Photo courtesy Newsday

Emergency . . . tank truck spill creates high hazard situation

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Deputy Chief, 13th Division

Saturday, February 19, 1983, was the start of a long Washington's birthday weekend. It was an unusually clear and comparatively mild winter's day, with a little snow left on the ground from the previous storm.

There was no significant fire activity in the Borough of Queens during the morning, and it looked as if, like the weather, it would be a comparatively mild day for the Fire Department. That, however, was soon to change.

At about 1230 hours, at the intersection of Woodhaven Boulevard and Forest Park Drive, in the Borough of Queens, a tank truck, carrying over 3,000 gallons of gasoline, overturned. The tank truck, owned by the Island Transportation Company of Westbury, Long Island, N.Y., was lying on its left side, and was completely blocking three lanes of southbound Woodhaven Boulevard traffic. The nose of the truck was resting against the traffic stanchion that it had knocked down at the southwest corner of the intersection.

10-75 TRANSMITTED

Forest Park Drive crosses Woodhaven Boulevard (a heavily traveled, six lane, north-south highway) at the crest of a long grade that runs down through densely populated areas of frame buildings located in sections of Woodhaven and Ozone Park.

First arriving units found gasoline flowing freely from one fully opened hatch cover, and leaking profusely from the other five, obviously sprung, closed hatch covers. The stunned driver was sitting on a park bench, and appeared to be in shock. The engine of his overturned truck was still running.

