



# Port Mobil Explosion

by Deputy Chief Theodore Goldfarb

**F**riday, February 21, 2003, started out as a quietly normal, 9 x 6 tour in the 8th Division, but ended up with some ironic resemblances to September 11, 2001. One of the ironies was that numerous members of the Department, including the 8th Division Deputy Chief Theodore Goldfarb, Staten Island Borough Commander and then-Deputy Assistant Chief John Casey and members of Rescue 5, were attending a ceremony in the courtroom of Supreme Court Justice Robert J. Gigante at the Homeport on Staten Island, honoring Rescue 5 FF Carl Bini, who died on 9/11. Just as the ceremony was concluding and the collation beginning at 1011 hours, these FDNY members received information via radio that there was a propane explosion in the vicinity of Port Mobil in the Charleston section of Staten Island. The 8th Division and Rescue 5 immediately responded.

As the other units (Engines 151, 164 and 167; Ladders 76 and

87; and Battalion 23) responded southwest toward Port Mobil, a huge smoke plume rising high over the horizon greeted them. As on 9/11, it was a perfectly clear, cool day with the black column of smoke contrasted against a bright-blue morning sky. This column of smoke provided a lot of information, even though the site was 12 miles away:

- It was going straight up, indicating that it was extremely hot and there was no wind with which to contend.
- The dark black color of the smoke gave a hint that a flammable or combustible liquid was involved.
- The smoke column was in the shape of a wide cylinder, rather than a “V,” indicating that the base of the fire was a large area rather than a point source.

Port Mobil is strictly a petroleum storage facility with no refining capability. It is about as far southwest as you can get in New York City. Chief Goldfarb, as well as the first-alarm units, were very familiar with this facility as a result of numerous multi-unit drills, foam drills, fire protection system tests, prior responses to incidents and the pre-fire plan.

Battalion Chief Tom Giordano, 23rd Battalion, transmitted a second alarm at 1016 hours while still en route. Ladder 76, the first-due Ladder Company, commanded by Captain Terry Sweeney, gave an initial report that there was “a massive explosion” at Port Mobil and ordered a third alarm transmitted at 1017 hours. Up until this point, Chief Goldfarb thought this incident could have been in one of the refineries across the 200-yard-wide Arthur Kill in New Jersey. Now, it was verified that the incident was on Staten Island.

While responding, Chief Goldfarb began to address some of the problems that were indicated in the pre-fire plan and his familiarity with the facility:

1. The facility had approximately 39 large storage tanks, pipe racks along the 2900-foot-long dock with 11 pipes of 16- and 22-inch diameters, four barge-loading positions and a connection to the Colonial Pipeline that ran under the Arthur Kill to New Jersey. The products stored were various grades of gasoline, heating oils, diesel fuel and kerosene. It was apparent that a large quantity of product was involved. To address this, Chief Goldfarb transmitted a 10-86 signal and verified that the three Staten Island Engine Companies assigned foam carriers—Engines 152, 154 and 167—were responding with their carriers.
2. The pre-plan mentions that it will take a long time—1½ to two hours—for a fireboat to get to the site. This facility is located opposite a large number of refineries and petroleum facilities on the New Jersey side of the Kill. Numerous ships of all kinds pass through and dock in this narrow portion of the Kill. Indications were that the fire covered a large area. Based on all this information and while responding, Chief Goldfarb ordered two additional fireboats (*McKean* and *Smith*) to be special-called, plus Marine Company 9, which was assigned on the Box. Any unneeded fireboats could be turned back. (See “Marine Operations at Staten Island Box 33-4197” by Battalion

