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**ADAPTATION OF THE FDNY
COMMAND STRUCTURE
AND TRAINING FOLLOWING
9/11**

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1. Introduction

The Fire Department of the City of New York's (FDNY) core mission is "life safety"¹.

The FDNY has the responsibility of protecting the citizens and property of New York City from fires, fire hazards, providing emergency medical services, technical rescue, as well as providing first response to biological, chemical, and radioactive hazards. In 2008, there were 11,405 uniformed firefighters, 3,141 uniformed Emergency Medical Service (EMS) staff, and 1,640 civilians employed to protect a land area of 322 sq. miles with an official population of 8,363,710² and millions of tourists each day³.

The FDNY faces varied challenges each day: in addition to protecting and securing building types that range from wood-frame single family homes to high-rise structures, there are a large number of bridges, tunnels, parks, wooded areas, and one of the largest subway systems in the world⁴, among other structures and areas that fall within the FDNY's jurisdiction.

Established in 1648 within a paramilitary structure, the FDNY's current standing is a direct result of events that occurred in 2001. With the loss of 343 members of firefighters, also known as *New York's Bravest*, on September 11, 2001, the FDNY realized that there were problems with its protocols and procedures that needed to be addressed. Further, the FDNY realized, only at this time, that there were new threats that would need long-term resolutions.

The short and long range impacts of 9/11 were significant: a high number of senior officers, as well as many officers with seniority, were lost in the terrorist attack, morale suffered, many firefighters retired, health problems were reported by a large number of officers (there is still an ongoing World Trade Center Medical Monitoring and Treatment Program), among many other consequences that are still being determined.

Since 2001, all efforts have been focused on the reconstruction and improvement of the FDNY. These improvements have a foundation in the work of both civilians and uniformed personnel that analyze, suggest, adopt, and enhance current tools.

2. The McKinsey Report

In August 2002, 11 months after the 9/11 Terrorist Attacks on the World Trade Center and the Pentagon, a report by McKinsey and Company, a management consulting firm, based

¹ FDNY Terrorism and Disaster Preparedness Strategy, document available at <http://www.nyc.gov/html/fdny/html/home2.shtml>

² U.S. Census Bureau, Fact Finder for New York, NY.

http://factfinder.census.gov/servlet/SAFFPopulation?_event=ChangeGeoContext&geo_id=16000US3651000&_geoContext=&_street=&_county=new+york&_cityTown=new+york&_state=&_zip=&_lang=en&_sse=on&ActiveGeoDiv=&_useEV=&pctxt=fph&pgsl=010&_submenuId=population_0&ds_name=null&_ci_nbr=null&qr_name=null®=null%3Anull&_keyword=&_industry=

³ Data from the 2009 Fiscal Year (New York: Fire Department of the City of New York), <http://www.nyc.gov/fdny>

⁴ Tony Pattison, ed., *Jane's Urban Transport Systems, 2002–2003*, 21st ed. (Surrey, UK: Jane's Information Group, 2002).

on information provided by the FDNY, identified key areas that could be improved upon within the FDNY. The report describes the FDNY's response to the Terrorist Attack to the World Trade Center in 2001 as the largest challenge ever presented to the FDNY due its nature and magnitude, as well as the main contributing factor for the loss of 343 members.

Analyzing all the information, as provided in documents and interviews, the McKinsey Report demonstrates that some problems in rescue operations occurred on 9/11 complicating the response activities of the firefighters. In particular, communications at the World Trade Center with agencies outside of the buildings, and within the FDNY, were minimal; the recall procedure was not clear; and cooperation and coordination between the number of City agencies that responded to the emergency were practically non-existent.

Multiple causes exacerbated the communication issues in conjunction with the massive scale of the event. The magnitude of the event and the shock caused in the entire world also initiated a revolution in the NY Fire Department. The McKinsey Report made some recommendations that represented the starting point for the that evolution. The recommendations held in the McKinsey Report were the following: increase operational preparedness; improve planning and management; improve communications and technology capabilities; and enhance the system for family and member support services. Some of the primary suggestions were: expand the use of the Incident Command System (ICS); enhance all types of planning; develop and update the operational information exchange; acquire and deploy new technologies, communication equipment, and infrastructure.