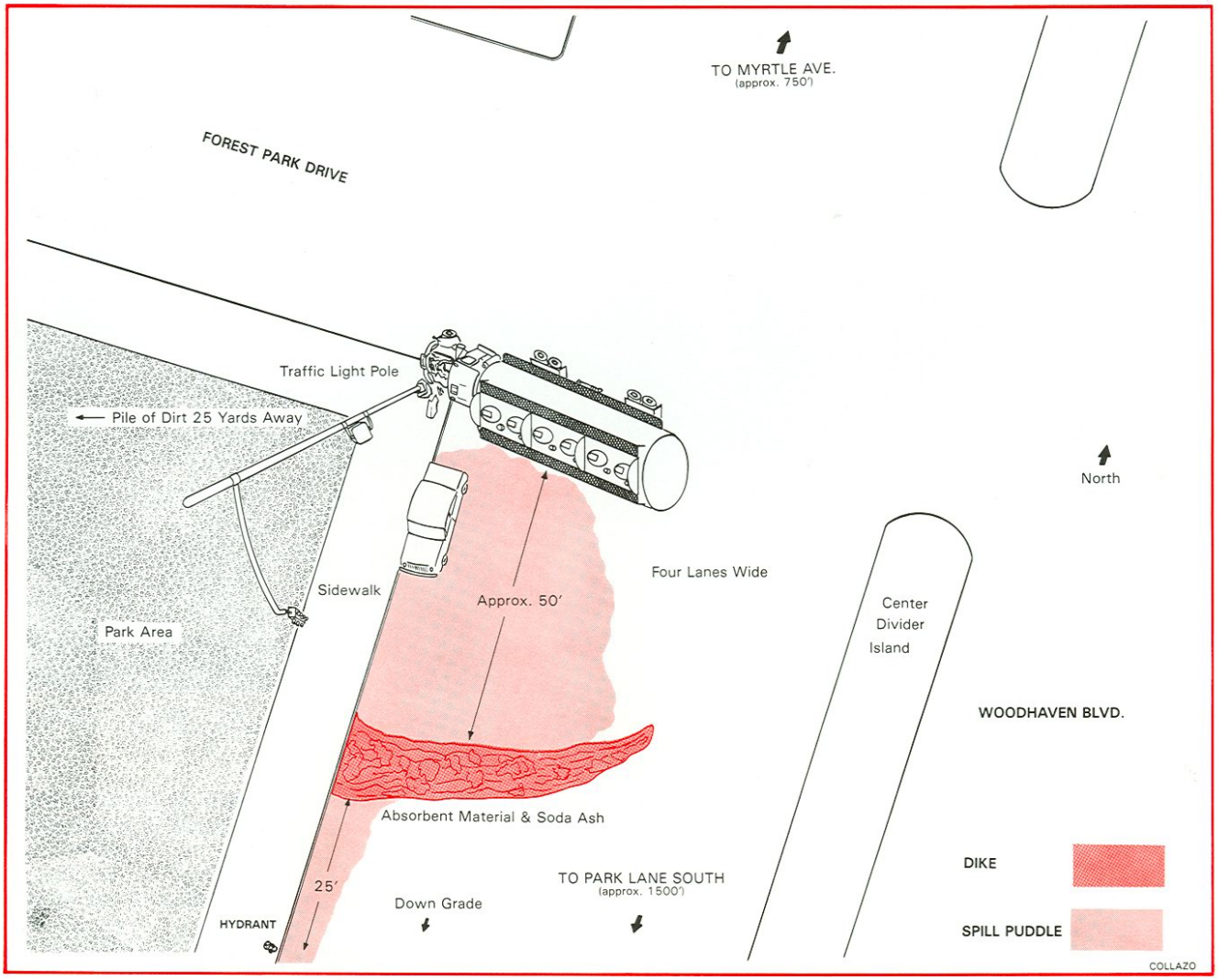

Illustration shows final resting position of tank truck after it overturned and completely blocked three southbound lanes of Woodhaven Boulevard. Spill was diked on the downgrade side of the truck and hydrants opened to flush and dilute the spilled gasoline.

Battalion Chief Joseph J. Kiesling, 51st Batt., was the first chief officer to arrive on the scene. His concerns and priorities were to:

- stop the flow feeding the spill
- dike/dam the run of free flowing fuel
- prevent ignition of the spill

He immediately issued orders to close the opened hatch cover, erect a dike that would contain the flowing fuel, apply foam to cover the spilled fuel, and open all downhill hydrants to dilute and flush the gasoline that had already entered the sewer system.

The running truck engine was shut off, the battery disconnected, and the stunned driver removed to the hospital by Emergency Medical Services personnel.

Chief Kiesling then ordered the transmission of signal 10-75, and the relaying of all pertinent information to the dispatcher. He ordered the response of the Rescue Co. 4 Hazardous Materials Unit* (HAZ-MAT) and a foam unit, and the notification to the proper authorities for this type of an incident.

The fully opened hatch cover was closed, but it was apparent that none of the hatch covers were close-fitting in the overturned position, and gasoline continued to leak from all the hatches.

Initially, ladder company personnel were set to work with claw tools, picks, axes, etc., to loosen the semi-frozen ground in the area in an effort to get material for the construction of a dike. Due to the fact that it was the winter season, all units carried shovels (as per *All Units Circular 200, "Winter Operations")* on their apparatus, which were put to good use in the construction of the dike.

Coincidently, a pile of soil had been previously deposited (for reasons unknown) within twenty-five yards of this incident. This heretofore eyesore became a boon to our operations. The mound of soil was quickly and efficiently utilized by our forces in the making of a substantial dike.

Foam was applied to cover the spill, pending the arrival of absorbent materials from the HAZ-MAT Unit.

At 1238 hours, Deputy Chief Andrew J. Kerzner, 13th Div., arrived on the scene and assumed command of operations. With the arrival of additional units, construction work on the dike was augmented. As an added safety measure, Chief Kerzner ordered that it be enlarged.

The dispatcher was requested to contact the Department of Sanitation, the Bureau of Sewers, Consolidated Edison, the Department of Environmental Protection, and other related and concerned agencies.

An engine company was ordered to proceed down the hill with the Division's explosimeter to check and take readings of the area's street drains. At the same time, they were instructed to ensure that all drains that were directly involved were thoroughly flushed.

Engine Co. 331 (a protein foam depot) was special-called, and responded to the scene with their reservoir of foam and

*The FDNY is the only agency in the City of New York that boasts a Hazardous Materials Unit and is, in fact, the only city agency capable of handling hazardous materials spills.