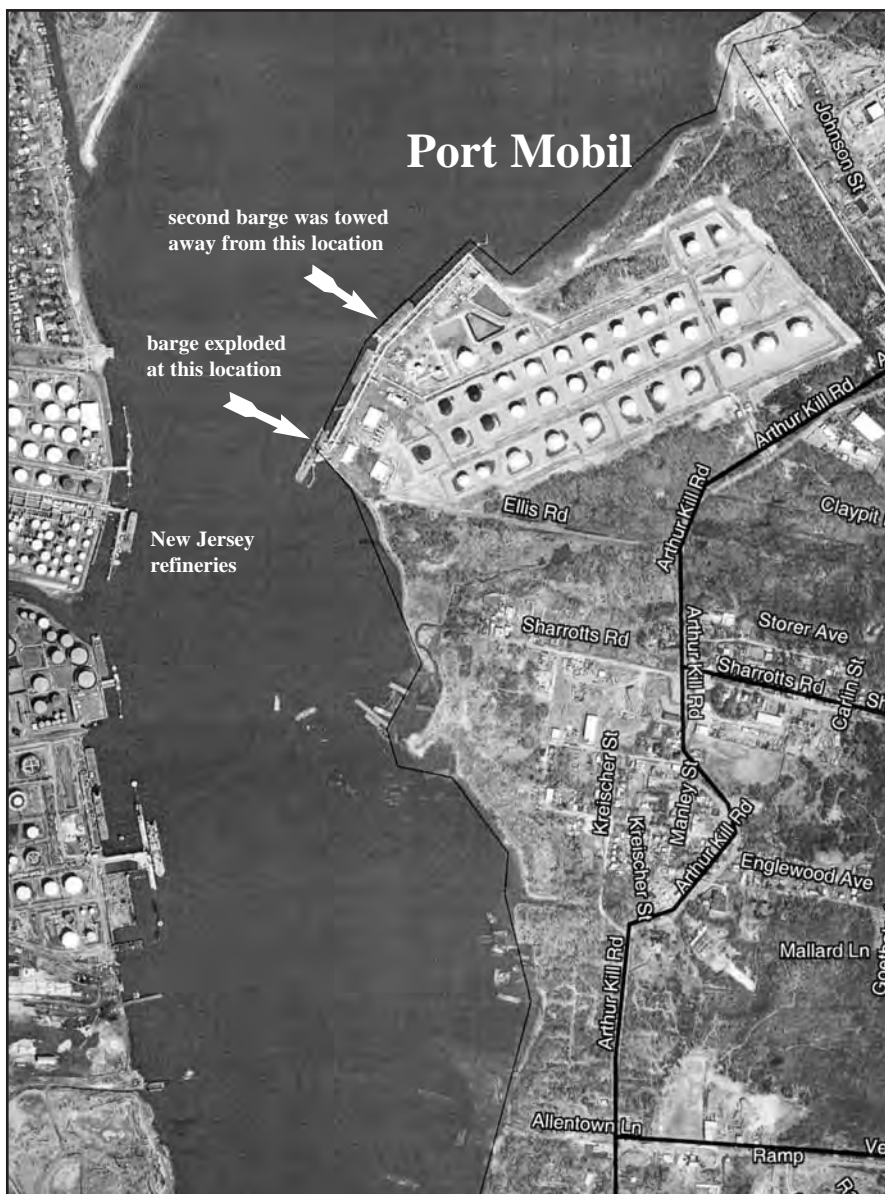
Chief William Siegel, Chief of Marine Operations, on page 6 of this issue.) Years ago, there was a fire involving several gasoline barges tied up on the New Jersey side of the Kill. After the mooring lines of one burning barge burnt through, it drifted across the Kill and started a four-alarm fire at Con Edison's Arthur Kill generating station at the foot of Victory Boulevard on Staten Island. Fireboats are crucial at this kind of operation.

3. The main road into the facility is Ellis Road. It is about one-third of a mile long and only wide enough for one vehicle at a time to navigate because it traverses designated wetlands. This also means the nearest City hydrants are one-third of a mile outside the facility on Arthur Kill Road. Chief Goldfarb ordered Engines 207 and 9, with Satellites 6 and 1, respectively, special-called, plus Engine 159 Satellite 5, which already was assigned. Again, it would be easier to turn these units around if not needed than to call them when a specific need might be determined later in the incident. This facility is in one of the most isolated portions of New York City. The remote location had the positive effect that there were no immediate exposure problems other than the facility itself. The narrow width of Ellis Road proved to be both a curse and a blessing. It was an obvious curse because of its narrow width, which limited apparatus movement, and a lack of hydrants. It proved a blessing because it enabled FDNY to funnel in Companies just as they were needed with a specific assignment for them. It was also easy to keep out onlookers and unnecessary people. Because of the massive response that included FDNY, Mayor Michael R. Bloomberg and Commissioner Nicholas Scoppetta, plus NYPD and all other concerned agencies--both public and private--Deputy Assistant Chief Thomas Haring, who was off-duty and responded from home, was put in charge of staging on Arthur Kill Road. (See #6.)
4. Although this facility covers more than 200 acres, there are relatively few people employed at the site. The weekday population is about 30 employees, with only five people on-site nights and weekends. Some of these employees are scattered around the site, with most concentrated in the brick administration building, one of a handful of actual buildings at the site. Because of the size of the explosion, the product involved, potential structural problems and possibly trapped employees, Chief Goldfarb ordered a 10-60 signal transmitted at 1016 hours.
5. Thoughts of a possible terrorist attack were on everyone's mind: the Firefighters responding, the public, elected officials, law enforcement and the media. This had to be addressed as soon as possible and the risk balanced with the fire and rescue problems. While proceeding down Ellis Road toward the dock, Chief Goldfarb stopped to speak to a number of employees self-evacuating. The Chief was told two workers were missing, one was severely burned and that they felt a malfunctioning pump caused the explosion while product was being off-loaded. Throughout the incident, the number of units committed was kept to a minimum. As needs were determined, units were funneled in from the staging area to address them. Surveys were conducted for radiological and chemical agents and found negative.
6. Because a third alarm and many special calls