The McKinsey Report represents the basis for which the FDNY has evolved post-9/11 and the following Strategic Plans keep the same goals.

3. Strategic Plans

The events of 9/11 created a situation in which the FDNY would have to account for; this came in the form of creating a new strategy and protocol for the future. Deciding objectives for the immediate future, and implementing those plans to achieve the goals, was a task completely alien to the Department.

The Planning Oversight Committee (POC), led by the Fire Commissioner and the Chief of the New York City Fire Department, was created to tackle this task. In the beginning of 2003, both the members of the POC and Fire Department Bureau Heads were asked to submit a list of five to ten of the most important objectives that could be accomplished in the 2003 calendar year. The deadline was February 21st, 2003 and the objectives proposed were examined and edited in the first Strategic Plan.

The first Strategic Plan was intended to be enacted over the next two years, but it was so ambitious that it was changed into a three-year plan. The Strategic Plan for 2004-2005 was the first attempt to identify and publish the goals and objectives of the Fire Department and contained 100 projects, which included 20 Primary Objectives and 15 Secondary Objectives, and six goals. The goals were the following:

1. improve emergency response operations;
2. enhance the health and safety of FDNY Members;
3. strengthen management and organizational development;
4. increase diversity;
5. improve fire prevention and safety education; and,
6. advance technology.

The Strategic Plan of 2004- 2005 had its basis in the McKinsey Report, which is demonstrated by the comparison of the McKinsey Report and the Strategic Plan.

In January 2005, the First Year Scorecard reported that of the Primary Objectives enumerated in the Strategic Plan, 43 percent of the projects has been completed, 29 percent were 50-99% complete, and 28 percent were less than 50% complete. Regarding the Secondary Objectives, 22 percent were completed, while 47 percent of the objectives were 50-99% complete and 31 percent were less than 50% complete.

By the end of 2006, the FDNY had completed nearly 90% of the objectives set out in the previous Strategic Plan. Even with the Department keeping step with changes in its operating environment, setting goals and developing strategies to meet those goals had clearly helped to advance key projects rapidly.

The next step in implementing the Strategic Plan was to include EMS stations, Borough Commands, and the Special Operations Command. This inclusive approach allowed for the unique objectives that are particular to each area (e.g., borough, neighborhood) to be delineated; to date, two borough-wide strategic plans have been published for the Bronx and Manhattan. In particular, each borough's Strategic Plans reflect different needs. For example, in a borough where an airport is located, there will be a demand for more training on incidents that can occur in an airport; in an area where there are a large number of high-rise buildings, the plans will need to reflect the requirements associated with protecting the residents.

The Strategic Plan for 2007-2008 had six key initiatives contained within five key goals that were specified within the previous Strategic Plan. Short-term and long-term initiatives were included within this Strategic Plan. These initiatives included providing further training to probationary firefighters, further development of the Continuity of Operations Plan, creating and implanting procedures for evacuations from high-rise buildings and the creation of a Network Centric Command that provided Incident Commanders with on-scene information.

The Strategic Plan for 2009-2010 has been built on the foundation set in previous plans while maintaining the same five goals and establishing 19 additional initiatives. In 2010, the three-year Strategic Plan for the FDNY's Special Operations Command (SOC) and the Borough Commands of Brooklyn, Queens, and Staten Island will be published. The end result of these plans is to ensure that the needs of the various boroughs are addressed and provided for.

4. The Performance Evaluation

Before 2001, the FDNY was aware of the necessity to evaluate its performance. After 9/11, this need became stronger.

