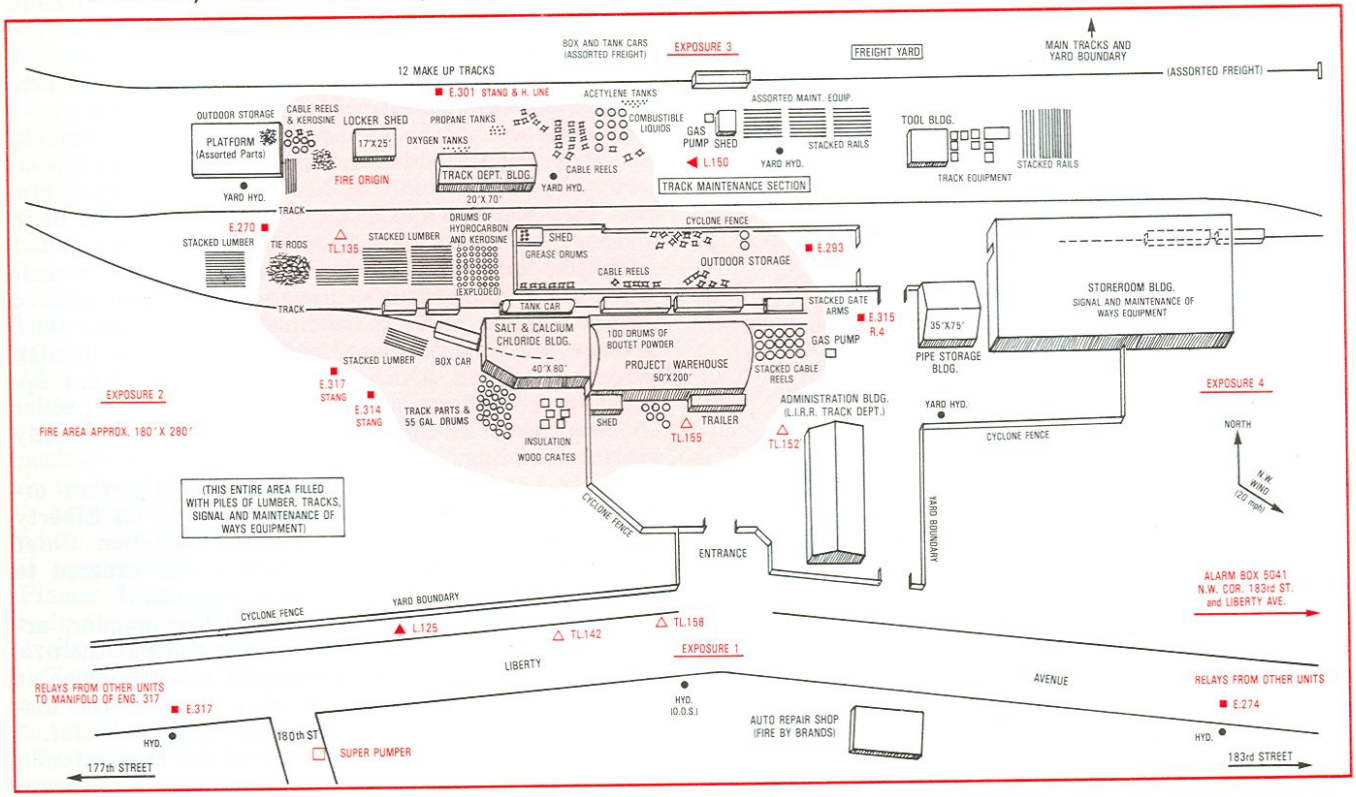


Above map shows LIRR Holban Yard and surrounding area. Dotted lines indicate yard boundaries. Area of fire involvement is shown in red.

stream to sweep the area, and to throw a protective water curtain on a tank car that was on the tracks alongside a large warehouse. That tank car was loaded with 4,000 gallons of diesel oil. The 54th Battalion took a position on the north side of the fire (Exp. #3).

Engine Co. 314 and Engine Co. 317 were ordered to stretch lines from Liberty Avenue to supply Tower Ladder 135. They were also ordered to set up their Stang nozzles on the Exposure #1 side and sweep the fire, which was being fanned by a brisk wind out of the northwest, and was threatening piles of lumber and a large warehouse. The warehouse measured 200′

Illustration below shows bird's eye view of the track maintenance section of the LIRR Holban Yard. Red tint indicates area involved in fire. Positions of firefighting units are the positions that were assigned upon arrival. Not shown in this illustration is the heavy concentration of stockpiled materials. That condition can be readily seen in photos that accompany this article.



