BISP, Planning Crucial to Successful Operations at Hospital Fires

by Deputy Chief Michael Mullins

January 21, 2009, was an exceptionally cold day in New York City. The weather for the day was a high of 26 degrees and a low of 17 degrees Fahrenheit, with a wind of 20 to 25 miles per hour, making the wind chill factor in the single digits. At 1825 hours, an alarm Box was transmitted for 1468 Madison Avenue, which is the Guggenheim Pavilion of Mt. Sinai Hospital.

This fire is of particular interest because--fortunately--the FDNY has been called to few hospital fires. Hospitals are large complexes that are heavily occupied with many non-ambulatory patients, along with staff and visitors who are unfamiliar with the procedures to take in case of an emergency or fire in the building. Every hospital is different and unique to itself, so FDNY members depend on the local fire companies to be familiar with the floor plans, building systems, elevators and stair locations of the hospitals in their response area. The local fire companies gain this knowledge through BISP (Building Inspection Safety Program) and various drills at these locations.

Transmission of this alarm brought the response of Engines 53, 22 and 58, Ladders 43 and 26 and Battalion 10. Units arrived on the scene and transmitted the 10-84 signal in three minutes and 40 seconds. Entering the Guggenheim Pavilion, the first-due units were met by heavy, black smoke in the lobby area, a large, five-story atrium. They also encountered many panicking civilians who were self-evacuating.

Battalion Chief Christopher Lennon, Battalion 10, transmitted signal 10-75 at 1835 hours. On transmission of the 10-75, Battalion 11, Battalion Chief John Pellegrinelli, and Division 3, Deputy Chief Michael Mullins, were assigned. Entering the lobby and seeing the heavy smoke condition, Chief Mullins told his aide, FF Francis Heffernan, to transmit a 10-76 with the second alarm at 1844 hours. Whenever FDNY encounters a fire in a high-rise building (this was an 11-story structure), it is standard procedure to transmit the 10-76 or 10-77 signal. These signals bring many more units for the searches, including specialty units, such as the high-rise unit with fans and more Chief Officers for supervision.

Chief Mullins, the Incident Commander (IC), received very little information from the hospital personnel, regarding location of the fire or what smoke alarms had been activated. The fire command station in this particular hospital is located downstairs, under the lobby atrium, and it was out of sight of the lobby and out of view of the elevators. If the IC went to this fire command station, he would be unable to see the units as they were reporting into the building.

After Chief Lennon briefed Chief Mullins regarding the location of units and status of searches for the fire and status of building systems, he was sent to the fire command station. Both the primary and secondary searches proved negative. Many hospital in-patients were transferred horizontally by hospital staff and FDNY personnel to safe areas, which were smoke-free. They were left in the care of hospital personnel and, thus, would not be considered victims.

Very little information was secured at the fire command station, although there was a sign on the fire command station that stated, *do not use radios in this room*. Hospitals--regardless of their height--are not required to have a fire safety director as do local law 5 (high-rise commercial) buildings. Having a trained fire safety director on the scene, who knew all the systems in the hospital, would have proved invaluable and a great benefit to the IC. Instead, the Incident Commander had to rely on limited information from hospital security personnel.

Anticipating that many people would have to be sheltered from the cold weather, Chief Mullins called for three empty City buses and an MTA supervisor to report to the Command Post. Other agencies called to report to the Command Post included an NYPD supervisor for traffic control outside the hospital and to keep the Command Post clear of anyone not required to be there and OEM to coordinate activities with the other City agencies, since this was a well-known building with many patients.