In the last decade of the previous century, the New York City Police Department (NYPD) had instituted a performance evaluation system. In 1999, the FDNY attempted to adopt the same system; however, it was a failure. The adoption of this evaluation system was impossible because the core indicators that indicated improvement were moot and useless for the purposes of the FDNY. Therefore, the 2007-2008 Strategic Plan for the FDNY attempted to resolve this; one of the objectives of the Plan was the development of an enhanced performance management system to aid in the improvement of the FDNY's mission.

In July 2007, the Chief of the Fire Department, Salvatore Cassano, asked the Performance Management System Task Force to submit a report with the proposal of a maximum of six Key Performance Indicators, a Performance Reporting and Accountability System, and a FDNY Summary Report. The deadline was September 2007 and in that month the Task Force recommended eight core indicators for the performance of the most important operations and 17 internal indicators for the administrative and field

support activities that are crucial to the performance of FDNY. The key core indicators were:

1. average response time to structural fires;
2. average response time to Segment 1-3 EMS runs (e.g. cardiac, choking);
3. number of civilian fire fatalities;
4. civilians evacuated, rescued, and saved;
5. training hours per uniformed employee;
6. fire/life safety education session held, number of civilians educated;
7. total revenue generated; and,
8. total number of inspections completed by type.

These core indicators point out the trends of the Fire Department and highlight the main areas that represent the most important goals for the FDNY. The development of the Performance and Safety Accountability System (PSA) sprung out of the work conducted by the Performance Management System Task Force.

4a. The Performance and Safety Accountability System (PSA)

The new Performance and Safety Accountability System (PSA) covers three bureaus: Fire Operations, Emergency Medical Services, and the Civilian Support Bureaus. In particular, the Fire Operations indicators are focused on *safety*, e.g., serious, on-the-job injuries, preventable vehicle accidents; *prevention*, e.g., percentage of building inspections; and *response*, e.g., structural fire/medical travel time differential.

To ensure compliance, each year, fire battalions with the highest and lowest statistics in the PSA System indicators met with the Chief of Fire Operations and his staff to explain and elaborate on their the performance in the previous quarter. These presentations enabled the FDNY to better understand what the best practices are and which practices need improvement; the purpose was to improve the performance of all battalions.

It has been discovered, after the initial, probationary period and after the first round of interviews that the practice of interviewing the best and worst performing battalions within a conference framework may not work. It has been decided to bring not only one, but three or four battalions that need improvement and compare them with the best battalion chosen. Reviewing initial results and comparing them with the subsequent quarter's results allows for the opportunity to see an overview of how effective the Performance and Safety Accountability System is; while reviewing battalions that have been interviewed, it has been shown that their statistics improves over the following months. Further, the highest ranking battalions appear to maintain their good standing in subsequent quarters.

4b. The Mayor's Management Report (MMR)

As mandated by the New York City Charter §12, twice a year a Mayor's Management Report (MMR)⁵ is published with the performance rankings of all municipal agencies in delivering services. The structure of this report was overhauled in the summer of 2002 after a comprehensive outreach effort, despite the steady publication of this report since 1977. The MMR's statistical tables present information about the trends in actual performance over the previous five years and a numeric target for a comparison for each performance measure. A total of 46 agencies and organizations are included within the Mayor's Management Report. They are agencies that have a direct impact on citizens,

⁵ *Mayor's Management Report*, Mayor's Officer of Operations.
<http://www.nyc.gov/html/ops/html/mmr/mmr.shtml>

such as FDNY, NYPD, Office of Emergency Management (OEM), and the Department of Buildings, Law Department, the Department of Transportation, among others.

The MMR analyzes seventeen different indicators, including, but not limited to, the average response time to structural fires and medical emergencies, the average annual cost of an engine company or a ladder company, fire safety presentations, civilian fire fatalities, and firefighter burns. When comparing the MRR's indicators and the PSA's indicators, it can be observed that the indicators and performance measures focus on the same aspects.