Looking north from Liberty Ave. Photo, taken after the fire was extinguished, shows just a portion of the Holban Yard complex. Note elevated railway cars (background) forming northern boundary, and tremendous amount of stockpiled materials throughout the yard.

x 50′, and was approximately 35′ in height. (It should be noted that the lines being stretched from Liberty Avenue had to be dragged through a cyclone fence, over and around large amounts of stored lumber, drums of fuel, stored signal equipment, tracks, and assorted maintenance-of-way supplies such as spikes, rail plates, and large quantities of electric cable reels containing combustible insulation. It should also be noted, that due to the rapidly spreading fire, only two of the four yard hydrants were available for use.

GREATER ALARMS TRANSMITTED

At 1604 hours, Battalion Chief Buckheit transmitted a 2nd alarm, and, in addition, requested that that response be augmented by two tower ladders. The area and volume of fire clearly dictated the need for heavy calibre streams. With the exception of the one handline in use by members of Engine Co. 301, no other handlines were ordered placed in operation.

Realizing the enormity of the situation that was quickly developing, Chief Buckheit transmitted a 3rd alarm at 1608 hours; just four minutes after the transmission of the 2nd alarm.

While the members of Ladder Co. 125 were cutting cyclone fences on the Liberty Avenue side, members of Engine Cos. 314 and 317, assisted by members of Ladder Co. 125, were stretching a line to Tower Ladder 135. At this point, the radiant heat forced members of Tower Ladder 135 and Engine Co. 301 to move their apparatus about 50′ away from the fire. This action, of course, necessitated the shutting down of lines, and removing Engine 301's Stang to a position on the ground. The radiant heat was so intense, that members were forced to seek protection behind stacks of rails. A booster line was used to protect Engine 301's apparatus against the searing heat.

Members of Engine Co. 314 encountered an unserviceable hydrant immediately in front of the complex on Liberty Avenue, while members of Engine Co. 317 were able to get a good hydrant further up the street. The members of Engine Co. 317 stretched lines to Tower Ladder 135, and to a Stang nozzle that was placed to cover the Exposure #1 and #2 sides. The members of Engine Co. 314 placed their Stang to the right of Engine Co. 317 and operated into Exp. #1.

Prior to Deputy Chief Albert K. Schaffner's arrival on the 2nd alarm, the fire had spread with dramatic speed. It now had control of a locker shed; a nearby storage shed; numerous 55 gallon drums containing flammable liquids; stocks of acetylene, oxygen, and propane tanks; dozens of reels of insulated copper wire; box cars located on a siding on the Exposure #1 side; 10,000 board feet of lumber; and the west end of the main storage building. Drums of liquid were beginning to explode, showering flammable liquid and debris over the entire area. The fire was so intense, that rising smoke could be seen for a distance of more than eight miles.

Units responding on greater alarms were ordered, via radio, to approach the scene from the Liberty Avenue side, and prepare for relay operations.

While responding, Tower Ladder 155 was ordered to notify Deputy Chief Schaffner of their exact position on arrival. When they arrived, they informed him that they were on the Exposure #1 side, by the main warehouse. Using this information, Deputy Chief Schaffner immediately ordered Engine Co. 270 to their location to supply them with water. This tactic allowed Tower Ladder 155 to commence operations with greater speed. As it was probable that the flaming warehouse would soon collapse, with a resultant upward blast of flame, the members of Tower Ladder 155 were ordered not to operate their bucket directly over the building.

Tower Ladder 142 and Tower Ladder 158 were ordered, while responding, to take positions on Liberty Avenue and operate onto the fire. Battalion Chief Albert J. Kranz, Jr., 51st Battalion, was ordered to direct operations on the Exposure #2 side.

Joseph C. Hess, Queens Borough Commander, arrived at 1620 hours and directed operations at the fire. Chief Hess ordered the transmission of a 4th alarm at 1628 hours. At that time, he also directed the dispatcher to special-call an additional battalion chief.

At 1638 hours, Chief Hess ordered the transmission of a 5th alarm. Chief of Department Francis Cruthers arrived at the scene at 1715 hours and assumed command of the fire.

A jumbled mass of twisted steel and debris are all that remain of the large warehouse. Members of L.155 and E.315 were repositioned shortly before the collapse, averting possible serious injury.

Tank car, containing 4,000 gallons of diesel oil, remains unharmed. Members of L.135 employed their heavy calibre stream to create a protective water curtain for the tank car, keeping it safe.

WAREHOUSE COLLAPSES

As previously mentioned, Tower Ladder 155 was positioned to cover one end of the large warehouse.

