DISASTER AVERTED

. . . operation fuel oil spill

All photos this article by J. M. Shanus F.D.N.Y

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Editor's Note: W.N.Y.F. Magazine, the official publication of the New York City Fire Department, is not only distributed and read throughout this Department, it is also mailed and perused worldwide in such exotic places as Kenya, Africa; Kobe, Japan; Buenos Aires, Argentina; New Dehli, India; and Wellington, New Zealand—to name but a few. Many of our operations are complex, often involving the cooperation of numerous Fire Department units, and various outside agencies. Many of the procedures that we institute at fires and emergency operations are taken for granted by our personnel because they are confronted with complex situations often, and handle them automatically. The reader of W.N.Y.F. Magazine, outside the sphere of the F.D.N.Y. is, of course, not privy to that knowledge. It is for that reason that the author has included "Evaluation of Disaster Plans for Petroleum Leaks and Spills" in this article. That brief description will enable all readers to understand and visualize how our pre-planning methods, our All Units Circular #257, our dispatching system, and our front line units, including the Haz-Mat unit, are all coordinated into an effective, efficient, and professional operation.

ON June 3, 1982, at 0909 hours, the 46th Battalion computer "print-out sheet" showed that the dispatcher was sending three engine companies, two ladder companies, and the chief of the 46th Battalion to a fuel oil spill in front of LaGuardia Hospital, located at 102nd Street and 66th Road in the Borough of Queens.

CONDITIONS ON ARRIVAL

Upon arrival, Battalion Chief Joseph F. Daly, 46th Batt., found a parked, 5,500 gallon capacity fuel oil truck delivering fuel to LaGuardia Hospital. The truck was parked in the middle of the roadway on the downgrade side of the hill. Number 4 fuel oil was flowing from a ruptured high pressure discharge hose into sewers, manholes, and was spraying adjoining buildings and cars. The ruptured hose was connected to the discharge side of the truck's pump, and contained no shut-off. The driver/operator of the truck was not on the scene. What had happened was quickly ascertained. When the driver engaged the discharge pump, the high pressure hose broke, covering him with fuel oil. He was temporarily blinded and was rushed into the emergency room of LaGuardia Hospital.

COMPANY ASSIGNMENTS & ACTIONS TAKEN

Engine Company 305 was the first company to arrive. Its members immediately noted the fuel oil gushing from the ruptured hose line. Lieutenant Gerard Heitmann, commanding officer of Engine 305 (now a captain, 12th Div.), ordered two of his men to install a Cooper hose jacket on the ruptured line, and the balance of his crew to stretch a protective 2½" handline. The installation of the Cooper hose jacket reduced, but did not stop, the flow of oil.

Ladder Company 151's members closed the valve on the hose line that fed the truck's pump. Due to the fact that this valve was defective, this action did not stop the flow of oil. Ladder Co. 151's members were then ordered to check the basements of LaGuardia Hospital for possible contamination by fumes and fuel oil which might have entered these areas via Con-Edison manholes.

Ladder Company 138's members were assigned the task of checking the adjoining basements of apartment houses and sewer basins in the area.

Engine Company 324's members set up their pumper for a foam operation and stood fast. After operations at this emergency were concluded, this company escorted the fuel oil truck over the Bronx Whitestone Bridge to Hunt's Point.

Rescue Company 4 was special-called, by the 46th Battalion, to respond as the Haz-Mat Unit. Upon arrival, they were directed to place rolls of 3M, type-100, oil-sorbent in the roadway to dike the offending oil, and prevent it from flowing down the grade. They then placed two large clamps on the ruptured hose line. This action further limited the flow of oil. They also shut down the individual "toe valves" for each compartment. (Toe valves are valves that control the oil flow from each compartment into a common header.) It was soon discovered that one of the toe valves was defective and could not be shut off.

Later in the operation, they assisted the vendor in the removal of 2,200 gallons of fuel oil from the truck and, together with Engine Co. 324, escorted the truck over the Bronx Whitestone Bridge to Hunt's Point.

Battalion Chief Daly, commanding the 46th Batt., requested that the owner of the oil company be notified of the incident, and specified that they arrange to have a vacuum truck report to the scene to pick up the approximately 100 gallons of oil spill from the roadway.

Con-Edison was also notified, and requested to respond, because fuel oil had entered their manholes.