5. The Incident Command System (ICS)

The Incident Command System (ICS)⁶ is an on-scene, all-hazard incident management structure. It is part of the National Incident Management System (NIMS), a nationally recognized system for incident management which recruits all responding agencies to operate under an Incident Command post. Based on flexibility and standardization, one of the three key organizational systems for the Incident Command Structures is ICS.

The ICS was originally developed in California in the 1970s; currently, it is widely used around the United States to aid in the management of resources at emergency incidents.

Following the McKinsey Report's recommendations in 2002, the use of the ICS has been expanded into the FDNY. This is a significant innovation because the ICS adoption affects almost everything from training to communications, and from organizational charts to procedures.

Prior to 2001, the FDNY instituted many ICS principles within its daily performance structure; the McKinsey Report recommended that the FDNY adopt all of the principles. On February 28, 2003, the Homeland Security Presidential Directive/HSPD-5 mandated that all federal, state, and local agencies institute the use of NIMS to manage emergencies if they were to continue to receive federal funding⁷.

Upon the implementation of Security Presidential Directive/HSPD-5, New York City (NYC) implemented the use of NIMS. NYC had to remain focused, however, on fine-tuning NIMS in order to address specific problems that present themselves with a large, varied, and unique city as New York. To address this, the Citywide Incident Management System (CIMS), which is an incident management doctrine for management emergency incidents and planned events, was developed with the assistance of many City agencies in 2005. The differences with CIMS and NIMS can be found with the usage of a number of terms and within the field of public information (e.g., forms of Incident Action Plans); however, these differences do not affect the assistance provided by these systems, especially in cases of emergency when two or more City agencies are involved.

One of the greatest challenges before the institution and expansion of CIMS and the ICS was the difficulty in knowing which City agency had jurisdiction over a multi-agency event. This problem was solved with CIMS, which redefined the rules and presented each agency's responsibilities in a clear manner. The FDNY ICS Manual, dated March 23, 2006, has been developed to explicitly comply with the guidelines set forth by the United States Department of Homeland Security, NIMS, and CIMS. In particular, the FDNY ICS breaks down the elements required to successfully manage an incident into five main

⁶ New York City Fire Department.

http://www.fdnny.org/pdf/books/fd_books/fd_toc/incident_comm_toc_new.html; *Emergency Management Institute*, FEMA. <http://training.fema.gov>

⁷ Department of Homeland Security, *Management of Domestic Incidents* (Washington, DC, February 2003), http://www.dhs.gov/xnews/releases/press_release_0105.shtm.

functions: command, planning, operations, logistics, and finance. The components of this system, that create optimum information management and control under normal or crisis conditions, are: common technology, manageable span of control, modular organization, integrated communications, unified command structure, incident action planning, designated incident facilities, and resources management. The ICS further provides for the creation of an Incident Management Team (IMT) which is comprised of highly trained individuals within a specific function of the ICS. The head of the team, the Incident Commander, is responsible for implementing the necessary functions of the ICS, based on the demands presented at the incident.

Full-time members of the FDNY IMT⁸ are qualified by the National Wildfire Coordinating Group, an operational group coordinating programs, policies, standards and training of participating wildfire management agencies. The original IMT was made up of twelve members of the FDNY in 2003. Due to retirement rates, there are currently only four or five officers still active with the FDNY recruiting every year and a half. Membership to the IMT is not limited to firefighters; civilians and EMS personnel are able to hold specific positions, e.g., Technical Specialist, and are chosen by the initial staff and FDNY Chiefs. The utility and effectiveness of IMTs became evident on September 13, 2001 with the arrival of the United States Department of Forestry Southwest IMT and the Alaska IMT, who both assisted in the World Trade Center rescue effort.

The goals of this system were realized when the FDNY IMT, as recognized by the United States Forestry Service Northeastern Area as a National Type 2 and a New York State Type 1 Team, provided assistance to the New Orleans Fire Department for a duration of six weeks following the devastation rendered by Hurricane Katrina in September 2005. Initially, it was believed that the FDNY IMT would manage a Type 2 Emergency, which is an incident that exceeds the capabilities of local control, include multiple operational periods, and operational personnel to do not exceed 500 persons; however, upon arrival, it was discovered that they would handle a Type 1 Emergency, which is considered the most complex and requires national resources, additional staff, and a total number of personnel that usually exceeds 1000. In total, 660 FDNY members lent their support and expertise in New Orleans.

