

# Emergency Medical Service response on September 11

This section describes the major aspects of the response of the FDNY's Emergency Medical Service (EMS) to the World Trade Center attack. It has three parts. The first describes how EMS officers at the scene exercised command and control and how EMS Dispatch personnel handled communications issues. The second deals specifically with how EMS officers deployed and managed resources and personnel. The third covers how they addressed planning and logistics issues.

## **COMMAND, CONTROL AND COMMUNICATIONS**

On the morning of September 11, the EMS dispatcher for the Manhattan Central borough area was also handling all dispatch needs for the Manhattan South borough area, where the World Trade Center is located. Normally each borough dispatch area has its own channel and dispatcher, however, the channel usually dedicated to Manhattan South was not being used due to insufficient staffing levels at the Emergency Medical Services Dispatch Center at that time.

Upon confirmation that an airplane had flown into WTC 1, the Manhattan Central dispatcher immediately assigned ambulance units to the scene and transferred the incident to the EMS citywide dispatcher, in accordance with EMS protocols. These protocols require that multiple casualty incidents (i.e., those involving more than five patients) have a dedicated dispatcher. This also leaves the regular borough dispatchers free to concentrate on activities within the borough not related to the incident. EMS personnel assigned to a multiple casualty incident are directed to switch their radios to the citywide channel.

### **Command is established**

Protocols for responding to multiple casualty incidents covering a large area such as the World Trade Center require that commanders establish geographic areas at the scene called divisions. Within each division, one or more EMS activities take place: staging of EMS units, patient triage, treatment, and transportation to a hospital. Each of these functions is known as a sector within each division.

At approximately 8:53 a.m., Conditions Car 042,<sup>23</sup> the first responding EMS officer, established EMS operations outside WTC 1 near West Street. EMS personnel established an initial staging and triage area at 8:55 a.m. on West Street across from WTC 1. Shortly thereafter, this staging area was relocated to the corner of West and Vesey Streets (see Exhibit 4).

The Assistant Chief of EMS Operations (Car 6A, the second highest-ranking EMS officer) arrived at the incident at approximately 9:01 a.m., and assumed the position of EMS Command, making him responsible for managing the overall EMS response to the incident. He assigned Conditions Car 042 to establish a division on Church Street and decided to move the EMS Command Post to the lobby of WTC 1, next to the Incident Command Post (ICP) that had been established by Fire Operations. (FDNY protocols require that EMS Command report to the Incident Commander. See Exhibit 12 for an EMS command and control events timeline.)

However, as EMS Command moved into the lobby of WTC 1, he was not immediately aware that the FDNY Incident Commander (the Chief of Department) was moving the ICP to the far side of West Street, in front of 2 World Financial Center.

Upon notification of the ICP move, EMS Command, at 9:20 a.m., assigned the EMS Division 3 Chief<sup>24</sup> (Car 63) to be the EMS Operations Chief for the incident and to report to the new ICP. (The job of Operations Chief entailed tracking EMS resources and assisting EMS Command.) EMS Command joined Car 63 at the ICP at approximately 9:30 a.m.

As more EMS officers and personnel arrived at the incident, additional divisions and sectors were established. Around 9:10 a.m., the Chief of EMS Operations (Car 6) began setting up a division south of the World Trade Center complex. It was fully functional by 9:45 a.m. and was referred to as the South End Division; however, Car 6 experienced radio communications difficulties and was unable to communicate the existence of this division.

By 9:11 a.m., the staging and triage sectors at West and Vesey Streets had expanded to become part of a geographic division known as the Vesey Division. The Liberty Division was established on Liberty Street at about 9:20 a.m. The Chief of Planning (Car 4P) established a WTC 7 Division at around 9:30 a.m. By

<sup>23</sup> Some FDNY personnel have radio designations that use the term “Car,” followed by numbers and/or letters. A “conditions car” is a designation for an EMS officer who supervises field operations within a specific area of the city.

<sup>24</sup> An EMS division chief has command responsibility for a larger geographic area of the city. This type of division is distinct from the divisions that EMS officers establish at multiple casualty incidents and from Fire Operations Divisions.

this time there were five divisions: Vesey, Church, South End, Liberty and WTC 7. (See Exhibit 13 for the incident organization timeline and Exhibit 14 for the initial EMS organization chart.)

### **Communications difficulties emerge**

EMS chiefs responding to the incident had difficulty communicating over the radio due to the large volume of radio traffic. This impeded their ability to gain awareness of the overall situation at the scene. The radio problems may have been partly caused by the way EMS uses its radio frequencies.