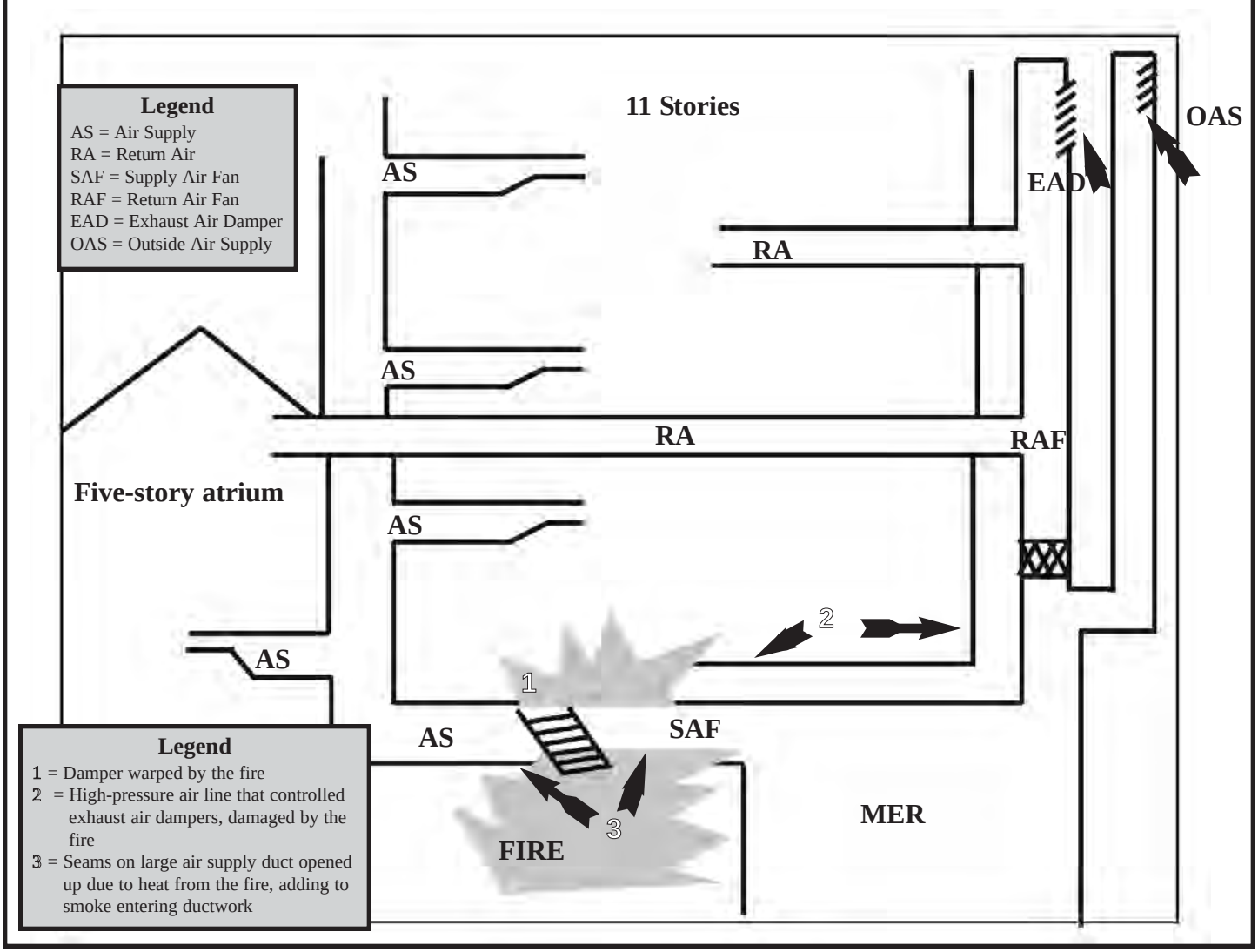
Chief Mullins instructed hospital security personnel to shut down the HVAC system and it was placed in the non-circulating mode. When the HVAC system is placed in the non-circulating mode, the supply and return air fans are shut down. All the outside air supply dampers are opened. All the mixing dampers are closed and all the exhaust dampers are opened. In the non-circulating mode, no air is circulating by the HVAC system.

All ladder and SOC companies were sent to various areas of the hospital to try to locate the fire. Engine 53

Inter-agency assistance provided by the NYPD and OEM was coordinated at the lobby Command Post in Mt. Sinai Hospital.

