Buried in a Barge

by Deputy Chief James D. Daly, Jr.

On December 7, 2002, Queens units were dispatched to Box 4337 at 1537 hours. The response ticket reported, *man buried under cement*, at the St. Lawrence Cement Company, located at 31-30 College Point Boulevard. A confined space response was assigned and included Engines 297, 274 and 316, Ladders 129 and 130, Battalion 46, Rescue 4, Squad 288, Special Operations Battalion and Tactical Support Unit #1. Marine Company #6 was called because the incident took place on Flushing Bay. Once a confined space incident was confirmed, Rescue 3, Ladder 117 (SOC Support Ladder Company), Field Comm, Safety Battalion, Haz-Mat Co. #1 and the Hazardous Materials Battalion also were assigned.

Engine 297 and Ladder 130, under the command of Captains William Bokowski and Thomas Wick, respectively, arrived first on-scene at approximately 1543 hours and were confronted with a 360-foot barge. The structure was partially loaded with granulated blast furnace slag, a concrete additive, which has the consistency of talcum powder. The barge measured 35 feet deep, with approximately 15 feet of product still remaining in the hold.

Once on the deck, FDNY members were informed by barge workers that the barge captain had entered the hold through a deck hatch, down a straight ladder. He had been attempting to free up a blockage during off-loading operations. The product was being pumped from the bottom of the tapered hull to onshore storage towers. The barge captain was engulfed in product, his body in a vertical position.

Firefighter William Shannon of Ladder 130 was secured to a lifesaving rope. After donning his SCBA, he entered the hold. Visibility was near zero due to the agitated state of the fine powder. The victim was located 10 feet from the ladder, with only his hand visible above the product level. Further assessment by FF Shannon determined the victim had no pulse.

Because approximately 15 minutes had passed from alarm transmission to patient contact, a decision was made that the victim no longer was alive. Units now would operate in a recovery--as opposed to a rescue--mode. Prior to leaving the hold, FF Shannon secured a rope to the victim's wrist. This action was very important because additional shifting of the product would result in completely covering the victim's location, hampering the recovery operation.

En route, SOC Battalion Chief James D. Daly, Jr. (recently promoted to Deputy Chief), requested the response of a Con Edison vacuum truck, anticipating the need for this versatile vehicle. He also ordered Ladder 130 members to position their tower-ladder bucket as a high-point anchor over the entrance of operation. This could not be accomplished because of the distance of the deck hatch from the pier.

Units from the Special Operations Command began arriving on-scene at 1556 hours. Chief Daly assumed command of recovery efforts, with Acting Deputy Chief Edwin Huberts, Jr., of Division 14 in overall command of the operation. Safety Battalion Chief Steven O'Donnell was assigned to secure shutdown of all power on the barge, with the exception of one onboard generator, which provided on-deck lighting as night fell. Since there were no railings around the perimeter of the deck, the edge was illuminated to help prevent FDNY members from falling into the water.

Haz-Mat Battalion Chief Nicholas Delre was assigned product assessment. Due to the caustic effect of cement products on the skin, a decontamination operation was established for several members. Ladder 15 and the Decon Trailer, assisted by special-called Squad 270 members, were assigned this task. Because of the brutally cold weather, members were dry deconned and then showered when they returned to quarters.

Marine Co. 6 arrived at 1613 hours and was ordered to assess the tide table and its effects on the stability of the barge. Another concern was stopping other marine traffic from entering the channel while FDNY members were operating in the confined space. Any wake from passing craft possibly could cause the product to

all photos courtesy of Deputy Chief James D. Daly, Jr.

FF William Shannon, Ladder 130, after exiting the hold.

SOC Chief, then-Battalion Chief James Daly (center), Haz-Mat Chief, Battalion Chief Nicholas Delre (right) and Safety Chief, Battalion Chief Steven O'Donnell (left) discuss tactical options prior to entry for recovery.

Con Ed vacuum truck in position on pier with suction boom, eight-inch aluminum extensions and 4 1/2-inch flex hose extending to the top of the barge.

shift, further endangering FDNY members.

Haz-Mat Co. #1 members arrived at 1556 hours and were given the task of continually monitoring the hold with their metering devices. Oxygen percent, toxic gases, flammable gases and carbon monoxide were evaluated. Additionally, Haz-Mat was given the assignment of locating an MSDS (Material Safety Data Sheet). This document would have helped members better assess the dangers presented from the product in the barge. An MSDS was not found during the incident, but was located during a follow-up critique. Reviewing the MSDS revealed that one of the by-products of ground granulated blast-furnace slag is crystalline silica, which is classified as a known human carcinogen. The Haz-Mat Battalion followed up with a notification for members to prepare CD-73s (member exposure reports).

Rescue Companies 3 and 4, under the command of Lieutenants John Hogan and Thomas Donnelly, respectively, arrived at approximately 1556 hours and were teamed up and assigned the task of entry and retrieval. Squad 288 was assigned as the back-up entry team. A tripod with a mechanical advantage system was set up over the deck hatch where the victim had made entry. Firefighters Michael Conboy and Michael Davis of Rescue 3 and Edward Morrison of Rescue 4 were secured to safety lines and surface-supplied air and entered the hold.

The first priority on reaching the product level was padding the area around the victim. By dispersing their weight over a wider area, this prevented FDNY members from sinking into the powder. Backboards from Engine Companies initially were used, while TAC #1 was assigned to cutting plywood. TAC #1 was assisted by members of Ladder 117, a SOC Support Ladder Company. (See "SOC Support Ladder Company Training," by Lieutenants Joseph M. Jardin and William F. Ryan on page 2 of this issue.)

