Friday, July 24, 2009, was an exceptionally beautiful summer day. While in quarters that morning, Deputy Chief Steven Kubler, Division 14, heard Box 6334 transmitted for a car accident at the intersection of 244th Street/Northern Boulevard, Douglaston. What seemed like only a moment later, he heard the Officer of Engine 313 tell the dispatcher that they did not have a car accident at this location but, instead, a transformer fire. The engine Officer then asked at 0759 hours that a 10-75 signal be transmitted for the Box and ordered the necessary fire tactics to be employed.

Lieutenant John Downey, the Officer in command of Engine 313, quickly sized up the situation and realized the potential for fire spread from the transformer to Exposure #4, a three-story commercial building. With this in mind, he ordered the placement of Engine 313 apparatus to the south side of Northern Boulevard and the deck gun of the apparatus was placed into operation while a hand-line simultaneously was stretched to provide exposure protection. Both of these lines operated from a position on Exposure #1 between the transformer and Exposure #4.

On arrival of the second engine company, Engine 306, a hand-line was stretched to the roof of Exposure #4 with the assistance of Engine 320, the third-arriving engine company. After assisting with the stretching of the second line, Engine 320 proceeded to stretch a hand-line to the first floor of Exposure #4. Engine 326, the fourth-due engine, stretched a 2 1/2-inch hand-line to protect private dwellings on 243rd Street. From this position, they were directly behind Exposure #4. (This hand-line later was turned to a portable Akron New Yorker.)

While en route to the Box location and still some distance away, Chief Kubler heard Battalion Chief John Marinaro, Battalion 53, give a preliminary report that they were operating using four lines. Hearing this transmission, Chief Kubler ordered the dispatcher to transmit a second alarm for the Box at 0805 hours. Although not on the scene, the reason for this action was obvious. If four lines are in operation with just an All Hands assignment, there would be no reserve units to do anything else. Also, there would be nobody for relief purposes. (Battalion Chief Robert Bohack, Battalion 47, was on his way to work and stopped to take command until Chief Marinaro arrived. Chief Bohack assisted Chief Marinaro until operations stabilized with the arrival of additional forces.)

While responding, it is important for Incident Commanders (ICs) to try to be proactive. Response times must be figured into the equation. In the outer areas of Queens, units are spread far apart and additional resources have significant lag time in arrival. ICs can always send units back if they aren’t needed. However, at this operation, additional units, indeed, were necessary.

All units that were operating lines were careful not to place water on the involved transformer. All aspects of AUC 338, Application of Water Streams on Live Electrical Equipment, were being complied with.

While engine companies were protecting exposures with hose-lines, ladder companies were busy searching all exposures for possible extension of fire, as well as evacuating occupancies where there was a possibility of exposure to smoke from the transformer. This included occupancies on the southern side of Northern Boulevard, as well as 243rd and 244th Streets. The northern side of Northern Boulevard is a cemetery and, therefore, coupled with the width of Northern Boulevard, did not present any exposure hazard.

All the while, units operated with all protective equipment.
Foam Operations at Queens Box 33-6334
by Battalion Chief Steven San Filippo

A signal 10-86 (foam operation) was transmitted for Queens Box 33-6334, Northern Boulevard/244th Street, for a fully involved transformer fire on Friday, July 24, 2009. The fire created multiple problems and required the need for foam, Purple K and a new product (F-500) for total extinguishment.

The immediate concern was the community center on the Exposure #4 side of the fire. Reporting into the Command Post, Battalion Chief Steven San Filippo, Foam Manager, was informed by Assistant Chief James Esposito, Command Chief, to start setting up the required foam resources that would be needed. At that time, Chief San Filippo conferred with Battalions 49 and 44, the two Foam Coordinators assigned on the 10-86, and developed a plan of attack.

They decided to use Ladder 164’s tower ladder, a hand-line operated by E-260 and two Purple K hand-lines from E-326’s Purple K unit. The two Purple K lines were operated by Engine 315, Engine 326’s back-up unit, which picks up the required equipment when the primary unit is unavailable. (All back-up and primary units are trained equally in the operation of the apparatus.) Additionally, they had a unique opportunity to use a product called F-500, which enables FDNY to use its standardeducators, hose and nozzles. Currently, Haz-Mat 1 carries five-gallon containers and their members manned this hand-line.