As a result of the accident, one of the hatch covers was thrown into the fully opened position, allowing hundreds of gallons of gasoline to spill onto Woodhaven Boulevard. Note absorbent material and soda ash in foreground, used to soak up and dike the spill.

foam equipment. They were held in reserve as a back-up for the foam unit, in the event of the ignition of the gasoline.

Agencies that were concerned with, and responsible for, the clean-up of the spill were notified to respond.

Attention was now given to other objectives, which were to:

- Determine the exact extent of the fuel spread, thereby establishing the boundaries of the danger area.
- Monitor and determine the explosive range, if any, that existed in the effected sewers and other drainage facilities.
- Examine the surrounding properties for possible gasoline or vapor contamination.

At this point, the overall objective was to stabilize conditions.

When members of the Rescue Co. 4 HAZ-MAT Unit arrived, absorbent material and about 600 pounds of soda ash were spread over the effected area. Mr. Russo, a supervisor with the Department of Sanitation, responded to the scene and placed a heavy-duty wrecker at our disposal in the event we wished to lift the overturned truck back to its normal, upright position. It was decided not to make any attempts at righting the overturned vehicle until all the fuel cargo had been off-loaded. Supervisor Russo also provided a Department of Sanitation dump truck with a load of sand and dirt which was used to reinforce the dike, and to help cover the spill.

CONDITIONS ARE STABILIZED

With a 2½" charged hoseline, and a 1¾" foam line standing by, three members of Rescue Co. 4 worked in the spill area in order to seal the leaking hatches. A putty-like substance (trade marked *Plug and Dike)* proved successful in stopping the flow from five of the offending hatches. The remaining troublesome hatch was finally sealed by using special wedges and an improvised hose clamp.

Several of Rescue Co. 4's Vetter air-bags were then placed under the tank truck and inflated. This was done in an attempt to remove the fluid pressure that was working against the hatch covers and, in fact, successfully accomplished this purpose. A Department of Parks truck was used to deliver some heavy timbers to the scene (procured from a not-too-distant road construction site). These timbers were used to chock and secure the lift that was gained by the air-bags. Additional railroad ties were provided by Fr. Joseph D. Burke, Ladder Co. 143. Fr. Burke, whose home is located near the incident, had originally obtained the railroad ties for landscaping purposes. Simultaneously, one member of Rescue Co. 4, with an explosimeter, accompanied personnel from the Bureau of Sewers in checking key sewer and drainage facilities.

The situation was now stabilized. For about three-and-a-half hours everybody stood fast, pending the arrival of equipment to off-load the remaining fuel. Consolidated Edison and Department of Traffic personnel checked manholes and related conduits for gasoline vapors. Department of Water Supply and Department of Environmental Protection personnel made sure that no threat to the water mains had occurred. A Department of Parks payloader arrived and additional dirt was used to further reinforce the dam and cover the spill.

Cooperation from the Police, Sanitation, Parks, Environmental Protection, and Traffic Departments, and Con-Edison was, to say the least, excellent. Unfortunately, the private sector did not react or respond with the same vigor and enthusiasm. It is possible that the long holiday weekend caught them with only a skeleton force, if any.

END OF AN EMERGENCY

Finally, at 1615 hours, an empty tank truck and transfer equipment arrived at the scene. Both trucks were grounded by cables that were attached to spikes and driven into the ground. For the sake of safety, an additional application of foam was laid down over the effected area. An explosion-proof pump transferred the gasoline from the overturned tank to the empty truck.

A wrecker was then brought in to right the overturned vehicle. When all cables and chains were in place, the members of Rescue Co. 4 opened each compartmnt cover and injected applications of Halon 1301 to inert the almost empty chambers. The hatch covers were quickly closed, and the truck righted without incident. The small amount of gasoline that was remaining in the now righted tank truck was then pumped out. Measurements

Above: Firefighters complete the sealing of all hatch covers. Wedges and an improvised hose clamp was used on one stubborn hatch cover. The others were sealed with a putty-like product called *Plug & Dike. Left:* It was discovered that, either prior to the accident, or because of it, the truck chassis had become totally separated from its undercarriage, and that all weld points, along with the drive shaft, had been completely sheared off.

were taken, and it was estimated that approximately 436 gallons of gasoline had been lost in the spill.

