



February 24, 2020

Testimony of Thomas Currao, Chief of Counterterrorism and Emergency Preparedness, FDNY
Oversight: FDNY Innovations

Good afternoon Chair Borelli and all of the Council Members present. My name is Thomas Currao and I am the Chief of Counterterrorism and Emergency Preparedness for the New York City Fire Department. I'm joined today by Alvin Surriel, Deputy Chief of EMS and Gregg Brady, Captain, Counter Terrorism Task Force. Thank you for the opportunity to speak with you today about the Fire Department's use of innovative technologies.

Protecting life and safety in the City of New York is an immense challenge and the Fire Department is constantly assessing and improving the resources that we use to meet that challenge. In a post-9/11 environment, the Department is consistently seeking the latest innovations to keep up with emerging threats.

One of the ways that we approach new innovations at the Fire Department is through our Research and Development (R&D) unit. The R&D unit, which is part of the FDNY Safety Command, was established in 1980 following a tragic incident that claimed the lives of two firefighters. Procedures were put in place at that time to ensure that the Fire Department's R&D unit thoroughly tested all safety equipment before it was issued to firefighters in the field. Over time, the role of the unit has expanded. To keep pace with advancements in safety technology, members of the unit proactively research, test, evaluate, and develop new tools and equipment to enhance the safety of firefighters and EMS personnel. They regularly meet with vendors to review equipment and monitor advancements in technology, create pilots, and track internal evaluations of new equipment.

Innovations come about in a wide variety of other avenues as well. Today, we'd like to highlight a few of the more recent examples of innovation that the Department has implemented from the areas of firefighting, counterterrorism, and Emergency Medical Service.

FIREFIGHTING AND COUNTERTERRORISM INNOVATIONS

Drones

An area in which we are constantly striving to innovate is improving situational awareness at an emergency incident. One tool that has been enormously helpful in this regard is the Department's recent addition of unmanned aerial vehicles, or drones.

The Department began meeting with representatives from the Federal Aviation Administration (FAA) in 2014 to discuss the potential for the Department to begin incorporating drones into our operations. Early testing revealed an immense appeal: drones enable FDNY first responders to collect and relay essential information faster than traditional methods and they achieve this efficiency at a low risk to our members. Not only does the drone relay critical information to the incident commander at the scene of the emergency, but it is also able to share information via a live video feed with the Fire Department Operations Center at FDNY Headquarters, where staff chiefs monitor evolving fire and emergency situations 24 hours a day.

The Department initially opted to respond to incidents using tethered drones. This afforded us a reliable and safe entry into the field of drones, mitigating against risks such as radio frequency interference and allowing us to gather data and better understand the technology. The FDNY's first use of a drone was a response to a fire in a six-story building in the Bronx in March 2017. The tethered drone has a high definition camera that can zoom in, and a forward looking infrared camera that detects heat signatures, improving the capabilities that an observer would have with the naked eye. The feed from the drone allows an incident commander to make strategic changes based on real-time information, providing an operational advantage as well as better ensuring the safety of personnel.

A drone tether function as conduits for data and power, allowing a pilot to essentially maintain flight in perpetuity, but it does limit maneuverability. While a tethered drone functions as phenomenal observational tool, an untethered drone with extended mobility and range can serve as an observational tool as well as a tactical device.

We collaborate with a wide variety of partners at the local, state, and federal levels, including the FAA who have been very supportive, to ensure that we keep abreast of this evolving technology and that we are good partners in this field. The National Fire Protection Association – which creates industry guidelines across the country – released *NFPA 2400: Standard on Small Unmanned Aircraft Systems Used for Public Safety Operations*, which validated many of our policies and procedures.

Drone technology continues to advance at a rapid pace. Our use of tethered drones has enabled us to learn the technology, and radio frequencies used by untethered drones are stronger than when we started. Battery and motor capabilities have improved and satellite navigational systems have led to better positioning. Safety features such as parachute systems have also become more sophisticated. After much review, we made the decision in 2019 to begin incorporating untethered drones into FDNY operations. We continue to work closely with the FAA to ensure that the Department's expansion into the use of untethered drones is supported both operationally and administratively. We will continue to monitor and experiment as the technology continues to advance, allowing us to gather more information and use the drones in new ways that ultimately help us to save more lives.