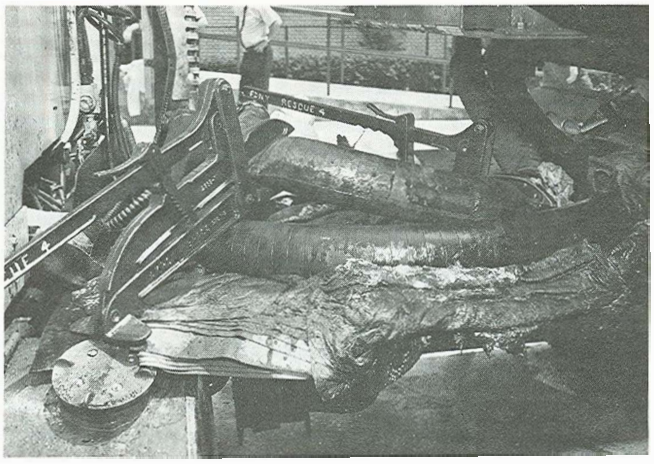
The City's Bureau of Sewers was notified and asked to check the catch basins in the area.

The Police Department was notified and requested to assist in traffic control and the setting up of barricades.

Notification was also made to the New York State Department of Transportation, and the New York City Department of Environmental Protection.

SITUATION STABILIZED, BUT...

By 0950 hours, we had stabilized the leak. Our plan, at this point, was to empty the compartment that was feeding oil to the defective toe valve which, in turn, allowed the oil to continue to leak from the ruptured hose line. Then, we would cap the discharge gate, completely sealing the leak. Once these items were accomplished, we would send the disabled truck back to its home base in the Bronx.



Special-called to the scene as the HazMat Unit, Rescue Company 4 members placed giant clamps on the ruptured high pressure hose. This action limited, but did not completely stop, the flow of oil.

Three problems developed which prevented the original plan from being put into effect. First, as we emptied the compartment with the defective toe valve, oil kept flowing into that compartment. This clearly indicated that the individual compartment baffle plates were leaking and allowing the oil to flow into the compartment that we were emptying. Second, the shut-off valve from the tank to the discharge pump was defective and did not stop the flow of oil. Third, the vacuum truck, sent by the parent oil company, had a capacity of only 2,200 gallons. When the vacuum truck was completely full, we were still left with approximately 3,200 gallons of fuel oil in the disabled truck.

OPERATION CONCLUDED

Rather than prolong the operation by waiting for another vacuum truck to respond to completely off-load the disabled truck, we decided that, since we had stabilized the leak, we would escort the fuel oil truck back to the Bronx via the Bronx Whitestone Bridge. The reasons for the escort by Rescue Co. 4 and Engine Co. 324 were twofold: The repairs to the disabled fuel oil truck were temporary in nature, and should the hose break during the trip, or the clamps fail, Rescue Co. 4 members would be able to cap the discharge outlet with a plug. Also, the location of the discharge hose was in the vicinity of the truck's hot muffler. In the unlikely event of a fire, Engine Co. 324 would be on hand with its supply of foam.

Safety Procedures. Notification was made to the hospital's personnel that there was a fuel oil spill in the roadway just outside of the hospital. They were also informed that the Fire Department had the situation under control, and that neither their personnel nor their patients were in any danger. Hospital personnel started up their emergency backup diesel electric generator, in the event that the oil flowing into the manholes shorted out the power lines supplying the hospital.

Barricades and fire lines were set up to prevent vehicular and pedestrian traffic from entering the area.

Outside Agencies. The New York State Department of Transportation responded to the scene, and was ready to supply a vacuum truck if the parent oil company could not, or would not, engage a cleanup contractor.

The New York City Department of Environmental Protection responded to the scene and found that the oil spill was under control, and that there was no threat to the environment.

Cleanup Operations. The response time of World Wide Pollution Control, Inc. was approximately one hour (well within our designated time frame). They were able to efficiently vacuum the oil from the roadway, and suction the oil from the compartments of the oil truck.

The damming of the oil spill by members of Rescue Co. 4 enabled the contractor to rapidly vacuum up the spill. No sand was used to cover the oil. The use of sand on an oil spill leak only compounds the problem. It prevents the use of the vacuum truck, and the oil and sand then have to be picked up manually with a broom and shovel.

World Wide Pollution Control, Inc. did an excellent job of cleaning up the roadway, thereby eliminating the hazards of a person slipping, or a vehicle skidding when trying to make a stop.