F-500 background
F-500, manufactured by Hazard Control Technology, is a new product that the FDNY is piloting. This product is not considered foam, with which most FDNY units are familiar. F-500 has been used at specific fires; mainly transformer and small metal or Class D fires (titanium). The product has many additional applications and myriad uses.

Foam/Purple K operations
All units on the 10-86 were assigned to the staging area and supervised by Battalion 44, the Foam Resource Unit Leader. As units were put into operation and given their assignments, the foam response was beginning to come together. Foam Carrier 294 supplied concentrate to Engine 294’s apparatus (using the portable FIMM), which supplied solution to Engine 72’s manifold.

Supplying foam solution to the manifold enabled FDNY to produce foam from a tower ladder (Ladder 164), a hand-line manned by Engine 260 and, if the need arose, to employ additional hand-lines or large-caliber appliances. In addition to the foam capabilities, Engine 315 stretched two hand-lines from Engine 326’s Purple K apparatus and stood by. After consulting with Lieutenant John Cassidy, Haz-Mat 1, it was decided to use F-500 and give FDNY the opportunity to evaluate its effectiveness at an actual incident.

Power removal confirmation
On confirmation that power was removed, the initial tactic was to use Purple K powder on the transformer oil. The powder appeared to extinguish the fire, but due to the inability of Purple K to cool the surrounding metal, the oil continued to self-ignite and burn.

The next tactic involved Haz-Mat’s hand-line with a fog nozzle, applying F-500 at three percent. This product controlled the fire and had the ability to cool the surrounding metal enough to contain and stop re-ignition of the dielectric oil. After Haz-Mat had control of the fire, members applied a foam blanket using fluoropolydol at three percent in the transformer trough to prevent any chance of re-ignition of the dielectric oil.

Conclusion
This operation was located in an area where the exposures were not a severe problem. That factor gave FDNY the opportunity to try various extinguishing agents—such as foam and Purple K—at the Department’s disposal. Additionally, members employed one of the newer products—F-500—which, through a pilot program, will continue to be evaluated to determine its effectiveness and usefulness to the FDNY.

About the Author...
Battalion Chief Steven San Filippo is a 32-year veteran of the FDNY. He is assigned to Operations as the Foam Manager. He completed the West Point Counter-Terrorism leadership and FDNY Officers Management Institute (FOMI) programs. He is attending John Jay College, studying for a bachelor’s degree in fire and emergency. He is also a member of the Department’s Incident Management Team that responded to New Orleans for Hurricane Katrina. He is a frequent writer for WNYF.

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their hand-line of Purple K to a position to be used once
supplied. Additionally, the Purple K unit responded and stretched
and helped coordinate all on-scene units. Battalion Chief Michael

arrived, a number of lines were stretched for foam operations. The
DeGennaro, Battalion 49, was assigned as the Foam Coordinator.

McGuire, Battalion 54, was assigned as the Resource Unit Leader
was assigned as the Safety Coordinator and supervised the evacu­
ation of homes on the Exposure #3 side. Battalion Chief John

was assigned in charge of operations in the Exposure #4 Sector. Battalion
Sector. Battalion Chief Eugene Mannann, Battalion 52, was

6. Was there any danger of involvement of the adjacent transformer?
7. How would shutting power off at this location affect the imme­
diate neighborhood?

With the Command structure now in place, members awaited
the Chiefs were

3. What type of fluid did the transformer contain and was it PCB-
contaminated?
4. Was it possible to get an MSDS (material safety data sheet) on
the transformer?
5. What was the capacity of the dike that surrounded the involved transformer?
6. Was there any danger of involvement of the adjacent transformer?
7. How would shutting power off at this location affect the immediate neighborhood?

As usual, Con Ed personnel were very receptive to FDNY’s
concerns and extremely cooperative. They began working on all
of the above requests immediately.