EMS uses the same frequency for two communications channels: command and citywide. The command channel is used for point-to-point communication among EMS Chiefs and officers at an incident, while the citywide channel is used for communication among EMS personnel and Dispatch across the city.

Transmissions on the command channel can only be heard on radios in the vicinity of the person transmitting. However, transmissions on the citywide channel can be heard throughout the city on both that channel *and* the command channel. This is done through the use of a citywide repeater system that receives transmissions from individual radios and repeats them over more powerful transmitters.

Consequently, an EMS radio tuned to the command channel will receive all traffic on that channel in its immediate vicinity, in addition to all traffic on the citywide channel.

In order to relieve radio congestion, the Manhattan South Borough channel was opened at 9:45 a.m. for radio transmissions between EMS Dispatch and ambulances responding to the incident. The citywide channel was dedicated solely for communications among chief officers and supervisors coordinating the response. However, many units did not tune their radios to Manhattan South and continued to operate on the citywide channel. This contributed further to communications congestion and degraded the chiefs' ability to communicate, as dispatchers were continually repeating to units the order to switch to Manhattan South. The congestion problem was exacerbated by a number of ambulances that repeatedly asked to be dispatched to the incident.

### **EMS dispatchers were overwhelmed with tasks**

In New York City, calls to 911 for medical help are answered initially by the 911 call center (which is managed by the NYPD), and then connected to EMS dispatchers. The 911 operators can communicate information to EMS via two methods: telephone or a data link called the Special Police Radio Inquiry Network (SPRINT). Usually, 911 operators, EMS and Fire dispatch operators try to communicate by phone to exchange urgent and/or complex information.

EMS dispatchers, in addition to handling incoming information from the 911 call center, are also responsible for assigning ambulances to incidents, communicating with chief officers and ambulances over the radio and the phone, monitoring incident information from multiple sources and handling other telephone calls.

On September 11, EMS dispatchers were dealing with a high volume of information, a very large number of responding units, a complex incident response, and a myriad of communications difficulties. As a result, they were overwhelmed, limiting their ability to synthesize information and disseminate it effectively.

### **Information flow to incident commanders was limited**

In the section of this report on the response of FDNY Fire Operations, we cited several examples to show that the Incident Commander and senior chiefs had a limited amount of information available to them as they made important decisions. An additional example comes from a series of events that followed a phone call to 911 from a person in WTC 2 a few minutes before that tower collapsed. These events illustrate the urgent need for the city to increase the level and accuracy of information exchange and dissemination within and across emergency response agencies.

At 9:37 a.m., a male caller from the 105<sup>th</sup> floor of WTC 2 phoned 911 and reported that floors beneath him “in the 90-something floor” had collapsed. The 911 operator typed a record of the call into the SPRINT system at 9:41 a.m. That record mistakenly stated the gender of the caller as female and it was unspecific about the location of the collapsed floors.

The SPRINT system automatically forwarded the record to the computers at the EMS Dispatch and NYPD Dispatch centers. Our review of the SPRINT records showed that it was among thousands of SPRINT records that the EMS Dispatch computers received that morning.

The EMS Dispatch computer system received the record at 9:47 a.m. It read as follows:

“09:47:15 Supplement-PD (T70) ..sts 2 World Trade Cntr...Flr 105....sts floor underneath her...collapse...”

This record was not read by anyone at EMS Dispatch at the time because it was categorized as a “supplement message.” Supplement messages are received by the EMS computer system and automatically added to a “job record,” which is a record of events relating to a particular incident. EMS Dispatch operators are not expected to review supplement messages during incidents and never do so.

Therefore, under normal operating procedures, there is no reason this message would have been seen by anyone at EMS.

The SPRINT system also sent the record of this call to the NYPD Zone 1 dispatcher,<sup>25</sup> who interpreted the words “sts underneath her ... collapse” as meaning that the floor that the caller was on was collapsing. At 9:42 a.m., this dispatcher broadcast a message on the NYPD Zone 1 radio channel stating, “106th floor of WTC2 has collapsed or is collapsing, on authority of female on 106th floor.” Clearly, this broadcast was an inaccurate representation of the contents of the original call.

Upon hearing the 9:42 a.m. radio announcement, the NYPD Zone 1 dispatch supervisor created a new SPRINT record indicating that the 106<sup>th</sup> floor was collapsing. This record was forwarded to three places: the NYPD Special Operations Division (SOD) dispatcher, EMS Dispatch and the PD’s traffic division. The SOD dispatcher received this new record just before 9:52 a.m. and broadcast a message over the NYPD’s SOD frequency as, “106th floor of WTC2 is crumbling.”