Engine Co. 315 was ordered to place their Stang into operation on the Exposure #4 side, where the large warehouse doors had been opened for examination. At that point in time, it was possible to walk into the warehouse through those doors. There was no smoke in the lower two-thirds of the building, which was divided in half by a plywood partition. Dense smoke, however, was noted in the trussed area of the roof.

It was then that railroad management notified the Fire Department that there was material stored in the warehouse which could be dangerous, and have explosive qualities in fire. There were about forty cans of stored material that were visible to our forces, and about a hundred cans at the other end of the building. Engine Co. 315's Stang was positioned to operate into the open doors of the warehouse should fire break out.

The fire was intensifying at the other end of the warehouse, and Tower Ladder 155 was ordered to shut down and move further away from the building. This maneuver was accomplished and, as the members of Tower Ladder 155 made ready to operate their high calibre stream once again, the entire roof of the warehouse began to ignite. That portion of the interior of the warehouse that had been free of smoke was now filled with dense, acrid smoke. All this had occurred within a few minutes. As a precautionary measure, the members of Engine Co. 315 were ordered to reposition their Stang nozzle some forty feet further away from the warehouse doors.

At that moment, the entire west end of the warehouse roof burst into flames with such rapidity that it occurred with what seemed like explosive force. Flames from the blazing building generated intense radiant heat, and burning brands were thrown hundreds of feet in the air, showering the entire area.

Tower Ladder 142 was caught by this blast of heat and had to quickly back their bucket away in order to avoid having their members injured. With great effort, the members of Tower Ladder 155 moved their apparatus safely out of the yard onto Liberty Avenue; a distance of 300′ from their original position. Tower Ladder 158 had not been placed into operation at that point and was not endangered.

In order to keep their Stang nozzle in operation, the members of Engine Co. 315, with the aid of members of Rescue Co. 4, were forced to move their charged line further back, about 100′. From that vantage point, they were able to protect a 35′ x 75′ building and several gasoline pumps.

UNDER CONTROL

Tower Ladder 152 was ordered into the yard to cover the Exposure #4 side. Engine Co. 293, using a yard hydrant, supplied them with water.

All hook-ups were made at a point that was distant and out of danger from the fire. When the hook-ups were completed, the apparatus was moved into position to battle the fire.

The entire warehouse was now fully involved, and Tower Ladder 155's heavy calibre stream was once again used as a water curtain. Tower Ladder 142 and 158 were positioned on Liberty Avenue and were in full operation.

Basically, these tower ladder streams were the deciding factor in containing and extinguishing the fire. The main warehouse was consumed quickly, and collapsed into a mass of twisted steel and materials which burned for hours.

All units at the scene continued to battle this stubborn fire, which was finally declared under control at 1807 hours.

During this period, several handlines were stretched by 4th and 5th alarm units to extinguish small pockets of fire that were still burning in reels of wire, piles of lumber, and box cars. An additional ladder pipe was placed in service on the Exposure #3 side to hit the areas not completely covered by the tower ladder streams.

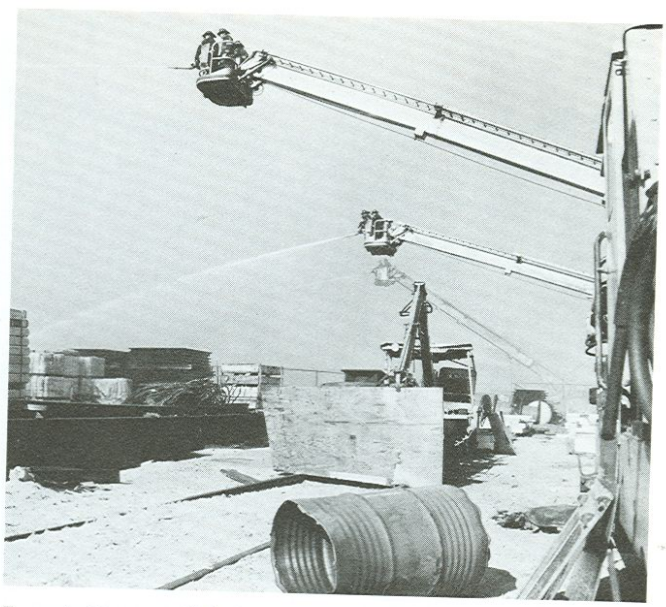
Mop-up operations and watch lines were maintained until 1350 hours the following day in order to ensure complete extinguishment.