As additional units arrived, the operation was sectored. Chief
Marinaro was put in charge of operations in the Exposure #2
Sector. Battalion Chief Eugene Marmann, Battalion 52, was
placed in charge of operations in the Exposure #4 Sector. Battalion
Chief Richard Schlueck, Haz-Mat Battalion, was assigned as the
Haz-Mat Branch Director and operated with Haz-Mat 1, Engine
274 and Squad 288 members. These units performed atmospheric
readings throughout the operation to check on LEL (lower explo­
sive limit) levels. Battalion Chief Stephen Browne, Battalion 50,
was assigned as the Safety Coordinator and supervised the evacu­
ation of homes on the Exposure #3 side. Battalion Chief John
McGuire, Battalion 54, was assigned as the Resource Unit Leader
and helped coordinate all on-scene units. Battalion Chief Michael
DeGennaro, Battalion 49, was assigned as the Foam Coordinator.

While waiting for confirmation of power off and as units
arrived, a number of lines were stretched for foam operations. The
Satellite unit set up the manifold and Ladders 152 and 164 were
supplied. Additionally, the Purple K Unit responded and stretched
their hand-line of Purple K to a position to be used once power off
was confirmed.

The Command Chief, Assistant Chief James Esposito, arrived
on-scene and assumed command. Chief Kubler was reassigned as
Operations Chief. Chief Esposito was apprised of all actions
taken. He ordered a Command Channel placed into operation and
called a third alarm at 0854 hours for logistical reasons. The
Chiefs knew the operation would last a while (the incident was
placed under control at 1049 hours) and they wanted to be able to
replace units as needed.

With the Command structure now in place, members awaited
further information from Con Ed. They stated that the fluid in the
transformer was non-PCB and provided a testing sheet, dated
April 5, 2009. They also stated that it would be some time before
power could be confirmed off. In regards to the capacity of the
dike around the transformer, it had a capacity of several thousand
gallons and the fluid in the transformer was only several hundred
gallons. Finally, they assured FDNY that there was no danger of
involvement of the other transformer. With this additional infor­
mation, positions were maintained and members awaited power off verification.

While continuing to protect the exposures with water, an ad­
nitional problem presented itself. Due to the amount of water that
was being used, the basement of Exposure #4 was beginning to
flood. Further, it was stated that the water appeared to be contam­
inated with some kind of oil. Due to the need to continue the ex­
pulsion protection, this was a problem that could not be solved imme­
diately. Whether the water was contaminated had to be verified
before it could be pumped out. The Department of Environmental
Protection (DEP) took samples and the condition was monitored.

During this waiting period for power off, the Chiefs were
given the luxury of formulating a plan for final extinguishment.
After gathering intelligence on-scene, the course of action to fol­
low was determined. First, the Purple K would be used to knock
down the fire. Once this had been accomplished, a new technol­
gy, F-500, would be used by Haz-Mat 1 via a hand-line. The
purpose of F-500 is to remove heat. If additional resources were need­
ed, the foam lines would be put into operation.

Word came from Con Ed that power was confirmed off. The
plan was put into operation. Unfortunately, like all good plans, this
one was not perfect. The Purple K was unable to totally extinguish
the fire because one area of the burning transformer was inacces­
sible to the agent. Thus, the plan was altered. One area that could
not be extinguished with the Purple K was still not out. The F-500
was applied to this area. It was very effective in reducing the heat
immediately and final extinguishment was accomplished. As a
precaution, the F-500 was applied continually until temperatures of
the transformer were in the 100- to 120-degree range. Finally,
conventional foam was applied to try to prevent the areas that the
Purple K had extinguished from re-igniting. This proved suc­
cessful, with a foam blanket applied.

With the transformer extinguished, consideration returned to
the problem of flooding in Exposure #4. As stated earlier, DEP
was testing the sample taken from the water. It was agreed that if
the sample was contaminated, Con Ed would handle any neces­
sary cleanup. They already had vacuum trucks on the scene for
this purpose. As a necessary precaution, all FDNY members
exposed to the water in the basement were decontaminated prior
to leaving and had their bunker gear taken for decon.