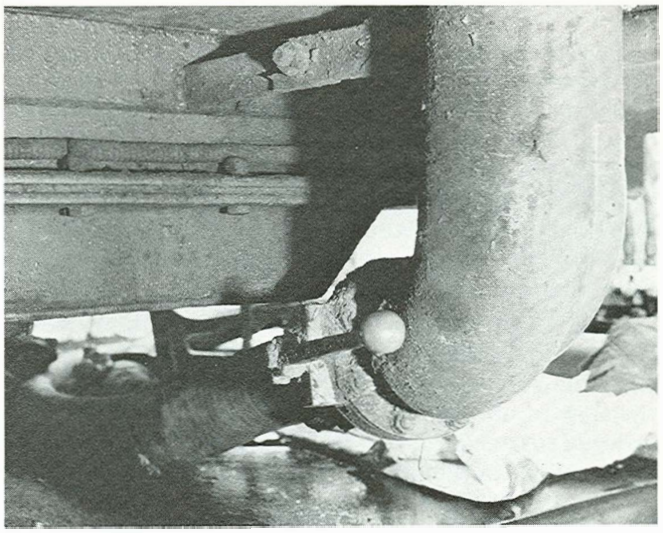
Follow-Up Actions

The following violation orders were issued to the owner of the fuel oil company:

- SP. *(Special Item)*. Properly clean roadway and sidewalk area of oil residue, making area safe for pedestrian and vehicular traffic.
- SP. *(Special Item)*. Provide an affidavit that the baffles and shut-off valves, and all parts of tank truck No. 714 are in proper working order. (A copy of this violation order was sent to the Tank Truck Section of the Division of Fire Prevention.)

LESSONS LEARNED OR REINFORCED

- Encountering a problem of this nature, where the tank truck driver is not on the scene, often occurs at this type of an operation. In this instance, the driver was completely covered with fuel oil and was being administered first aid in LaGuardia Hospital's emergency room. In situations such as this, Fire Department personnel must be prepared to operate without the assistance of the driver.
- The Cooper hose jacket is a clamp that is designed to be installed around a burst hose, in order to keep that line in operation until it can be replaced. Although not specifically made to use on a burst fuel oil line, it is readily adaptable for such a purpose.
- The proper size-up of the problem, shutting down of the tank valve, placing controlling devices on the broken discharge line, and the damming of the fuel oil spill limited the discharge and flow of the fuel oil. These actions made for the rapid vacuuming of the fuel oil, and quick restoration of this busy roadway. In the past, fuel oil spills were flushed into the sewers. Handling a spill in that manner made for an extremely slippery surface, spread oil over a wide area, extended a hazardous condition for pedestrians and vehicular traffic, and allowed for the possible pollution of the waterways.



The tank's shut-off valve, located near an elbow, did not operate properly. When placed at a 90° angle to the pipe, it did not stop the flow of oil. The valve was later discovered to be defective.

- The guidelines set down by All Units Circular 257 were followed and worked very well. The owner was notified of the leak and was requested to contact a private contractor to send a vacuum truck for the removal of the fuel oil from the roadway. The New York State Department of Transportation responded to the scene and was ready to supply a vacuum truck if the oil company could not, or would not, effectuate a cleanup contractor. The New York City Department of Environmental Protection responded to the scene and found that the oil spill was under control, and that the environment was not in jeopardy.
- There was a question as to the proper position of the tank shut-off valve. The valve was installed near an elbow location, and when it was placed in the upright position, the oil did not stop flowing. Logically, we applied the principle that when the valve handle is parallel to the pipe it is in the open position, and when it is at a 90° angle to the pipe it is in the closed position. The reason that the oil kept flowing was because the valve did not seal properly.
- This was a time consuming operation, but our commitment was to stay with the problem until the fuel oil truck was safely secured at its home base. Were we not so committed, we could be faced with a situation whereby a disabled tank truck would leave the scene of the original emergency, and possibly break down, allowing 3,200 gallons of fuel oil to flow onto the streets.
- The total cost of the absorbents used by the Rescue Co 4/Haz-Mat Unit was $514.00 (1979 list price). In view of the financial climate existing today, the Fire Department might investigate the feasibility of reimbursement from either the involved insurance company or the oil company.
- The issuance of a violation order to clean up the oil spill places the responsibility directly upon the owner. Forwarding a copy of that violation order to the Tank Truck Section of the Division of Fire Prevention will ensure follow-up action by that unit, and subsequent repair of the tank truck.