Mass Casualty Incident Bags

In the area of counterterrorism and emergency preparedness, the Fire Department studies high profile incidents across the globe to learn from them and better calibrate our own resources and preparation for potential events here in New York City. Events such as the 1999 Columbine School Shooting as well as many other school attacks, the September 11th, 2001 attacks, and the 2008 Mumbai Attack that combined active shooting, improvised explosives and fire/smoke as a weapon in what we call a complex, coordinated attack give us a better understanding of potential emergencies, causing our response capabilities and training to evolve as the nature of threats evolved.

One such event, the 2015 Paris terror attacks, served as the catalyst for the next innovation that I would like to highlight - the Mass Casualty Incident bags. In the wake of those attacks, Commissioner Nigro recognized that the Department needed to implement an improved system for responding to complex mass casualty incidents (MCIs) and the Department created the Rescue Task Force. Each Division Task Force – there are two in every borough – is made up of 25 FDNY members, including three fire officers, three EMS officers, 12 firefighters, six EMS members, and a battalion chief. When the program initially launched, the task force carried a standard FDNY MCI bag, which gave it the ability to treat six patients per team. However, after researching contemporary MCIs such as the Las Vegas shooting, the Department determined that the teams must have the capability to treat a much larger number of patients.

The Department surveyed the market for a product that would fit our needs but did not find any that was suitable. So we did what we often end up doing and created our own solution. We designed and implemented two additional ways to equip the teams with the tools to treat a significantly larger number of patients. First, we began affixing a pouch on the front of every Task Force member's ballistic vest. Each pouch contains two vacuum sealed bags and carries three tourniquets, one Pressure Bandage, one Combat Gauze dressing, 12 triage tags, and two Surgical Marking pens. With these tools, each member has the capability of immediately treating six patients with critical injuries and triaging 25 additional patients.

Second, we also outfitted the Rescue Task Force officers with a Rescue Task Force Deployment bag. The bag includes 25 tourniquets, 25 Combat Gauze dressings, 25 bandages, five Surgical Marking pens, 12 Decompression Needles, 12 Chest Seals, and one Sharp shuttle. By equipping the teams with the Rescue Task Force Deployment bag, each team has the ability to treat approximately an additional 75 patients. With these simple but critical changes to the equipment that our Rescue Task Forces take into the field, we have dramatically increased the teams' capability to quickly and effectively treat a large number of patients.

Incident Command System (ICS) Application

The Incident Command System (ICS) application is a tool that the Fire Department created in order to give the Incident Commander the most efficient ability to track, monitor, and record the status of units at the scene of an emergency. Developed in-house, the app enables the Incident Commander to call up resources about the location, including floor plans and building maps to

assist with planning a response. It can be accessed in the field via iPads and smartphones, taking advantage of the advances in mobile communication to allow members to reliably receive, transmit, and monitor secure information on device that is easy to carry and maintain. The app has become a key resource for command and control-level personnel to assess the situation on the ground and share information from the field to headquarters.

Over 500 members of the department use the ICS app at fire incidents, and we continue to roll out the application in a controlled pilot to additional members, including all chiefs, senior executive staff, and Department leadership. Going forward, the app will be further incorporated into EMS incidents as well.

EMS INNOVATIONS

ASAP Vehicles

Densely-packed environments can present a challenge for EMS responders trying to reach a patient, especially in areas with large numbers of pedestrians and foot traffic. In New York City, we have a great number of these locations. Navigating an ambulance to reach a patient in an area such as Times Square, for example - which also features street closures and pedestrian islands - can slow response times and delay EMS personnel from arriving as quickly as possible.