This record was also received at EMS Dispatch just before 9:52 a.m. It read:

“09:51:39 PDEMS (BO1A) Floor of 106 Floor of 2 World Trade Center in (sic) collapsing.”

This message was categorized as a “PD-EMS” message, which means that, under normal circumstances, it would have been handled differently at EMS Dispatch than the earlier supplement message, and would have been reviewed by EMS Dispatch personnel.

On the morning of September 11, however, EMS dispatchers were asked to handle an enormous volume of calls and perform many extraordinary tasks under extreme pressure. This message arrived while EMS dispatchers were handling telephone and radio calls from dispatched units seeking further instructions, units that had not been dispatched, off-duty workers, hospitals, and personnel in the field having trouble with radio communication who called dispatchers on the phone.

We believe that EMS Dispatch operators did not have the time to review either the supplement message or the PD-EMS message before the collapse of WTC 2 at 9:59 a.m. We also believe that neither Fire Dispatch nor any senior Fire or EMS chiefs received the information in these messages.

<sup>25</sup> Zone 1 includes the area around the World Trade Center.

## **WTC 2 collapse impairs EMS command structure**

WTC 2's collapse at 9:59 a.m. destroyed the EMS Command Post, which was next to the Incident Command Post on West Street. The EMS divisions and sectors that had been established prior to the collapse were dispersed as personnel evacuated the area and sought shelter in surrounding structures. Chief officers at the ICP also sought shelter in nearby structures. In the absence of ranking chief officers, the EMS Communications Officer, previously located at the ICP, recommended to EMS Dispatch that command be transferred until resources could regroup. However, EMS Dispatch was unable to immediately act on this for two reasons: 1) It is not a normal procedure to transfer command via Dispatch and; 2) It was unclear at that point in time who was available to assume command.

The overall command structure of EMS operations was unclear to EMS members and FDNY command for about one hour after WTC 2 collapsed. EMS Dispatch was unable to account for or contact EMS Command or any other senior personnel. EMS personnel had difficulty with multiple means of communication including portable radios (handie talkies), mobile radios, mobile phones and fixed line phones. Interviewees told us that no means of communication worked reliably immediately after the collapse.

Starting at approximately 10:09 a.m., a Division 2 Deputy Chief (Car 621) made repeated requests to Dispatch to conduct a roll call to determine the command structure and location of any chiefs. However, Dispatch was unable to conduct such a roll call because there was too much radio traffic following the collapse of WTC 2. At 10:29 a.m., WTC 1 collapsed, prolonging and exacerbating command, control and communications difficulties.

## **EMS chiefs and officers regroup**

Approximately ten minutes after WTC 1 collapsed, several senior EMS chiefs and officers converged by chance in an area near the Embassy Suites Hotel, located at Vesey Street and North End Avenue. These chiefs held an impromptu meeting in the lobby of the hotel to discuss operations strategy, resource deployment and the safety of EMS personnel. Two primary decisions were made at this meeting:

- ¶ Car 6A and Car 6C (the Tour 1 EMS Chief Officer) would proceed to One Police Plaza, on the assumption that responding agencies would be coordinated from that location, given the destruction of the city's Office of Emergency Management (OEM) offices at WTC 7.
- ¶ EMS resources would be re-deployed to establish two divisions, one at Chelsea Piers and one at the Staten Island Ferry Terminal. The chief officers divided EMS personnel and ambulances located at West and Vesey Streets into two groups and assigned them to these new divisions, which were established by approximately 10:55 a.m.

While the chiefs and officers in the Embassy Suites hotel lobby set about the tasks decided on at their meeting, they were unable to communicate their actions to Dispatch.

Unknown to those chiefs and officers, other EMS chiefs had already established additional EMS divisions elsewhere. Car 6 and Division Chief 5 (Car 65) established a division at Robert F. Wagner Jr. Park at 10:27 a.m.<sup>26</sup> In addition, Car 621 designated the Brooklyn side of the Brooklyn Bridge as a new division at 10:36 a.m. During this time, many EMS personnel remained unaware of who was serving as overall EMS Command.

### **Command restored, but communications problems continue**

Shortly before 11:00 a.m., Car 621 informed Dispatch that he was prepared to assume EMS Command from the Brooklyn Bridge, which was the closest point to his location that was clear of dust and debris. However, at that exact time, the Chief of Planning (Car 4P), a higher-ranking officer than Car 621, assumed EMS Command at West and Chambers Streets, alongside fire chiefs who were relocating the ICP there.