With the emergency at an end, Chief Kerzner ordered Fire Department units to "take up." The street was then sanded and opened to traffic. The next morning, personnel from the Island Transportation Co. removed the sand.

BEHIND THE SCENES

As with all operations, there is more to it than meets the eye, or is recorded in the fire or emergency reports. For example:

The members of Rescue Co. 4 were engaged in a HAZ-MAT drill at the quarters of Engine Co. 3, in Manhattan, when notified to respond to this incident. While responding to the scene, Lt. John D. Dillon, commanding Rescue Co. 4, obtained the details of the emergency from the Dispatcher. Realizing that his response would be delayed, Lt. Dillon requested that Engine Co. 292 (normally quartered with Rescue Co. 4 in Queens) respond to the scene with as many large rolls of absorbent material and absorbent booms as they could carry. In addition, while enroute, Rescue Co. 4 stopped at their quarters to obtain still more of the needed absorbent material and several hundred pounds of soda ash to be used to sop up the spill.

Another item that is not often mentioned in reports is the placement of apparatus. In this instance, the placement of apparatus was of particular importance. Specific orders were issued for the placement of apparatus so that operating units would be located on the safest side of the overturned truck, should ignition occur.

The foam unit, Engine Co. 331 with their 500 gallons of protein foam, and the supply pumpers were all connected with flaked out hoselines, and positioned on the chassis side of the overturned vehicle. Chauffeurs and officers of these units remained in their cabs, ready to maneuver into position should the need arise.

LESSONS LEARNED

- The importance of a good size-up by the officer in command is the first key to a successful operation, and cannot be overstressed. A well-formulated size-up will greatly assist in determining if there is a need for special and/or additional units, and becomes the basis for devising good fire-field strategy.
- At an operation of this magnitude, it is extremely important to establish an adequate safety area for the protection of civilian spectators. Due to the nature of this operation, Battalion Chief James J. Manahan, Safety Operating Battalion, upon his arrival, established a safety area that was 100 feet more than is normally expected at a fire operation.
- Very often, the officer in command of an operation must weigh one set of circumstances against another in order to establish a viable set of priorities. In this instance, the order of priorities was instantly recognized by Batt. Chief Kiesling as being self-evident. This was due to Chief Kiesling's vast experience and knowledge which was quickly manifested into prompt and accurate decision making.
- The HAZ-MAT Unit proved to be of particular value at this operation. That value was not only obvious because of the special equipment that they carry, but also because of the spec-

(Continued on page 19.)

With the situation stabilized and well under control, firefighter stands by with foam line. At this point, additional equipment from the Island Transportation Company was enroute to the scene to offload the remaining gasoline from the overturned vehicle.

is fully sprinklered, you can have automatic exhaust of the fire floor.

16. The inlets shall be limited to a maximum of 3,000 cubic feet per minute, and shall be evenly spaced throughout the area. All return air inlets shall be connected to the return air shaft by enclosed ducts.

17. The system shall be tested at least once each week, using a different floor each week. A record of these tests shall be maintained.

18. All control wiring or tubing for the control of all dampers shall be protected to withstand a temperature of 700° F.

19. All return air shafts shall have a fire rating of at least two hours.

SMOKE CONTROLS + SPRINKLERS

In high-rise buildings, the large volumes of smoke that are generated during a fire present a serious exposure hazard to the occupants, and impede the work of the firefighting forces. Consequently, a positive means of smoke control should be provided in all high-rise buildings. Properly designed smoke control systems also prevent the HVAC system from becoming an avenue by which smoke can spread, as it does in currently designed systems. However, it must be emphasized that smoke control systems are not designed to extinguish or to control a fire. They serve only as a supplement to a sprinkler system. They limit the spread of smoke which, in turn, will act to protect the occupants, and limit property damage.