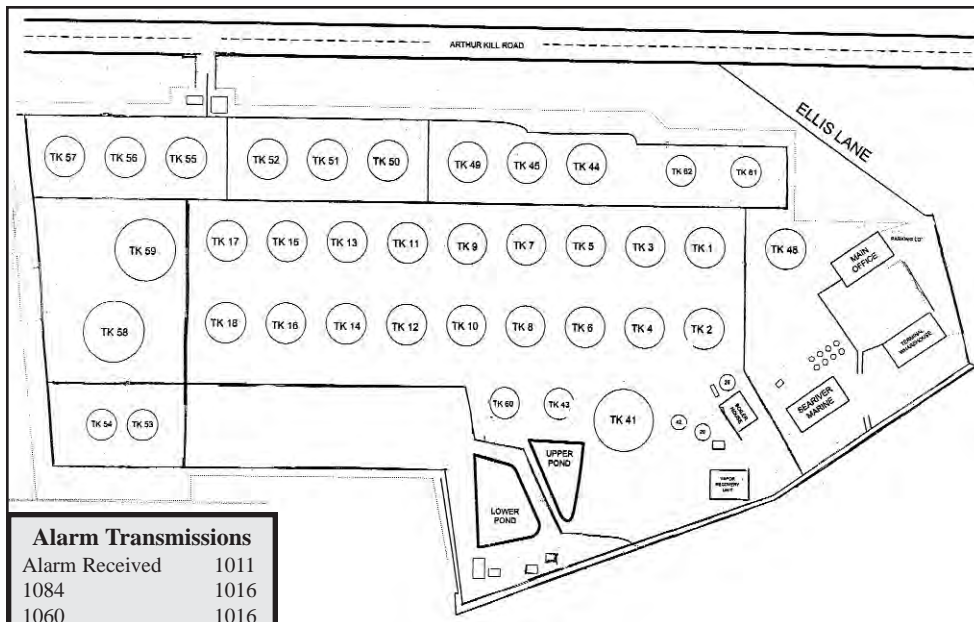
for specialized units were transmitted quickly, a staging area was set up to allow units to be assigned tasks in an orderly fashion. The third and later assigned Battalion Chiefs would be responding from off Staten Island and would have a long response time, arriving after the third-alarm units and many special-called units. To address this, the first Engine Company on the third alarm was ordered to act as staging Officer until Chief Haring arrived and assumed this responsibility.

Ellis Road entered the facility at its southernmost point. This was near the dock, administration building and a large, open parking area that had many parked cars. Visibility was good. FDNY members could see most of the facility up to the dock. The heavy smoke and flames were rising straight up. At the water line, units were faced with flames hundreds of feet in the air and thousands of feet along the dock and shore. The radiant heat prevented immediate examination and operation on the dock. Division 8 aide, FF Doug Palamara, suggested turning the car around in case a hasty retreat had to be made. This placed the rear of Chief Goldfarb's vehicle facing the fire and was an ideal position in which to set up the portable Command Post.

Chief of Operations Salvatore J. Cassano arrived at the Command Post quickly (within 10 minutes of Chief Goldfarb) and took over as Incident Commander. Chief Goldfarb was assigned



artwork courtesy of the FDNY Phoenix Unit



The barge that initially exploded propelled large amounts of steel shrapnel in all directions. One piece, which was the size of three pumpers, was propelled 1000 feet north and landed adjacent to the dock. It brought down all the main power lines and knocked out all electricity to the facility. It landed in the only open area, adjacent to the pipe racks along the dock, within 50 feet of the vapor recovery unit.

The explosion that ripped the barge apart also released most of the remaining product left on it--two million gallons of unleaded gasoline--and sunk. The fire consumed this released fuel and rapidly reduced in intensity. Foam carriers were used to supply foam-lines and an Angus foam cannon mounted on Ladder 87's Tower Ladder, in conjunction with the facility's foam monitors. These lines protected the dock and reduced the intensity of the floating fire.

**Alarm Transmissions**

Alarm Received	1011
1084	1016
1060	1016
2nd Alarm	1016
3rd Alarm	1017
Under Control	1423
<i>(February 28, 2003)</i>	

to make a reconnaissance north along the dock area with Battalion Chief Richard Callery, 21st Battalion. A long brick warehouse building along the dock provided a shield from the radiant

heat. The further north they went, the less radiant heat was present. About 500 feet north of the original barge, they found another barge tied up to the dock. From its orientation, it appeared to still contain a large amount of unknown type fuel. Floating burning product, creating a light to medium fire condition, surrounded this barge. Additionally, wood portions of the dock also were involved in fire. Two Engine Companies were requested and assigned from staging to protect this barge. They operated two foam hand-lines off a pumper connected to the facility's yard hydrant system and a foam monitor nozzle from the facility's separate foam system.