Car 4P, also unaware of the establishment of divisions at Chelsea Piers and Staten Island Ferry Terminal, immediately established a division at West and Chambers Street. (See Exhibit 15 for the post-collapse EMS organization chart.)

At 11:09 a.m., EMS Dispatch conducted a roll call of chiefs at the scene. At this time, Car 661 responded and provided an update on the steps that were being taken to set up the divisions at the Ferry terminal and at Chelsea Piers. At 11:48 a.m., telephone communications between EMS Dispatch and One Police Plaza were re-established. However, communications between Dispatch and the Chelsea Piers and Staten Island Ferry Terminal divisions were not established for several more minutes, continuing to hinder the coordination of operations.

Shortly before noon, Car 4P, in his capacity as EMS Command, conducted another EMS chief roll call to determine the locations of chiefs, divisions and sectors. At that time, he was informed of the locations of all operating divisions and the location of senior personnel at One Police Plaza.

Subsequently, Car 4P asked Car 63 (the Division 3 Chief) to assume EMS Command. Car 63 did so at approximately 2 p.m., upon his arrival at the relocated ICP at West and Chambers Streets.

<sup>26</sup> This division merged later with the division established at the Staten Island Ferry Terminal.

At approximately 6:00 p.m., Fire Operations moved the ICP to the corner of West and Vesey Streets, several blocks closer to the WTC site. The EMS Command Post remained at West and Chambers due to safety concerns (e.g., EMS personnel did not possess full protective clothing). However, an EMS liaison officer operated at the relocated ICP and reported to EMS Command.

At approximately 5:00 p.m., at Car 6's request, EMS chiefs held a second face-to-face meeting at the EMS Command Post. They discussed the status of the response, the strategy for ongoing operations, and safety issues. They also discussed strategies to provide staffing for the incident and the 911 system, to ensure that citywide EMS coverage was maintained.

## **RESOURCE DEPLOYMENT AND MANAGEMENT**

FDNY's EMS resource commitment to the World Trade Center incident was, of course, extensive. About 30 percent of the 354 ambulances available that morning in the city's 911 emergency ambulance system were deployed. Deployments peaked at around 1:00 p.m., as units began to return to regular service. The resources committed to the incident included:

- ¶ 14 municipal and 23 voluntary<sup>27</sup> Advanced Life Support (ALS) units, or 33 percent of all ALS units on duty in the 911 emergency ambulance system.
- ¶ 51 municipal and 18 voluntary Basic Life Support (BLS) units, or 29 percent of all BLS units on duty in the system.
- ¶ 24 out of 31 EMS lieutenants and captains on duty.
- ¶ 15 out of 17 EMS chiefs on duty (See Exhibit 16).
- ¶ An unknown number of mutual aid units.
- ¶ An unknown number of volunteer/freelance units.
- ¶ An unknown number of volunteer medical professionals.

### **Incident's scope hindered resource management**

During the initial phase of the response, senior EMS chiefs used a magnetic command board to track deployment of EMS resources. Car 6C set up the board

<sup>27</sup> Ambulances that do not belong to FDNY but participate in NYC's 911 emergency ambulance system. Many are operated by hospitals.

at 9:23 a.m. at the EMS Command Post on West Street, but the board was lost at 9:59 a.m. when WTC 2 collapsed.

A large number of other events complicated EMS efforts to manage personnel and other resources responding to the incident.

- ¶ Normally, EMS personnel who are arriving for duty log into the EMS Computer-assisted Dispatch (CAD) system with their radio number and ambulance unit number. The system then keeps a record of all assignments, recording their name, shield number, assigned ambulance, and tour number. In this incident, some personnel responded without radios, and therefore personnel tracking information was incomplete. This hindered efforts to determine who was operating at the incident after the collapses.
- ¶ A large number of ambulances that are not part of the 911 emergency system, volunteered and/or self-deployed to the incident (i.e., without coordination and direction of EMS Command or EMS Dispatch), which degraded the FDNY's ability to maintain control.
- ¶ Several EMS units requested to be dispatched to the incident repeatedly or self-dispatched without permission from a dispatcher, and several EMS units responded with additional personnel who had responded to the recall.
- ¶ A recall of EMS personnel was announced through several radio and TV stations early in the incident. Who, if anybody, made the decision to recall all EMS personnel remains unclear. In all likelihood there was confusion or misinterpretation whether EMS personnel were also being recalled when the Chief of Department recalled all Fire personnel. EMS had never conducted or trained for a total recall and did not have a recall procedure.
- ¶ Civilians requiring medical assistance flagged down ambulances en route from their staging areas to their assignments. Several of these ambulances could not or did not communicate with their staging areas to request that another unit be given their original assignment. Instead, they informed EMS Dispatch of the fact that they were not proceeding to their original assignment. This required EMS Dispatch to assign additional units from the citywide resource pool to the incident so that the diverted ambulance's assignment could be filled.