The next concern was securing the victim to a retrieval line. A second deck hatch was located directly over the victim and was used as the point of removal. Another tripod with a 4:1 mechanical advantage system was erected over this hatch. A line was secured to the victim's wrists. In order to stop the product from re-engulfing him, a 55-gallon overpack drum from Haz-Mat was used. With top and bottom cut out, the drum was placed over the top of the victim to hold back the powder. (See "Staten Island Trench Rescue," by Battalion Chief John M. Moran and Firefighter Hank Molle (retired), in the 4th/2002 issue of *WNYF*.)

The Con Edison vacuum (vac) truck arrived on-scene. Battalion 46 Acting Battalion Chief Gerard McMahon was placed in charge of ensuring the vac truck hoses were capable of reaching the point of operation. There were problems with the length of hose required to reach from the vehicle, located on the pier, to the below-deck area of the barge. Innovative FDNY members suggested obtaining PVC piping at a nearby Home Depot to extend the suction boom. A second vac truck arrived with additional 4.5-inch flexible hose. After connecting the sections of hose--using a torch and shrink-type unions--the vac truck was ready to go at approximately 1700 hours.

A handie-talkie-equipped FDNY member was assigned to the operator at the vac truck control panel. This communication link allowed the precise amount of suction necessary to accomplish

FF (now Lieutenant) Michael Conboy, Rescue 3, an entry team member.

Con Ed employee breaks down 4 1/2-inch flex hose as FDNY members remove victim via wire stokes and high-point anchor (tripod).

FDNY's goals. The hose was passed down to the entry team and progress was made removing product from inside the drum surrounding the victim. As the level of product became lower and lower, the end of the hose no longer could be controlled. A six-foot hook and duct tape became an improvised handle, facilitating maneuverability during the last few feet of removal. In all, approximately seven feet of material had to be removed, as the victim was completely vertical with arms outstretched overhead.

The Mask Service Unit was special-called at 1634 hours to replenish cylinders used on the surface-supplied air carts. This is a two-SCBA-cylinder manifold, which provides a continuous flow of air to masks and/or tools. (See "The Air Source C.A.R.T.," by Battalion Chief Raymond M. Downey, in the 1st/99 issue of *WNYF*.) This provided an uninterrupted flow of air as the recovery team operated for more than 1 1/2 hours below deck. As soon as the victim was free of the powder, a stokes basket was lowered and the back-up team relieved the entry team below deck. The victim was properly packaged and removed from the hold in a dignified manner. In all, operations took nearly four hours in freezing conditions on the waterfront.

Entry team member, FF Michael Davis, Rescue 3, after exiting hold. Safety Chief, Battalion Chief Steven O'Donnell, is in the background.

Lessons learned

- *Risk vs. reward assessment.* Safety of members is always FDNY's highest priority. Once the victim has been confirmed deceased, added emphasis must be placed on safe operating procedures. Take time to discuss all tactical options and ensure that FDNY members employ the safest methods.
- *Con Edison vacuum truck.* This piece of equipment is a valuable asset. Request assistance early if it might be needed. Anticipate delays for various reasons, including travel time, traffic or unavailability at that time. Anticipate your needs *before* a call is necessary. You can cancel the request if developments eliminate the need. Normally, Con Edison will dispatch a second vacuum truck as a back-up. Ensure that two vacuum trucks are responding, since breakdowns have occurred at other operations. Con Edison maintains eight to 10 vac trucks in each borough. Each truck has approximately 20 feet of eight-inch, aluminum, suction boom in three-foot sections. They also may carry about six feet of 4 1/2-inch flexible rubber hose. Rescue 3 has an additional 50 feet of 4 1/2-inch flex hose on their Collapse Unit. (See "Rescue 3 Collapse Unit," by then-Battalion Chief Raymond M. Downey, SOC, in the 2nd/2000 issue of *WNYF*.) The vac truck has a 10-yard capacity and can remove both wet and dry materials. SOC units train monthly with the vac truck at the Technical Rescue School at the Bureau of Training. Members must become familiar with the controls on the vehicle in case the Con Edison operator is unable to handle them due to a hazardous atmosphere or conditions.
- *Confined space retrieval systems.* Members must remain aware that attempting to haul a person secured to a lifesaving rope out of a vertical opening without a high-point anchor and mechanical advantage system is nearly impossible. The preferred high point for first-responding units is a tower ladder (800-lb. capacity) or an aerial ladder (250-lb. capacity) with a single pulley. This creates a directional advantage, allowing members to haul horizontally rather than vertically. A life belt with hook can be substituted for the single pulley. On arrival of SOC units, a tripod (600-lb. capacity) with a pre-rigged 4:1 mechanical advantage system can be deployed. This system allows members to move a four-pound load with one pound of force. All Rescue and Squad Companies carry a pre-rigged 4:1 mechanical advantage system. This system has a 15:1 safety factor, with a 9000-lb. breaking strength. The use of the tripod allows placement at remote locations that are unreachable to apparatus. There are height limitations with the tripod, with a maximum high-point anchor distance of 10 feet above the opening. (Also see *Training Bulletin*, "Confined Space Operations.")

All FDNY units at this operation displayed a high level of skill and teamwork. Units communicated and coordinated efforts with each other and Con Ed to bring this incident to a close without injury to members.

About the Author...

Deputy Chief James D. Daly, Jr., is an 18-year veteran of the FDNY. Currently, he is assigned to the 3rd Division. Most recently, he worked in the 44 and SOC Battalions. This is his first contribution to WNYF.