SUMMARY

It has often been said that each fire is different, and that each presents its own particular problems. This fire was no exception. The problems encountered at this blaze were many and varied.

Accessibility. Accessibility to the fire area was an

Firefighting units encountered many obstacles. Stockpile-maze hampered maneuverability and created unsafe footing conditions.



Tower ladders provided the reach and penetration that was necessary to saturate high stockpiles of material and protect exposures.

immediate problem encountered by our forces. As was previously mentioned, this fire could only be approached from one side; Liberty Avenue. Knowledge of this fact by chief officers enabled them to assign responding units, via radio, to desired operating positions. Units were instructed to pass the fire scene on Liberty Avenue and seek hydrants east of the area. This information was invaluable, and allowed our units to place lines in operation without any undue waste of time or effort.

Water. The area in which the Holban Yard is located is served by the Jamaica Water Supply Co. (JWSC) and is served primarily by 6″ mains. Luckily, there was a 12″ main in this situation. And, standard operating procedure in the Borough of Queens requires that, where multiple lines are to be used, the first arriving unit in the JWSC area shall request an increase in the water pressure. Unfortunately, the closest hydrant in front of the fire, on Liberty Avenue, was out of service.

Yard Hydrants. The yard hydrant system is comprised of four hydrants connected to a 4″ main that is supplied by the 12″ main on Liberty Avenue. The system runs in a loop, and is dead-ended. The farthest hydrant is approximately 800′ from the main on Liberty Avenue. When pressure is raised by the JWSC, it also increases the pressure in this system.

These hydrants have two 2½″ outlets and must be turned in a counterclockwise direction to be opened. It appears, however, that these hydrants are not checked with any degree of frequency. They are old and encrusted, which cut down considerably on their water flow.

Our forces were able to utilize only two of these hydrants; one by Engine Co. 301 (first company to arrive), and the other by Engine Co. 293. Engine Co. 293 was able to adequately supply Tower Ladder 152, but when they also stretched a handline, in an attempt to extinguish nearby reels of burning wire, the tower ladder stream was affected. Relay stretches were employed to augment these units and correct that situation.

There is, apparently, no regular inspection of these hydrants by the LIRR. The only time a defect is discovered in a hydrant is when it becomes necessary to use it. The 13th Division is endeavoring to convince the LIRR to institute an inspection program in all of their yard systems. It is also suggested that some sort of elevated marking system be employed with yard hydrants that will enable units to locate them when they are blocked from view by box cars, low sheds, etc.

Hazardous Materials. It is most important to be aware of the contents of industrial occupancies in your response area, and the potential hazards that they present to firefighting personnel. This is especially important in railroad yards, as a variety of hazardous materials may be passing through the yard at any given time. It is well to keep in mind, however, that the information you receive from occupancy employees may not always be accurate or complete.

The Department of Transportation (D.O.T.) mandates that, when carrying hazardous materials, railway cars be identified by signs or placards. However, there have been reported incidents where these signs or placards have been removed by vandals. At this fire, two box cars, that were endangered by flames and heat, were opened and inspected to make sure that they did not contain any hazardous materials that would imperil nearby operating units.

Information regarding the contents of box cars that are stored at sidings can usually be obtained from management at nearby occupancies or, if located in a large yard, from the yardmaster.

In questioning railroad employees at the scene, it was ascertained that the material stored in the drums was a compound called *Boutet Thermite Charges*. This compound is described as a thermite mixture, composed of 60% iron oxide, 20% aluminum powder, 14% steel with a slight carbon content, and 5% iron with manganese. This compound is used for welding, thus eliminating the need for bolting stretches of rail together. The D.O.T. does not regard this compound as flammable as it cannot be ignited at temperatures under 3100° F. The manufacturer supplies tapers (similar to fireworks sparklers) with the compound, which are used as ignitors. When the compound is ignited by the taper, it reaches a temperature of 5000° F. and the iron oxide is turned into molten iron. Incredibly, when shipped, the tapers are packed with the compound.

When inquiries were made of the manufacturer, he stated, "The ingredients are not considered hazardous materials, and the charge [compound] is classified as non-flammable. As far as the extinguishing media, special firefighting procedures, and explosion hazards go, there is no known way to extinguish the reaction once it has started. Since the reaction requires no outside oxygen to continue, and produces such large quantities of heat and molten steel at approximately 5000° F., once it has started, under no circumstances should any water be used as this will cause immediate explosions from the large, rapid volume changes caused by the water vaporizing to steam instantly."