- ¶ Numerous medical personnel phoned EMS Dispatch offering to volunteer their help. Some volunteering medical personnel, whose credentials had not been verified, went directly to EMS staging areas. This taxed onsite operations as the responsibility of verifying credentials was shifted to EMS officers operating at the scene.

From 9:59 a.m. until at least mid-afternoon on September 11, EMS chiefs and officers did not have an accurate view of the number and location of resources deployed to the incident, including on-duty EMS personnel and equipment, volunteer ambulances, off-duty members and volunteer professionals responding to the incident.

Ad hoc efforts were made to re-establish EMS resource and personnel tracking, such as the radio roll calls requested by the Car 621 and Car 4P in order to ascertain the status and locations of EMS chiefs. Also, officers who were supervising various divisions created handwritten reports on the number of units at their respective locations. In addition, the EMS Resource Coordination Center collected personnel data from battalions, and battalions called homes of unaccounted-for members to determine their whereabouts.

The chiefs' ability to manage resources was also hindered by the fact that their span of control was significantly stretched.<sup>28</sup> During the response to the incident, interviewees reported that, in some cases, the span of control increased to as much as one chief/officer to 20 EMTs/paramedics, well above the ratio of one-to-seven that senior EMS chiefs believe is the maximum that will ensure that command, control and quality of care are maintained.<sup>29</sup>

### **Efforts made to ensure Citywide coverage**

A number of EMS officials made efforts to ensure adequate emergency medical coverage throughout the city and at the World Trade Center incident. At 9:07 a.m., EMS Dispatch contacted the city Office of Emergency Management (OEM) and requested activation of the regional mutual aid plan. OEM activated the plan, and mutual aid ambulances from the New York region did respond to the WTC. However, administration of the plan was hindered when OEM personnel had to evacuate their headquarters at WTC 7.

At 9:08 a.m., an EMS officer directed Dispatch to contact the EMS Academy at Fort Totten and ask all qualified EMS personnel there to stand by for deployment.

<sup>28</sup> Span of control refers to the number of personnel that each officer is managing simultaneously.

<sup>29</sup> The New York State Emergency Management Office recommends that the Incident Command System deployed by emergency responders maintain the span of control between three and seven.

Those personnel did later deploy and were transported to the World Trade Center in buses.

At 11:42 a.m., EMS, in conjunction with other agencies at One Police Plaza, requested state and federal assistance to include the Disaster Medical Assistance Team and the Disaster Mortuary Operational Response Team.

At 12:35 p.m., EMS dispatch started to release EMS units committed to the incident back into the 911 resource pool.

Throughout the incident, EMS patient tracking capabilities, which are performed manually by EMS personnel, did not hold up well. Because of the large number of victims and patients requiring immediate treatment and transport, EMS personnel decided they could not accurately complete the paperwork required to enable accurate tracking of patients as those patients were transported to different hospitals. Instead, EMS personnel focused on transporting victims to the hospital as fast as possible.

## **PLANNING AND LOGISTICS**

On September 11, EMS officers made no formal, explicit assignments of planning and logistics functions. At the division level, informal planning occurred throughout the response. For example, resource assignments later in the day were calculated with the consideration of the city's overall need for emergency medical services. Formal planning at the command level occurred only twice: once at the face-to-face meeting of chiefs at the Embassy Suites Hotel in the morning and once at the chiefs' meeting at the ICP around 5 p.m.

The Division 4 Chief (Car 64) initiated informal pre-staging of logistical units (e.g., Major Emergency Response Vehicles (MERVs) and borough supply) before the collapse, but the overall difficulties that commanders had in tracking resources throughout the emergency limited the effectiveness of the pre-staged logistical units. (See Exhibit 18 for a planning and logistics timeline.)

In addition, managing corporate and public donations proved challenging in the days following September 11. Large amounts of resources were donated to EMS by multiple sources, but the supplies often did not match the supply needs of the units.