The dock, which ran north to south along the shoreline, was made of a corrugated steel bulkhead holding back soil and a top deck made of reinforced concrete. There were wood pilings behind the bulkhead supporting the concrete deck and large-dimension wood members acting as bumpers along the bulkhead.

On his arrival, Chief Cassano requested that the tugboats remove the barge to a safe location, which was done after plant personnel secured the barge. It was too dangerous to tow the barge away because of radiant heat and the possibility of explosion. This barge initially was moved to midstream in the Kill and held by tugs. One tug had firefighting capability and used its monitor to cool the barge.

When the *McKean* arrived on the scene, under the command of Lieutenant Thomas Piambino, it was assigned to this barge. Monitoring the barge with their thermal imaging camera, Firefighters found a hot spot that didn't reduce in intensity. This area was determined to be a 25- by 75-foot compartment used to store rope and paper supplies. This fire would have to be extinguished with hand-lines from the fireboat.

The Coast Guard requested that the barge be taken to anchorage #44, south of the Outerbridge, so that if there was a problem with the barge, it wouldn't close the narrow channel in the Kill. The land units on the fireboat *McKean* stretched and operated two hand-lines, one supplying a distributor, to extinguish the fire. This barge was the main exposure problem and it was addressed rapidly and successfully.

Battalion Chief Gil Frank of the 58th Battalion quickly was assigned to respond to Floyd Bennett Field in Brooklyn and respond via a Police Department helicopter. (This is automatic during fires or emergencies of three or more alarms. See "The McKinsey Report," by Deputy Assistant Chief of Operations Joseph W. Pfeifer, in the 1st/2003 issue of *WNYF*.) When they arrived, they were assigned to make a primary search of the facility for any injured workers and leaks caused by shrapnel. This would be very time-consuming for land units to do because a dike that surrounds each tank would have to be climbed to make an examination.

The piping on one tank inside its dike had been hit by a large valve from the exploding barge and was leaking. A small leak also was discovered in the piping on the dock. A third leak and small fire was found under the piping. SOC units (Rescue Companies 5 and 3 and Squad Companies 1 and 252) addressed all of these leaks and extinguished the fire. (See "SOC Unit Operations at Staten Island Box 33-4197," by Deputy Chief John Norman, Chief of Rescue Operations, on page 8 of this issue.) The rest of the primary search via helicopter was negative.

The Police Department found the body of one of the victims floating in the Arthur Kill and recovered it. The other victim was still missing. In the evening, the police interviewed the critically injured worker in the hospital and determined that the missing worker probably was sleeping in the crew compartment at the stern of the barge, which still was intact and above the water line. Members of Marine 1 and their assigned land units went aboard and recovered the victim at 2020 hours.

As evening approached, the main problem was leaking, burning product from the damaged manifold to which the barge was hooked up when it exploded. This fire was left burning so that raw product wouldn't spread and possibly ignite at a remote location, endangering property, vessels and people. The area was kept cool by streams from land and fireboats to prevent additional failures of equipment.

Exxon/Mobil engineers and other personnel were flown in from around the country. They found more unknowns than knowns. There were 11 pipes that were 2900 feet long and either 16 or 22 inches in diameter in the overhead pipe rack along the dock. The 16-inch pipes could contain up to 30,000 and the 22-inch pipes 50,000 gallons of product. It was impossible to determine how much product was in these pipes. Nine of these pipes

led to the manifold where the barge was off-loading. All of these pipes were leaking from damaged valves and flanges. The one pipe the barge was hooked up to was open and couldn't be closed.

The operation became a holding action with essentially a third-alarm assignment until the engineers could determine how to stop the leaks. Sometime during Saturday night, February 22, the fire self-extinguished, but the leaks of raw product continued. Most of this product was flowing into troughs on the dock and was recovered by vacuum trucks. The leaks continued and on Monday, February 24, it was discovered that there was still fire smoldering under the concrete deck of the dock in the vicinity of the leaking product. It was difficult to determine exactly where the smoldering fire was because of the lack of access. The smoke was coming up between the expansion joints in the concrete deck and between the concrete deck and steel bulkhead, but the fire actually could be remote from these locations.

Rescue 5 was special-called to try to address this situation. They used their thermal imaging camera, search cam and flammable gas detector to try to further define the situation. They couldn't make a certain determination. When the tide came in, the smoke greatly diminished. It was decided not to break up the concrete deck at this time.