Hurricane Katrina is only one of many assignments given to the FDNY IMT and the assistance provided by this to the Fire Department of New Orleans demonstrated the abilities of this organizational structure in times of emergency and response. To date, the FDNY IMT has responded to three assignments outside of the City of New York, including Hurricane Katrina, Hurricane Gustav in Louisiana, and the Idaho fires, as well as eight assignments within the Greater City of New York.

5a. Common Communication

The ICS also highlights the importance of communication between the personnel and agencies responding to an emergency. This is very important especially when there are multiple agencies involved and a common language is an essential basis for interoperability. The simple language developed by the ICS is designed to eliminate, or limit, the use of codes and acronyms which allows for communication that can be understood by the entire audience. Currently, this language is used only in large-scale events, when the presence of more agencies requires its use; for everyday use, the FDNY still uses its codified language.

⁸IMT Team Center, <http://www.imtcenter.net>; Fire Department City of New York Type 1 IMT, <http://fdny2.imtcenter.net/main/index.aspx>.

5b. Preparing for Events and Emergencies: Incident Action Plans

Incident Action Plans (IAPs)⁹ are an oral or written plan containing general objectives reflecting the overall strategy for managing an incident. It may include the identification of operational resources and assignments. It may also include attachments that provide direction and important information for management of the incident during one or more operational periods.

The IAPs are an instrument introduced by the Incident Command System. IAPs are tactics used to organize the resources of the FDNY and EMS during major events, parades, and shows. In particular, it contains four essential elements: a statement of incident objectives, ICS organization, tactics and assignments, and supporting documents. These elements contain essential information, which includes which units are assigned to the operation, what each unit will do specifically, the particular assignment for each sector or group, which HT channels will be utilized for communication, special instructions, a facilities list, as well as other directives needed in order to ensure that the incident runs without major incident.

Implementation of the IAP during an emergency is the sole responsibility of the Operations Section and is approved by the Incident Commander. The IAP is given to all incident supervisor personnel. The Plan is about an “operational period” that normally does not exceed 24 hours and is the time necessary to achieve an objective. With the IAP instrument, the Fire Department is able to create plans for the handling of situations that has the potential of becoming large-scale emergencies.

After a major annual event, such as the Thanksgiving Day Parade, a debriefing is conducted regarding the IAPs with the express aim to improve capabilities for the following year. The goal is for staff and personnel to evaluate what parts of the IAP worked effectively, which parts did not and to determine what can be improved, removed, or changed.

IAPs are not only created for large, public events; they are also created in anticipation of natural disaster emergencies, such as hurricanes and floods. IAPs created for these purposes do not contain data, such as hours, but they do identify personnel that will be involved, the area that will contain the operation, the duties involved in containing the emergency, and the nearest medical providers (e.g., hospitals and medical plans).¹⁰

5c. Emergency Action Plans for High-Rise Evacuation

Statutes, regulations, and professional standards often require the preparation of emergency action plans to facilitate the response, recovery, and rebuilding efforts when a non-fire related disaster occurs. In the wake of September 11th, the City of New York determined that new procedures were required to protect the occupants of office buildings in the event of non-fire emergencies. As a consequence, the World Trade Center Building Code Task Force was convened in 2002 “to review current building design, construction, and operating requirements and determine if modification for extreme events were needed to ensure public safety in new and existing buildings”¹¹. The Mayor and the City Council

⁹ Fire Department of the City of New York, http://www.fdnny.org/pdf/books/fd_books/fd_toc/iap.html;
Fire Department of the City of New York, “FDNY Planning & Strategy: Incident Action Plan worksheet,”
http://www.fdnny.org/pdf/books/fd_books/fd_toc/iap.html.