World Wide Pollution Control, Inc., an oil cleanup contractor, received rave reviews for their excellent work and all-around cooperation. Here they are shown off-loading oil from the disabled truck.

- The development of a training film depicting such an incident would be most helpful to our personnel. It could show the different types of tank shut-offs, toe valves, etc., along with the proper procedures to follow in order to disconnect the cab from the trailer in the event of fire.

EVALUATION OF A DISASTER PLAN FOR PETROLEUM LEAKS AND SPILLS

There can be no doubt that the potential for a disaster existed at this operation. When the high pressure oil hose ruptured, it sprayed fuel oil onto the exterior of the hospital, an adjoining multiple dwelling, over and under nearby cars parked on both sides of the roadway, and flowed downgrade into manholes and sewers. The oil was atomized, and the break was near the truck's hot muffler. Conditions were set for ignition, but, fortunately, the oil never did ignite.

Goal. When an accident occurs involving a flammable liquid, the goal of the F.D.N.Y is the protection of life and property, and the restoration of the area to normal conditions as soon as possible.

Communications. The F.D.N.Y. has the necessary communications system available to notify and dispatch the proper emergency forces. When our dispatcher received the phone notification of the leak, they evaluated the situation and sent three engine companies, two ladder companies, and a battalion chief to the scene. The dispatcher recognized that there was the potential for a disaster at this incident, and sent a full first alarm assignment.

The dispatcher pulled the file on foam availability, and was ready to dispatch the units listed on the card that carry 3% fluoroprotein foam. One side of the card lists the units that carry fluoroprotein foam for flammable liquid fires, and the other side lists the units that carry high expansion foam for confined areas. As of April, 1983, eighty-seven engine companies have been issued a JS-10 foam nozzle, along with three 5 gallon cans of 3% fluoroprotein foam for flammable liquid fires. The fifteen gallons of foam can be dumped into the booster tanks of the first arriving engine companies, and will supply an instantaneous and effective body of foam.

The first arriving unit transmitted a signal 10-84, indicating that the Fire Department had arrived on the scene. This signal is stored in the computer, and can be retrieved later on a "printout." This information is extremely useful, especially when people claim that they had to wait an inordinate amount of time for Fire Department units to respond. The printout will indicate the time of the original call, the time that the signal 10-84 was received, and the number of the unit that transmitted it.

Had the fuel oil ignited, the officer of the first arriving unit would have transmitted a signal 10-75, or, if required, a multiple alarm.

The chief of the 46th Battalion established a command post for all communications. The Department apparatus radio was used to exchange information, and to transmit progress reports on the status of the oil spill. The Department radio was monitored by Deputy Chief John F. Clennan, 14th Division, and Queens Borough Commander Edward F. Brennan. Both realized the potential for disaster at this operation, and responded to the scene.

Unit Operations. All Units that responded went to work as per standard operating procedures. The placing of the Cooper hose jacket on the leak was the personal action of Lieutenant [Captain] Gerard Heitmann, commanding Engine Co. 305. It worked well, is a fine example of the ingenuity of our members, and certainly leaves one with food for thought.

The Rescue Co. 4/Haz-Mat Unit operations were very effective; the installation of the clamp was a company action.

Plan. All Units Circular 257 is a detailed plan of action for the officer in command when he responds to a petroleum leak and spill. The Fire Department has spelled out who is responsible for the cleanup operation. If the owner of the oil company can not, or will not, comply with our instructions, then the alternate plan is for the New York State Department of Transportation to take over the cleanup operation. The plan designates the Fire Department as being in charge of the evacuation, the prevention of fire and/or explosions, and having the authority for declaring the area as stabilized and safe.

CONCLUSION

The Fire Department recognized the potential for disaster at these spills and took an affirmative stance by drawing up a pre-plan of action, and by conferring with the New York State Department of Transportation and the New York City Department of Environmental Protection.

Everything at this operation went according to plan. The initial utilization of the Cooper hose jacket, along with the placing of the large clamps to control the oil leak was both ingenious and professional. These actions are, indeed, a credit to our operating personnel for a "heads up" operation.

Later on, that same afternoon, the area of the emergency was inspected, and the roadway was found to be clear and clean. The value of All Units Circular 257, and the pre-planning of actions for an emergency of this type was self-evident. ▲