Over the years, with the coming and going of the tides, soil washed out from behind the steel bulkhead and under the concrete deck, creating voids. Two days later, on Wednesday, February 26, the smoke greatly intensified. Rescue 5 again returned to the scene and under the protection of water and foam-lines, made some holes in the deck. Water and foam continuously were applied through the holes and after approximately four hours, the fire was extinguished. But the product was still leaking. A Fire Department presence was maintained at the site until the situation was fully controlled, which was seven days later on February 28, 2003, at 1423 hours. Primary searches were completed within an hour and secondary searches were completed the first night.

The Exxon/Mobil engineers decided to place cold taps on each of the pipes at their low points. Valves were placed on these taps and vacuum trucks recovered the product via hoses. This procedure lasted until Saturday, March 1. In all, 186,000 gallons of product were vacuumed from these pipes.

An Incident Action Plan (IAP) was developed that evening by the Exxon/Mobil engineers to control the situation. The plan listed each activity, in order, that had to be conducted. The personnel/contractors who would carry out the activity were listed, as well as the equipment and materials necessary and any issues involved. This plan was drawn up in consultation with FDNY's Bureau of Fire Prevention (see "The Role of the Bureau of Fire Prevention at Port Mobil," by Deputy Assistant Chief Ronald R. Spadafora and Chief Inspector John McCook, on page 10 of this issue of *WNYF*) and Bureau of Operations (see "FDOC Activated for Staten Island Box 33-4197," by Deputy Assistant Chief Joseph W. Pfeifer, on page 11 of this issue of *WNYF*) personnel.

After vacuuming all nine lines, there was a small amount of product still leaking from the valves at the damaged manifold where the unloading barge exploded. This product couldn't be vacuumed out. Two Engine Companies stood by with one fog hand-line, one foam hand-line and purple-K fire extinguishers, as workers unbolted the valves, one by one, and replaced them with blank flanges. The small amount of remaining product near these valves was released by this process, but the leaks were stopped. Fire Department units left the scene on Saturday afternoon, eight days after the explosion.

Speaking to off-duty members after the fire, Chief Goldfarb was told that they had a great view of the situation on their home television sets from the media helicopters flying over Port Mobil.

Some stations suspended normal programming and dedicated three hours of continuous coverage to this incident. Their overhead view provided them with more information than was available to the Commanders at the scene; again, another similarity to 9/11. Off-duty 8th Division Commander, Deputy Chief James Leonard, called Chief Casey on his cell phone to inform him of the exposed barge moored to the dock north of the barge that exploded. Commanders on the scene had no way of viewing these television images.

The Department now has installed a TV receiver in the Field Comm Unit to allow Commanders to view scenes shot by media helicopters. The media helicopters can be contacted through a relay from the Incident Commander to the helicopter via the dispatcher and TV station to focus on specific aspects of an incident.

#### Lessons learned/reinforced

- Knowledge of a complex facility--gained through visits, drills, prior responses and a pre-fire plan--are vital to a successful operation. All units responding to this incident were the regularly assigned units and their knowledge proved invaluable.
- The new Motorola 3500 handie-talkies worked well. A command channel should be set up early. Because of the nature of this incident, there was a heavy response of Chief Officers. The command channel facilitated more effective fireground communications between Chief Officers operating at the Command Post and remote sectors. Because the fire operational area was large, the five-watt transmit capability of the command channel reduced the possibility of units going out of range.
- Exxon/Mobil assembled their Incident Management Team from around the country on-site within a few hours. After making their survey, they came up with an IAP that detailed all the actions that had to be completed to render the site safe. This plan included:
  1. Each specific job that had to be done. For example, "cut line #9 and blank it at barge-loading position 4."
  2. Who was to do the job--Exxon/Mobil employees or contractors
  3. What tools and equipment were needed
  4. Safety concerns and Fire Department approval
  5. Conditions that might be encountered.This IAP dovetailed exactly what the FDNY has initiated in the recent Incident Management Team training provided by the National Forest Service.
- Aerial views and surveys from a helicopter--either through a fire Chief on an NYPD helicopter or from media helicopters--can be valuable and time-saving and reduce the danger to members on the ground. FDNY's Field Comm Unit now has a television and the capability to view these broadcasts.
- Staging is vitally important--especially at complex incidents--for efficiency and safety, so units can be inserted effectively into the action plan.
- Fireboats take a long time to get to remote areas of the City and this time lag must be compensated for by considering greater use of the Satellite system and having units draft from water sources. Engine 164, the second-due Engine, drafted from the dock when fire conditions permitted.