¹⁰ Fire Department of the City of New York.
http://www.fdnny.org/pdf/books/fd_books/fd_toc/iap_template.html

¹¹ New York City, New York City Department of Buildings, *Promulgation of the New York City Building Code Reference Standard RS 6-1 and RS 6-1A in Relation to Photoluminescent Exit Path Markings*, New York City Department of Buildings (New York, May, 2005), http://www.nyc.gov/html/dob/downloads/pdf/rs_6-1.pdf.

agreed to a number of the recommendations, which included Emergency Action Plans, and introduced Local Law 26 of 2004, which was adopted into the Fire Prevention Code as RCNY Title 3 Rule 6-02.

Emergency Action Plans (EAPs) provide documentation that includes certification, building information, EAP staff designations, duties and responsibilities, critical operations staff, EAPs for the various emergencies, building information cards, and documentation of consultation with neighboring buildings. The FDNY also created rules governing the duties, training, qualification, and responsibilities of the on-site EAP Directors.

Local Law 26 or RCNY Title 3 Rule 6-02, requires that the FDNY review and accept the EAP that is submitted by all Class E buildings higher than six stories or higher than seventy-five feet; or occupied by more than one hundred persons above or below the street level; or by more than a total of five hundred persons in the entire building. In particular, this law required that owners of Class E buildings develop evacuation procedures in response to various emergency scenarios, which needed to include partial evacuation and full evacuation of the buildings.

The EAP unit established in the end of 2008 by the FDNY within its Bureau of Fire Prevention has identified approximately 1800 buildings that underline the importance of this initiative. In July, 2009, some of the findings included the following:

- Buildings Filed: 1310
- Compliance: 73%
- Plans Accepted: 968
- Plans Pending: 342
- Violations for Non-Compliance: 776
- Violations Cured: 60
- Summonses Issued: 25

6. New Capabilities and New Training Regimes

9/11 has represented a turning point for the entire world, and especially for the agencies involved in the response on that day. The FDNY was faced with a new type and scale of emergency never seen before in its history. The development and unfolding of world political events made adaptation necessary for the FDNY to face those new issues accordingly. Attention was now focused on the terrorism threat and it has been proven to be essential for the FDNY in preparing for all-hazards emergencies.

Training has been concentrated mainly on chemical, biological, radiological, and nuclear emergencies; and, high-rise building emergencies and evacuations, which represent a major part of routine incidents that the FDNY handles. Training for firefighters and FDNY personnel has expanded at the Fire Academy on Randall's Island to include confined-space rescue, chauffeur's simulator exercises, tactical training and all-hazards training. New training activities, exercises, drills are incorporated within the FDNY in conjunction with other City agencies' personnel and the most advanced technologies to ensure that the capabilities and skills are improved upon and perfected.

6a. Fire Officers Management Institute (FOMI)

The events of 9/11 caused the loss of many firefighters, including many chiefs. FDNY personnel was, until September 10, 2001, the most experienced and specialized ever. However, after the destruction of the World Trade Center, the FDNY had to facilitate a method in which to replace the missing ranks. This created a grave situation with the Department in which many firefighters were promoted, and many others retired.

Currently, the new generation of officers is five years younger than they were ten years ago and more than half of the number of firefighters in the Department have been hired since 2001. Recruiting firefighters requires a tremendous amount of training. This training was not only required for new personnel and the new capabilities being introduced to the Department, but also for the capabilities that were passed on to the Chiefs.

In September 2002, the Fire Officers Management Institute (FOMI) was established at Columbia University School of International and Public Affairs, providing fire and EMS chiefs with a customized curriculum of leadership and strategic management training. The inaugural class included 24 of the Department's most senior level chiefs and had a curriculum of modified graduate management and leadership classes from Columbia University.

Throughout the span of FOMI, FDNY exercises and case studies were added to the course curricula. Specifically, integration of Columbia University management material courses and FDNY case studies, together with faculty that have experience with the FDNY, and other government agencies, contribute to achieving the FDNY's Strategic Plan Objectives.