Manhattan Box 33-1273
Mt. Sinai Hospital
1468 Madison Avenue/East 101st Street

Transmission	*Times*
First Unit, 10-84	1830 hours
10-75	1835 hours
10-76	1850 hours
Second Alarm	1844 hours
Third Alarm	1914 hours
Probably Will Hold	2002 hours
Under Control	2037 hours
Incident Closed	0250 hours
Total Duration	Eight hours, 25 minutes



Due to security reasons and complexity, the above diagram does not reflect the actual plans of the Mt. Sinai HVAC system. Rather, it is to be used as a tool to show how the HVAC system was affected by the fire.

The FDNY Planning Section Chief (T3)

by Deputy Assistant Chief Robert Maynes

The FDNY Planning Section Chief assignment was created in 2008 in response to a number of complex incidents requiring the use of FDNY resources for multiple operational periods. (The on-duty Planning Section Chiefs are identified as T3 on the Chiefs' Riding List.) Based on the foundation established in the planning section of the FDNY Incident Management Team, the objective of the T3 is to have a trained FDNY Battalion Chief respond in a timely manner to complex incidents that have the potential to expand into multi-operational period events. The T3 will manage the planning process and, when required, produce the written Incident Action Plan (IAP).

The T3 is assigned with the FDNY Planning Vehicle (PV). He/she initiates the planning process in cooperation with the assigned Deputy Chief assigned as the Operations Section Chief and all other activated Command and general staff positions. Once accurate situation awareness is attained, the T3 completes an evaluation for additional assistance required. The assistance may include activation of the FDNY IMT, part of the IMT or additional T3s. Once the evaluation is completed, the T3 will make a recommendation to the Incident Commander to request the additional resources.

The FDNY Planning Vehicle is a self-contained vehicle, similar in appearance to the Mobile Command Center. The PV contains all the physical and technical equipment required to create a written IAP and manage the planning process and section. Maintained and housed by the members of Engine 262, the PV houses computers, projectors, printers, televisions, a plotter and all supplies identified as necessary for support of the planning process. Additionally, the PV has the ability to serve as a facility for operational briefings by providing a wall for large maps. A public address system and an awning for protection from the weather are other PV features. The on-duty members of Engine 262 drive the PV to the incident and set the vehicle up for operation as directed by the T3.

In 2008, the individuals assigned to the FDNY IMT Planning Section were tasked with training selected FDNY Battalion Chiefs as All Hazards Planning Section Chiefs. Battalion Chief George Maier is a nationally known expert and instructor in the Incident Command System. Chief Maier is a qualified type-2 Planning Section Chief and in 2008, was an integral member in the creation of the National All Hazards Planning Section Chief curriculum. Serving as Lead Instructor, Chief Maier was assisted by Battalion Chiefs John Belnavis, Michael Meyers and Gregory Bierster in the delivery of two one-week courses. The result was the successful training of 40 Battalion Chiefs assigned to 10 Battalions and 10 additional covering Battalion Chiefs. The 50 trained Battalion Chiefs guarantee the availability of a trained Battalion Chief to serve as a T3 on all tours.

The Planning Section Chief was activated for the Mt. Sinai Hospital fire. This activation was one of many successful uses of T3 and the Planning Vehicle. At Mt. Sinai, Battalion Chief Patrick Ruddick, Battalion 20, was the T3 and assisted by three individuals from the FDNY IMT. During the second operational period, Mt. Sinai Hospital was determined to be self-sufficient and the FDNY resources were relieved.

Other activations of T3 include, but are not limited to, the second (May 30, 2008) Manhattan crane collapse, Staten Island cardboard factory fire on June 2, 2008, and the January 15, 2009, recovery of the U.S. Airways Airbus that landed in the Hudson River.

About the Author...

Deputy Assistant Chief Robert Maynes is a 26-year veteran of the FDNY. He is the Planning Chief. His prior assignment was Division 13. He holds a BA degree from Stony Brook University. He serves as the IMT Operations Section Chief, Deputy Incident Commander, Training Coordinator and liaison to Federal and State agencies. He is a frequent contributor to WNYF.