#### About the Author...

*Deputy Chief Theodore Goldfarb is a 40-year veteran of the FDNY. Currently, he is working in the 8th Division. He is a Fire Science Coordinator and Adjunct Professor at Middlesex County College in Edison, New Jersey, and has authored numerous articles for national fire service publications. This is his second article for WNYF.*



# Marine Operations at Staten Island Box 33-4197

by Battalion Chief William Siegel, Chief of Marine Operations



The telephone conversation between Lieutenant Peter Farrenkopf at the Marine Division and Captain Thomas Whyte, working his first day tour UFO in Marine Company 9 was interrupted by the sound of a loud explosion somewhere on Staten Island. Both Officers hung up their phones and turned up the volume on their Department radios. Minutes later, they heard Engines 155 and 161 being dispatched to augment the crew on Marine Company 9. The fireboat *Fire Fighter* was dispatched to Port Mobil. As members left the dock at the Homeport, they could see the black column of smoke.

Captain Whyte and several members of the crew on Marine 9 recently had completed a shipboard firefighting course at the Navy Firefighting School in Norfolk, Virginia. It was time to put some of this training to work. Instructions were given by the Captain to prepare the boat for a foam operation. Foam nozzles and eductors were placed on several deck monitors and two hand-lines were stretched.

As Pilot Scott Hanson maneuvered the 130-foot fireboat toward the burning barge, members were ordered to use the powerful monitors to cool an adjoining barge that had been exposed to the original fire. Once this barge was cooled, it was safely towed from the dock by a commercial tug. The *Fire Fighter* then was instructed to apply foam onto the original barge. Captain Whyte now had the opportunity to witness the effect of his recently developed PowerPoint presentation on foam operations. (See the

accompanying chart for pumping capacities, gallons of foam concentrate carried and operational times for all FDNY fireboats that responded and operated at this incident.)

Monitors and hand-lines from the *Fire Fighter*, operated by Engines 155 and 161, extinguished the fire along the bulkhead on the exposure #3 side of the fire area. This gave the crew of the *Fire Fighter* an opportunity to secure the fireboat to the north end of the bulkhead. From the dock, it had direct access to the burning barge and bulkhead superstructure. Foam was applied to the burning gasoline around the barge. Water was used to cool the product delivery system on the dock. Marine Company 9--fireboat and crew--remained on the scene for the next five days.

As Marine 9 moved in to apply foam on the burning barge, Marine Company 1, the fireboat *McKean*, under the command of Lieutenant Thomas Piambino, took over the responsibilities of cooling the second barge. Four deck monitors and the tower monitor--which is 48 feet above the water line--were used to cool the bow section of the barge.

After one hour, Lieutenant Piambino directed FFs Dan Mayott and Paul Ruckdeschel to lower a small boat over the side and survey the barge hull. Using the thermal imaging camera, members found a section of the hull in the bow that still contained heat. Cooling continued for another hour, but this barge was loaded with 8000 barrels of gasoline.

Once again, the thermal imaging camera was used to check the hull. At this time, FF Mayott reported that the heated area of steel seemed to be increasing in size. With this report, the Coast Guard--concerned about a second explosion--ordered the barge towed out of the Kills.

Marine Company 1--with Acting Battalion Chief Anthony Orlandi of the 2nd Battalion, Engine 24 and Ladder 12 onboard--followed the barge to an anchorage in Raritan Bay. When the barge was anchored, the *McKean* tied up alongside it. FDNY members climbed a boarding ladder onto the barge to locate the heated compartment. Information on the layout of the barge and the location of the entry hatch was provided by Marine Company 1 Chief Marine Engineer Joseph Stark. Once the fire was located, a 2 1/2-inch attack-line was stretched to the compartment hatch. A second line was stretched to supply a distributor.

The hand-line and distributor were operated into the compartment and the fire was extinguished. Acting Battalion Chief Orlandi declared the fire under control. Marine Company 1 returned to the scene of the original fire.



Firefighters position the *Fire Fighter's* monitors on the burning barge.

all photos by EMT Chris Landano unless indicated otherwise

Arriving back at the scene at approximately 2015 hours, Battalion Chief William Siegel ordered Marine Company 1 to board the original barge and conduct a primary search. There is a small, shed-like structure, referred to as the “doghouse,” which is located on the stern of most barges. It is used as living quarters for the crew. Information from the Marine Engineers about the layout of the compartment was used in performing the search. One 10-45 code 1 was located in the heavily damaged kitchen section at 2020 hours.

The harsh winter in the upper regions of the Hudson River provided the New York City harbor with an unusually heavy spring ice floe. For that reason, the steel-hulled fireboat *Smith* was in service as Marine Company 6, as opposed to the faster, aluminum fireboat *Kane*. On arrival, Marine Company 6 was instructed to use its monitors to assist in cooling the superstructure. The *Smith* operated off the dock on the exposure #3 side. Pilot Sean O’Connor had to hold the boat in position against an outgoing tide, while the force of the deck monitors was pushing the boat in the opposite direction.