Final thoughts
• Sector operations as soon as possible. As operations expand, it is
impossible to control everything without help.
• Keep in constant contact with utilities. Additional information
may be needed at any time.
• Over prolonged operations, weather conditions must be consid­
ered. At this incident, wind conditions changed from the outset
of operations. Members who were not exposed initially were
exposed later to smoke from the burning transformer. This also
applied to the need to evacuate additional occupancies that were
not an initial consideration.
• Good initial tactics by first-arriving units can make all the differ­
ce. At this operation, the first-due engine knew that protecting
Exposure #4 was a priority and the Officer issued the proper
orders to make sure that it was done.
F-500 and its Use at Queens Box 33-6334
by Lieutenant John Cassidy

Transformer fires pose a number of challenges that need to be overcome for extinguishment to take place. The two most common types of electrical transformers are air-cooled and oil-cooled. The transformer at this incident was an oil-cooled unit.

All transformers have large amounts of mass due to the metals used in their construction. This mass serves as a large heat reservoir. If not cooled down quickly, it will be a constant source of re-ignition. The main areas of the transformer usually are enclosed with metal walls that make it difficult to get at the seat of the fire.

Oil-cooled transformers often will have both spill fires and running fuel fires. This occurs as the oil boils and expands, as was the case at Box 6334. While Purple K is a very effective agent on Class B fires, there were a number of problems that it could not overcome at this incident. First, the Purple K could not penetrate to the seat of the fire due to the metal enclosure. Second, Purple K does not cool the burning material.

Haz-Mat Company 1 members monitored the progress of the Purple K attack with their thermal imaging camera and observed active flaming through the Purple K cloud. Haz-Mat 1 used the F-500 agent to knock down the fire and cool the body of the transformer. The initial extinguishment took place in approximately two minutes. Haz-Mat 1 and HMTU/Engine 274 continued to apply agent until the temperature of the transformer and the oil contained within it no longer was considered a source of re-ignition.

The thermal imaging camera was used to track the progress of the cooling process. During the initial stages of cooling the transformer, once the application of F-500 stopped, the temperature would rise. When the temperature stabilized, the application of F-500 was discontinued. Battalion Chief Steven San Filippo, Foam Manager, used the Department’s foam resources to apply a foam blanket to the transformer oil that had collected in the pit.

Using foam at these types of fires is difficult because of the challenge of getting foam to the seat of the fire. Also problematic is that flowing fuel prevents an effective blanket from being formed. The water in foam initially provides cooling, but then after the blanket is formed, it acts as a thermal insulator.

- New technologies should be used whenever possible. The use of both Purple K and the new F-500 were instrumental in the control of this fire. Additionally, it was possible to monitor the heat of the transformer with thermal imaging cameras, thereby tracking the progress of the above-mentioned F-500 in heat removal.
- Having the Command Chief on-scene made it possible to concentrate totally on the operations tactics. The Command Chief was the Incident Commander and took over the responsibilities of interaction with involved agencies, as well as overall coordination of the incident.
- At prolonged operations such as this, particular attention must be paid to logistics. Members will become fatigued due to necessary use of all PPE and must be relieved as necessary. It is equally important to relieve units that will not be needed for operations. This will make them available for other responses if necessary.
- All Officers must be vigilant to maintain safe operating distances. During extended operations, it is common to see units moving in closer and closer as time goes on.
- Per the Emergency Response Plan, Hazardous Materials, section 19.1.2, clean-up operations are not Fire Department functions. However, the FDNY is responsible for ensuring that clean-up operations take place. In this particular operation, Con Ed handled the contaminated water from Exposure #4, while DEP was left on-scene to oversee the operation.
- This operation was conducted on a major Queens thoroughfare during rush hour. Police were needed for both traffic control, as well as rerouting. Reopening a major roadway should be given consideration when possible. The effects of a shutdown of such a roadway can have far-reaching effects.

About the Author...
Deputy Chief Steven Kabler is a 31-year veteran of the FDNY. He is assigned to Division 14. As a Battalion Chief, he served with Battalion 4; as Captain, with Engine 259; as Lieutenant, with Engine 55; and as a Firefighter, with Engine 212 and Ladder 138. He attended Empire State University. This is his third article for WNYF.