A dry 2½-inch line was stretched to the lobby with enough hose-line to go up or downstairs, once members located the fire.

The source of the fire was located in the mechanical equipment room.

stretched a dry 2½-inch hose-line to the lobby with enough hose-line to go up or downstairs, once the fire was located.

After a long search, Ladder 26 and Rescue 1 located the source of the fire--in a large mechanical equipment room (MER) on a mezzanine between the second and third floors. The fire was in a caged storage area in this mechanical equipment room. The contents in this caged area were fully involved in fire. Engine 53 stretched their 2½-inch line to the mechanical equipment room and called for water. Engine 53 extinguished the fire.

There are many hazardous materials in hospitals, so Haz-Mat 1 was used to meter the fire area because, at this time, FDNY didn't know what was stored in the mechanical equipment room. The metering proved negative for any hazardous materials in this storage area.

With the fire extinguished, units now were faced with an 11-story hospital filled with heavy smoke on all floors. Using walkway bridges that connected two buildings of the hospital complex, patients on various floors were evacuated horizontally to another building by the hospital staff.

At this time, the Command Chief, Assistant Chief James Esposito, and Assistant Chief Michael Weinlein, Manhattan Borough Commander, arrived on the scene. Chief Esposito took command of the fire and Chief Mullins assisted him at the Command Post. Chief Weinlein took command of the Search and Evacuation Post and was assisted by Deputy Chief James Nichols, 6th Division. Chief Esposito transmitted a third alarm at 1914 hours for manpower and relief, as well as to assist with any evacuation and ventilation of the building.

Even with the HVAC system shut down, the smoke condition was still filling the building with heavy black smoke. It turned out that the duct work for the HVAC system ran right over the fire area. There also was a fire damper in this duct, which was right over the fire. Due to the heat, this damper warped and could not close. Additionally, seams on the duct work opened up from the heat and smoke entered the duct and bypassed the warped damper, resulting in the building filling with smoke.

Working Together to Make Fire Safety a Priority at Hospital Emergencies

by Assistant Chief Michael C. Weinlein

During the past three years, there have been several serious fires, as well as a few smaller incidents, in hospitals throughout the City. Three of these incidents have occurred at Mount Sinai Hospital. The first fire occurred on March 7, 2007. More recently, a third-alarm fire that posed serious consequences occurred on January 21, 2009.

Throughout this time period, Mount Sinai has worked with the FDNY, hand and hand, to make fire safety a priority. A number of improvements since the first fire have been implemented and there are others in the pipeline. Mt. Sinai officials understand the tremendous costs associated with the cleanup after a fire and the disruption of services afterward. There were no fatalities with any of these fires, which was a testament to the quick-acting hospital staff and the timely response and extinguishment of these fires by the FDNY units assigned.

Many of the issues and possible solutions to these problems were brought to the table during the after-action review by the Exercise Design group at the Center for Terrorism and Disaster Preparedness. Battalion Chief Neil Hintze and his staff were instrumental in working through the issues and facilitating constructive conversation between the FDNY and Mount Sinai staff.

The current Fire Code of the City of New York covers fire safety and prevention in a limited fashion. These issues are addressed in only two sections of the Fire Prevention Code:

- FC Chapter 4 deals with fire drills.
- FC 3006 deals with Medical Gas Storage.

The Joint Commission JCAHO regulates hospitals. It has accredited hospitals for more than 50 years and, today, it certifies approximately 4250 general, children's, long-term acute, psychiatric, rehabilitation and surgical specialty hospitals and 358 critical access hospitals, maintaining a unique program for these organizations. Approximately 88 percent of the nation's hospitals currently are accredited by The Joint Commission, according to the JC web site. Hospitals participate in this review even though they may not be required to because it reflects best practices and a high level of organization, encouraging community confidence.