The dock superstructure was being heated by the controlled fire at the fuel dock manifold. The residual product in the piping system was allowed to burn off. Failure of the piping system would allow more product to be released into the fire area. The cooling was successful and there was no further pipe failure. The residual product continued to burn overnight.

Originally, the possibility of a terrorist act could not be ruled out. With this in mind, the Marine Division activated the reserve fireboat *Smoke*. The *Smoke* was relocated to the berth of Marine Company 1--the Hudson River and West 12th Street--and remained there until 2400 hours.

Ice conditions in the Kill were reported as negative, so the *Kane* was placed back in service. When the *Kane* arrived, members were instructed to assist in cooling the steel superstructure in the area of the fire without putting out the fire. Pilot Donald Sinclair was able to maneuver the *Kane* around the debris field to take a position on the exposure #2 side, at the south end of the dock.

When the cooling was complete, both the *Kane* and *Smith* were returned to the Navy Yard in Brooklyn. Marine Company 6, using the *Kane*, returned to the scene to assist in transporting Fire Marshals to the barge.

At one point during this fire, four fireboats were operating. The total available pumping capacity was 48,000 gpm. The total foam concentrate taken to the scene by the fireboats was 3600 gallons.

The Marine Division gratefully acknowledges the efforts of the several FDNY land Companies that responded on the fireboats. Their efforts in stretching hand-lines, operating monitors and setting up the foam nozzles reflected a high level of profes-



The entire Marine Division responded to and worked at this incident.

sionalism and cooperation.

### Lessons learned

- The thermal imaging camera is a useful tool in the marine environment. In the past, FDNY Marine Companies had used it successfully to locate people on the surface of the water. At Port Mobil, it was used to identify the location of a fire on a barge loaded with gasoline. This fire was caused by radiant heat heating the steel hull of the barge. The steel transferred the heat by conduction to contents inside the compartment and they ignited. Members of Marine Company 1, using the thermal imaging camera from a small boat, were able to quickly identify the compartment.
- Drills are an important part of the fire service. Good drills are even more important. The foam drills held by the marine units proved that. Each of the responding large (longer than 100 feet) fireboats was prepared to operate a 1000-gpm foam nozzle on arrival. Each boat had enough foam to operate independently for 40 minutes.
- Operations by the Marine Companies at both barge fires reinforced the need for large fireboats. The large fireboats offer a stable work platform for members to use when boarding larger vessels. Large fireboats can transport additional Companies and their special equipment to fires onboard ships in the stream. The large boats also provide a triage area and have enough room to safely transport large numbers of victims.

larger photo by Paul Sanner

Fireboat	LOA (feet)	Pumping Capacity (gpm)	Foam Concentrate Carried (gallons)	Total Operational Time	Travel Distance to Port Mobil (Port Socony)
<i>Fire Fighter</i> (Marine 9)	134	20,000	1200	5 days	14 nm
<i>McKean</i> (Marine 1)	129.5	15,000	1200	14 hours	19 nm
<i>Kane</i> (Marine 6)	52	5000	100	5 hours, 15 minutes	19 nm
<i>Smith</i>	105	8000	1200	7 hours, 15 minutes	19 nm
<i>Smoke II</i>	51.5	1000	500	relocated 12 hours	6 nm to Marine 1

### About the Author...

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LOA is the “length overall”; the total length of the vessel from bow to stern. Nm is a nautical mile, which is 6080 feet.

# SOC Unit Operations at Staten Island Box 33-4197

by Deputy Chief John Norman, Chief of Rescue Operations

Given the continuing threat of terrorist attacks, Special Operations Command (SOC) units are taught to approach each and every explosion with the thought that it could be the result of an attack. Under these circumstances, “force protection” becomes FDNY’s highest priority--examining the situation for potential threats to our firefighting forces. At the scene of an explosion, this involves surveying the scene for possible causes of the blast, monitoring the area for the presence of dangerous chemicals or other hazards and identifying any areas where such hazards exist to the Incident Commander and other responding units.

At Box 4197, the transmission of the signal 10-60 at 1016 hours prompted the response of numerous SOC units: Rescue 5 and Rescue 3 with the Collapse Unit; Squads 1 and 252 with their Haz-Mat tenders; and Battalion Chief Jack Spillane, SOC Battalion. Additionally, the location of the incident in a bulk petroleum storage plant prompted the assignment of Haz-Mat Co. 1, under the command of Lieutenant Brian Coughlan, and Battalion Chief Robert Strakosch, Haz-Mat Battalion. These units initially were held at the staging area until the nature and scope of the event were determined, whereupon select units were dis-

patched to various locations around the site to begin monitoring the area for explosive vapors, as well as other hazards. As Battalion Chief William Siegel’s sidebar explains, the Marine Battalion and four Marine units also responded. (See “Marine Operations at Staten Island Box 33-4197,” by Battalion Chief William Siegel, on page 6.)