To overcome street closures and pedestrian foot traffic, in December 2017 the Department began deploying alternative support apparatus, or ASAP vehicles. At eight feet tall and five feet wide, the ASAP is smaller and more nimble than a standard FDNY ambulance. Though it is not used for transport, it has all of the same patient care capabilities of an ambulance, including a patient compartment with a full-size stretcher. The ASAP provides a way for EMS members to quickly reach a patient and begin providing care. In the event that the patient needs a transport to a hospital, the responding EMTs or paramedics will be able to treat the patient during the time it takes for a transport-capable ambulance to arrive.

We have assigned two ASAP vehicles to respond to medical emergencies in Times Square. They are available seven days a week from 10am to 10pm, and we have found that they typically reach patients in under five minutes. We've also begun rolling out ASAPs in other strategic areas of the city including some funded by City Councilmembers. We are grateful for the Council's support for this program. Other areas in which we have deployed ASAPs at least some of the time include: at Coney Island and Orchard beaches in the summer, along the route of the New York City marathon, at the West Indian Day Parade, and we are exploring deploying them to Randall's and Ward's Island.

EMS Equipment: Power Stretchers & EMS Simulation Training Mannequins

The Department often tests and pilots new equipment. As the largest Fire Department in the country, we're often able to work directly with manufacturers to review new types of devices

and explore potential additions. Two relatively recent acquisitions for EMS have been power stretchers and the simulation training mannequins that we use at the EMS Academy on Fort Totten.

One of the more challenging aspects to EMS work is lifting patients. Not only does this sometimes present an operational issue for getting larger patients into an ambulance for transport, but lifting heavy objects can be taxing on our members, leading to strained muscles and other more serious injuries. After launching a Request for Information and reviewing submissions, the Department will soon be testing out models of power stretchers. The device is battery-powered and consists of a platform mounted on a wheeled frame, with adjustable locking positions and arm rests, as well as a retractable head section. EMS personnel are able to use the lift to aid in moving and positioning patients that would otherwise be difficult to move. A power stretcher is useful for lifting up to 700 pounds.

Another challenging aspect to EMS is making sure that members are able to train under conditions that are as lifelike as possible. To this end, the Department has acquired approximately 50 state-of-the-art simulation mannequins that members can use in a wide variety of training simulations at the EMS Academy at Fort Totten. The high-tech training mannequins are lifelike and have the ability to simulate bleeding and breathing problems. They can be adjusted to be male or female, and the speed of their blinking can be adjusted to show normal and sluggish rate of response. They exhibit a heartbeat, coughing, and some can inhale carbon dioxide.

They contain speakers that allow the patient to speak – via the voice of an instructor who is monitoring the training – and provide information in real-time. EMS personnel are able to vocally interact with the mannequin and provide treatment, including administering intravenous medication and intubation. These are techniques that would be impossible to replicate with live humans but are necessary to reflect life-like scenarios that the trainees will encounter in the field. In addition to the hundreds of new EMTs and paramedics that the Department trains each year, we provide refresher training to all of our current members – approximately 4,000 in total. By staying current with innovations such as the lifelike simulation mannequins, we work to ensure that our members receive the best possible training so that they are prepared to provide expert care when it comes to the real thing.

Introduction 1561

Introduction 1561 would require the Fire Department to implement a pilot program for the deployment of motorized scooters for the transportation of EMS personnel. Specifically, the legislation would require the department to implement this pilot in locations where accessibility for traditional ambulance responses is hindered due to geographic considerations or pedestrian traffic.

Finding ways to improve EMS response in congested areas is a worthy goal that the Department supports. As I mentioned earlier, beginning in 2017, the Department designed, tested, and has begun using ASAP vehicles to overcome precisely the circumstances described in the legislation. It is possible that we may want to explore supplementing the ASAP program with an even smaller, more individualized device. However, our focus has not been on motorized scooters but rather on the notion of whether it would be useful to incorporate a Segway-like personal transport device that could be modified for use by EMS personnel. We are aware of such devices being used in law enforcement contexts, and we know that at least one US city is using a modified version for EMS response at a major airport. The Fire Department is at a very early stage of this exploration, and we are not certain that a legislative mandate to use motorized scooters would best contribute to that effort. But we do remain committed to discussing potential improvements in this area with the Council and our colleagues at the Office of Management and Budget.

I would be happy to take your questions at this time.

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