It was this compound which accounted for the sudden explosive-like flashover during the fire, which generated intense heat and spewed flying brands over the entire area. This incident clearly illustrates that statements from reliable people about the flammability of stored material, which they base upon ordinary circumstances, cannot be completely relied upon.

Multiple Alarms. The transmission of greater alarms was a most important ingredient in successfully fighting this fire. The long distances required for units to travel to fires in this area is of prime concern to chief officers and company units alike. This, coupled with the need for possible relay stretches, made it mandatory to transmit 4th and 5th alarms promptly.

Units in the 13th Division have been made aware of the importance of using relay stretches in this area of Queens in order to augment the lines of first arriving units. These evolutions are constantly reviewed during Multi-Unit Drills.

At this fire, Satellites were used to relay stretches and supply manifolds. This permitted greater flexibility, and eventually allowed some pumpers to be relieved and lines switched over.

Delayed Alarm. The primary reason that this fire gained such headway, prior to the arrival of firefighting forces, is due to the delayed transmission of the alarm. For a fire to reach such proportions in daylight hours, with large numbers of railroad employees in the area, clearly indicates a lack of understanding on their part as to how rapidly a small fire can grow.

RESULTS & LESSONS LEARNED

- The company manufacturing the thermite compound has offered to ship the tapers (ignitors) in separate containers in the future.
- The management of the L.I.R.R. has agreed to start an inspection program of all its yard hydrants and mains to assure reliability.
- Critiques, follow-up inspections, consultations with manufacturers of hazardous materials, and visits to the fire scene are all important functions if we are to expand our knowledge and experience in fighting and preventing fires.
- Units responding to fires, especially multiple alarms, should, in addition to monitoring their apparatus radio, turn on their Handie-Talkies. In this manner, they will have a clearer picture of the events at the fire scene; can inform the chief in command of their exact location and arrival time; and be available for special orders or assignment. Following this procedure will also reduce Department radio traffic.
- When cyclone fences surround a large tract of land, as in this instance, it is preferable to cut through the fence in order to reduce the length of the stretch. This procedure will allow you to get water on the fire more rapidly.
- Great care must be taken in the positioning of the buckets of tower ladders at fires where an increase in fire intensity or collapse is a possibility. Had Tower Ladder 155 placed their bucket over the warehouse for better stream penetration, there is every possibility that serious injury would have been inflicted on its operating members.
- When operating at large scale, serious fires, it is important to ensure that the minimum number of members are exposed to danger. Use only those members who are needed to operate lines, tools, etc. Have all other members safely positioned behind walls, stacked material, or at a distance where they are available, but out of danger.
- While it would appear that railroad cars are too heavy to move, we must recognize the fact that, in some instances, car brakes may not have been set, or may suddenly loosen. Therefore, when operating around box cars (especially single, unattached cars), it is important to have their wheels chocked. The force of a stream or an explosion may cause movement of the car which could pose a serious threat to operating personnel.
- Keep in mind that it is not unusual for pumpers to completely expend their fuel at extended operations. Engine Co. 270 responded to this fire with a full tank of diesel fuel. After operating at full capacity for about five hours, they ran out of fuel. Notified of this condition by the motor pump operator, the officer in command summoned a tank refueling truck.

When operating at large scale fires, the need for a tank refueling truck should be anticipated to cover this possibility. It should also be remembered that some units may have responded to the fire with less than full fuel tanks.

- Prompt consideration must be given to the necessity of setting up brand patrols. Brand patrol units should be assigned areas where exposure is deemed the greatest, and must be instructed to relay calls for additional aid should they encounter a problem that so warrants.

CONCLUSION

It should be particularly noted that the members operating at this fire performed in true Fire Department tradition. Their physical and mental capacities taxed to the limits, they extended themselves to the utmost. It was only their prompt and diligent work that prevented an even greater loss of property. In the final analysis, the success of any Fire Department is always dependent upon the dedication of trained, determined firefighters. At this fire, that dedication and determination was self-evident. ▲

Resources Needed to Control and Extinguish Fire at Box 5-5-5041, Queens. May 27, 1980.

Firefighters:	Two hundred and eight. (Includes officers and members.)
Engine Companies:	Twenty-one. (Includes two that were special-called for relief.)
Ladder Companies:	Nine. (Including five tower ladders.)
Satellites:	Three.
Ambulances:	One.

Rescue Co. 4; the Searchlight Unit; The Superpumper Unit, including Engine Co. 207; the Mask Service Unit; and the Field Communications Unit were among those special units that were called to the scene.

There was a total of 1,350,000 gallons of water used at this fire, with a peak usage of 9,000 gallons per minute between 1730 hours and 1830 hours.