Primary searches were conducted in the several heavily damaged buildings around the perimeter of the site, with negative results. Haz-Mat Co. 1 was assigned to work with plant personnel to stop a product leak from a storage tank that had its discharge piping damaged by flying debris. Other SOC personnel were dispatched to the plant foam pump house and they coordinated procurement of additional foam and water supplies to augment the plant’s supplies.

The floating fuel spill resulting from the barge explosion was allowed to burn while exposures were protected. This action reduced the danger of accumulating vapors that could lead to another explosion. However, it did not totally eliminate it, since gasoline continued to float to the surface periodically from leaking compartments in the sunken remnants of the barge. This required continuous air monitoring to provide a warning of any dangerous accumulation of vapors. Foam was applied to areas where gasoline vapors were discovered.

This situation was exacerbated when the changing tide caused gasoline that was being carried downstream and dispersing to begin flowing back toward the plant and still-burning fires. The fireboats *Kevin Kane* and *Fire Fighter* used large-caliber streams to break up the floating slick and directed it away from the pier line.

The limited access to the epicenter of the blast site was worsened by huge sections of the barge that blocked one of the service roads within the plant. Personnel advancing on foot made good use of the plant’s fixed foam monitors to cool exposed piping and knock down pockets of fire.



Tower Ladder 87 directs its Angus foam cannon at the burning product manifold.



Remains of the shattered gasoline barge lie in the background as flames pour from the ruptured product manifold.

all photos by Deputy Chief John Norman



One of the hand-lines that was lashed in place provides cooling water on pipe manifold to prevent further damage to product lines.

After nearly two hours, the main body of fire was contained enough to permit a close approach to the remaining three-dimensional fires at the product-unloading manifold. (Three-dimensional fires involve fuel that is burning as it falls from above, such as from a leaking pipe. Three-dimensional gasoline fires cannot be extinguished by using foam or water spray.)

Under the protection of two plant foam monitors and Tower Ladder 87's foam cannon, SOC personnel examined the damaged pipe rack to determine the feasibility of stopping the product leak from the damaged piping. This examination revealed that seven of the nine product lines in this area were severely damaged and leaking. A limited number of valves existed on these lines, which Rescue 5 members, under the direction of Captain William Burke, closed with no appreciable effect on the fire. The product continued to pour out of several valves and damaged flanges at rates of



One of the fixed monitors provides a cooling stream on the remains of the destroyed pump house and piping.



Marine Co. 9 uses water monitors to break up floating fuel and cool remains of the sunken barge, while a 1000-gpm Angus foam cannon on the bow monitor is supplied with foam concentrate from a portable 600-gallon reservoir on its foredeck.

anywhere from 10 to about 30 or more gallons per minute.

This evaluation revealed that while it likely would be possible to extinguish the fire using a combination of foam and the Department's two large Purple-K dry chemical trucks, stopping the continuing leaks would require members to work over large amounts of heavily damaged, large-diameter piping. There was also concern over the area below the dock where leaking gasoline vapors from spilled fuel then would be trapped. This area was thought to have smoldering timbers that could not be reached because of the bulkhead.

Division 8 Deputy Chief Theodore Goldfarb and Chief of Operations Salvatore J. Cassano decided to let the fires continue to burn so FDNY members would not have to worry about additional accumulations of vapors in this area. Engine Companies stretched two 2<sup>1</sup>/<sub>2</sub>-inch hand-lines with fog tips that they then lashed in place to provide pinpoint application of cooling streams right behind the burning manifold. This prevented further heat damage to the piping and their supports.

Units were withdrawn from the immediate area and the operation assumed a prolonged controlled burn mode. The military term and concept of "force protection" guided the decision to use the controlled burn approach: The risks to FDNY personnel far outweighed the benefit of extinguishing the fires earlier. All the damage that ever would result from this incident already had occurred. All of the piping that already was damaged would have to be replaced. It would take months to fully repair. It could wait another two days if it meant risking Firefighters' lives.



#### **About the Author...**

*Deputy Chief John Norman, a 24-year veteran of the FDNY, is the Chief of Rescue Operations. He co-taught the Foam Coordinators course at the Bureau of Training for more than 15 years. He has had extensive training in flammable liquid and gas fire suppression at training classes around the country. He has served with Engine 290, Ladder 103, Rescue Co. 3, Haz-Mat Co. 1, Rescue 2, Rescue 1 and Battalion 16. He is a frequent contributor to WNYF.*