This fall, a group of Officers attending the Fire Officers Management Institute (FOMI) will partake in an in-depth study of problems that occur in hospitals and determine possible solutions. Local Law 5 of 1973 is a good starting point to see if the same or similar provisions apply to hospitals in high-rise buildings. Local Law 26 of 2004 as it applies to emergency evacuation planning is a good second step. These Officers also will research how other municipalities solve the issues associated with hospital fires and emergencies.

Some of the concerns at hospital fires and emergencies that will be addressed include:

- Evacuation (horizontal and vertical) vs. sheltering in place
- Communications
  1. between staff
  2. between hospital and FDNY
  3. between staff and patients
  4. between FDNY and patients
- Fire Command Post with a dedicated Fire Safety Director
- Auxiliary Fire Safety Requirements (sprinklers and other suppression systems)
- Hazardous Materials
- Education and Training

The recommendations from the FOMI group will be instrumental in facilitating a concerted effort to address the many concerns that fires and emergencies provoke in hospital and similar-type occupancies.

About the Author...

Assistant Chief Michael C. Weinlein is a 28-year veteran of the FDNY. He is the Borough Commander for Manhattan. Prior assignments include Assistant Chief of Operations, Commander of the Special Operations Command and Deputy Chief in Divisions 3 and 13. He holds a BA degree in Biology from Queens College and an MA degree in Homeland Security and Defense from the Naval Postgraduate School. He is a frequent contributor to WNYF.

Post-Control Phase

by Assistant Chief James E. Esposito

Reoccupying the fire floor and all floors affected by the fire must be addressed by the IC. In all likelihood, a fire of any consequence will cause major disruptions in the hospital itself and even the entire 911 system. Ambulance diversions sometimes are necessary, putting a strain on surrounding hospitals and services.

The fire floor will have sustained damage by fire, heat, water and smoke. Sprinklers will have activated. FDNY members will experience a smoke condition on upper floors and the hospital fire alarm, sprinkler and ventilation systems may be off-line. Medical facilities, labs and operating rooms may be affected. Elevators may be out of service and Firefighters will be faced with hundreds of hospital staff and patients (some non-ambulatory and on life support) in the lobby or removed from their patient rooms and in evacuation holding areas.

When the fire is extinguished and secondary searches have concluded, this is no time to have available units take up. This is the beginning of returning the hospital to normal operations. The Incident Commander may need Battalion Chiefs and units that remain in staging assist hospital staff in evaluating areas and floors affected by the fire prior to reoccupancy. In some cases, a special call for fresh resources will be necessary. Incident Commanders should be proactive by anticipating the need for additional resources before entering this post-control phase of the operation.

Coordination of goals between the hospital administrator and the IC is required. This effort will take place at the Command Post. Priorities must be set and goals must be met. Patients in operating rooms and patients on life support are a priority. The hospital administrator will want them back in their rooms with hospital personnel as soon as possible. FDNY members work with the hospital staff to address these immediate needs. Fire units and Battalion Chiefs will work side by side with hospital personnel.

The Incident Commander should create a task force consisting of an FDNY resource (unit or Chief) and hospital resource (doctor or nurse supervisor) to evaluate conditions on the floor in question and affected by the fire prior to re-occupancy. To maintain efficiency, the lobby control unit will operate one or more elevators on Firemen Service during this assessment. A communication link is established with the Command Post. The Command channel is preferred because post-fire control operations are continuing on the fire floor or units that were relieved are in the process of taking up and the handie-talkie tactical channel is still quite active.

This task force--consisting of a hospital representative with decision-making capability and assigned by the hospital administrator (doctor or nurse supervisor) will certify safe all floors prior to re-occupancy. Adding more task forces to certify safe other floors evacuated or affected by the fire will speed up the process for the hospital to return to normal operation as soon as possible.

At this fire, a Planning Section Chief and the Planning unit were special-called to the scene to assist the hospital administrator in the post-fire clean-up and effort. (See "The FDNY Planning Section Chief (T3)," by Deputy Chief Robert Maynes, on page 9 of this issue.) Fire alarm systems had to be reset, sprinkler heads had to be replaced and smoke and water damage were also major concerns that needed attention. The mechanical equipment and ventilation system were damaged by direct flame impingement and the hospital emergency room was on a diversion for new patients for several days.