There is no possibility of designing an economically feasible smoke control system that would be capable of handling the tremendous volumes of smoke that would be generated in an unsprinklered building. Six hundred square feet of burning hardwood will fill 200,000 cubic feet of space with smoke to a degree that is beyond human endurance. The pyrolysis of plastic material will result in the production of 500 times as much smoke as hardwood, in addition to the production of toxic and volatile gases.

The use of automatic sprinklers in undoubtedly the most efficient and effective measure of fire control. To the extent that sprinklers can be relied upon to control or extinguish a fire in any part of a building before substantial smoke is produced, they represent a smoke control system as well as an extinguishing system.

The first line of defense for fire protection in a high-rise building is an automatic sprinkler system that is tied into the Fire Department through a central station. These systems are highly efficient. Not only do they confine the fire to a small area, thereby limiting the generation of smoke, they also immediately transmit an alarm. They operate whether the building is occupied or not and are not subject to manpower cutbacks.

CONCLUSION

Although high-rise buildings may be of fire resistive construction, the furnishings and interior finish may be highly combustible. As a result, these buildings can be exposed to major fire and smoke damage, requiring a large firefighting force for suppression. Fire resistive construction and compartmentation have not prevented outside and inside fire spread in high-rise buildings. Consequently, these features are not a substitute for automatic sprinkler protection when combustibles are present.

In the final analysis, engineers have come to realize that the design of HVAC systems must include an efficient smoke control system. Acting in concert, an operable sprinkler system and an efficient smoke control system will certainly reduce the potential for fire spread and, therefore, risk to occupants in high-rise buildings. ▲

(Emergency continued from page 7.)

ialized training and knowledge possessed by their personnel, and the application of that expertise to the situation.

- It is important for the officer in command to be willing to listen to, and accept advice from, professionals in other fields. No one person can be expected to have instant and total recall of all relevant technical information. While professional advice is welcome, the officer in command must weigh the value of that advice, and the credibility of the adviser. The ultimate decision and the responsibility, of course, remains with the officer in command. In this case, a passing Division of Fire Prevention Inspector, Mr. Ronald Kanterman, made several excellent suggestions in areas of his particular expertise. This allowed the officer in command to deal directly with other important emergency matters requiring his immediate attention.

CONCLUSION

Examination of the overturned vehicle, after the situation had been stabilized, disclosed that the truck chassis had become totally separated from its undercarriage. All the weld points that connected the spring assembly, etc., along with the drive shaft, had been completely sheared off. As of this writing, it could not be determined if this condition caused the vehicle to flip over, or, in fact, if this condition was the result of the vehicle having turned over.

As far as the actual operation is concerned, it can only be termed a success. We are all familiar with Murphy's Law which states, "Anything that can go wrong, will go wrong." Sorry, Mr. Murphy, but in this instance the exact opposite was true. Everything went right! As each step of the operation progressed, the possibility of a catastrophic ignition of the gasoline spill was minimized. It was a perfect example of professionals doing a professional job. Each person at the scene knew what he was supposed to do, and did it. That this operation was successfully concluded is a tribute to the members of this Department who conducted themselves with calm reserve, proficiency, and dedication.

And, we would be remiss, indeed, if we did not take this opportunity to thank all of the personnel, from the various other agencies, who responded to the scene and assisted in this most dangerous emergency. ▲

(Hypertension continued from page 14.)

sure patients. Since hypertension has no symptoms, patients may stop taking their medication if they are feeling fine. Or the high cost of health care may prevent some patients from continuing treatment. Sometimes the unpleasant side effects associated with antihypertension drugs such as palpitations, depression, lethargy, insomnia, diarrhea and impotency discourage the user.

It may take some time to find the right combination of antihypertension drugs to bring high blood pressure under control. The important thing to remember is that high blood pressure can't be ignored; it does not go away. By taking the medication as directed and by reporting any side effects, a patient can aid his physician in effectively controlling high blood pressure.

WHAT'S IN STORE FOR THE FUTURE?

As more research is done into the possible causes, cures and treatment practices for hypertension, scientists are hopeful that answers will be discovered for the many questions comprising the high blood pressure mystery. Until then, hypertension patients benefits from the advances that have been made and from the knowledge that high blood pressure *can* be controlled. ▲