At major events and incidents such as this hospital fire that have a major impact on the immediate community (and, in this case, the entire 911 system), the FDNY--with its training and expertise in Incident Management--is a significant resource to assist in any recovery effort.

About the Author...

Assistant Chief James E. Esposito is a 35-year veteran of the FDNY. He is the Borough Commander of the Bronx. Prior assignments include Battalion 40 as a Battalion Chief, Division 15 as a Deputy Chief and Bureau of Operations and Deputy Borough Commander in the Bronx as a Deputy Assistant Chief. He holds a BS degree in Business Administration from Manhattan College. He contributes to WNYF *frequently.*

Now FDNY members had to vent the building. Fans from the Hi-Rise unit were used to pressurize the A and B stairs. Units trying to vent the floors above the fire were faced with locked windows and no keys available. Hospital security had to get the window keys to the Command Post and then the keys were given to the units on the floors above the fire.

Additionally, the IC tried to have the HVAC system placed in the exhaust mode in an effort to vent the building. Exhausting the building by the HVAC system did not work. Later, it was discovered that the outside air supply dampers and the exhaust dampers worked on pneumatic air. This pneumatic air was supplied through thin copper tubing, which also ran over the fire area. The copper tubing failed and resulted in a loss of the pressurized air. Since the pneumatic air system was down, the exhaust dampers remained in the closed position, unable to be activated. Eventually, the window keys were distributed to the units and they were able to eventually vent the hospital building.

Members are urged to review "MRI Technology: First Responder Operational and Safety Issues," by Deputy Assistant Chief Ronald R. Spadafora, on page 21 of this issue.

Next came the task of reoccupying the hospital on all floors. Chiefs Esposito and Weinlein assigned a Battalion Chief and hospital representative to walk each floor, checking that it was vented to the satisfaction of both the FDNY and hospital staff. Hospital personnel were used to organize reoccupation of the various floors. The fire was declared *Probably Will Hold* at 2002 hours and placed *Under Control* at 2037 hours by Chief Esposito.

This fire cost Mt. Sinai Hospital $19 million in damages and the massive cleanup of the entire pavilion. Since this fire, Mt. Sinai officials met with the FDNY to facilitate a joint partnership to become a national model for fire safety in hospitals nationwide.

Lessons learned/reinforced

- A fire safety director with knowledge of his/her building can prove invaluable to the Incident Commander.
- Since this fire, Mt. Sinai Hospital has removed all storage from any MER rooms on its campus.
- Hospitals should have window keys located in a secure area on every floor, preferably at the nurse's station.
- Use of NYPD and hospital security personnel to keep the lobby Command Post area clear of unnecessary people can lead to a more organized operation for the IC.
- The Command Post should be located where the IC can see arriving units and be in sight of the elevators.
- A hospital liaison should be located at the Command Post and be easily identified, such as by wearing a labeled vest.
- Pressurizing the stairways can help limit the movement of smoke in the building and keep the stairs clear for evacuation and attack lines.
- This particular hospital had operating rooms on its own HVAC system and was a sealed room. Even though patients were on the operating tables, surgeons were able to complete their operations. Not all hospitals have operating rooms on their own HVAC system. This information must be garnered by local units during inspections and drilling with knowledgeable hospital personnel.
- When dealing with other agencies, use a common language and make sure the proper message is received. When dealing with a hospital and EMS, a patient is a person already in the hospital and is a hospital client. A person who gets injured and needs to be treated by EMS should be referred to as a victim.

About the Author...

Deputy Chief Michael Mullins is a 32-year veteran of the FDNY. He is assigned to the 3rd Division. He holds an AAS degree in Chemistry from Concordia College and a BA degree in Psychology from the College of New Rochelle. This is his first article for WNYF.