6b. High Rise Simulator

New York City is known around the world for its skyscrapers. High-rise buildings are a peculiar aspect of this city, especially in the borough of Manhattan, and it presents significant problems for the FDNY; the emergency needs of a high-rise building differ drastically from the needs of a one- or two-story structure. September 11th can be used as an example of the difficulties and complications that arise while responding to a high-rise building emergency.

The High-Rise Simulator, a new training program, was started in November 2007 at the Fire Academy at Randall's Island as a response to the dilemmas facing firefighters that respond to high-rise building emergencies. This program aims at improving the preparedness and capabilities of the firefighters and other FDNY personnel.

A 4,000 sq. foot, four-story building, which features state-of-the-art technology that replicated real conditions of a high-rise building, was dedicated to the FDNY Training Academy in April 2009. This building includes a roll-over fire-simulator, mock shaft ways, a dry standpipe system, and videos on each floor providing real-time action review and instruction. It can further produce real fire, which when controlled, can be create a scenarios which call for a many-alarm fire with complications from smoke and extreme heat conditions. The simulator has proved to be a critical resource for the training of FDNY personnel. Beginning in October 2009, it not only be used to assist in the training of probationary firefighters, but it will also be used by all personnel who train on Randall's Island for at least one month.

6c. Center for Terrorism and Disaster Preparedness

One of the many initiatives taken after the events of September 11, 2001 was the establishment of the Center for Terrorism and Disaster Preparedness. This Center was explicitly created for the implementation of a strategy to improve the FDNY's preparedness to terrorism-related incidents, which include terrorists and Hazardous-Materials issues. Specifically, the Center for Terrorism and Disaster Preparedness establishes training exercises, such as table top exercises, drills, in addition to developing Emergency Response Plans, risk assessments, and prepares strategies and analyses of risks.

There are many units within the Center and they include the Exercise Design and Development Unit, which conducts and evaluates intra- and inter-agency table top

exercises, as well as full-scale exercises; the Risk Assessment and Target Hazards (RATH) Unit, which gathers information on critical infrastructures, identifies target hazards within the City of New York, and assists in the development of Emergency Response Plans for specific structures; and, the Strategy & Analysis Unit, which reviews and analyzes initiatives, policies, and legislative proposals.

The first Strategy Plan produced by the Center for Terrorism and Disaster Preparedness was created in 2007 and it was divided into four chapters: Purpose, Mission & Focus, Operational Readiness, and Coordination & Evacuation. The Center analyzes ways in which the FDNY can be better prepared in the case of another terrorist attack or a chemical, biological, radiological, and nuclear (CBRN) attack and provides tools to facilitate that aim. Lastly, the Strategic Plans are measurably effective, economically efficient, and sustainably over a long period of time.

7. The Network Centric Command: Communication and Info

Network Centric Command is an information-sharing component for first responders. It allows first responders to connect with each other and links the Fire Department Operation Center (FDOC) to other emergency operations centers.

The use of this system allows for the immediate exchange of relevant information between all parties involved. It is imperative that this system be updated at regular intervals in order to be used effectively and efficiently under extreme, emergency conditions.

The Network Command uses voice, data, and video for situational awareness and all of these elements are indispensable for the Incident Commander. Specifically, the Incident Commander will use portable systems (e.g., post radios, cellular phones, satellites, sound-powered phones), mobile systems (e.g., borough dispatchers VHF radio, 800MHz radio, vehicle cross-band repeaters), and auxiliary radio communication systems (e.g., subway repeaters, coaxial cables) as voice systems; helicopter videos and Command Tactical Units (CTU) as video systems; and, the Fire Department Operations Center (FDOC), Electronic Command Boards, Critical Response Information Management Systems (CRIMS), Electronic Riding Lists, and 3-D Firefighter Tracking as data systems in order to relay important and relevant information.

7a. Portable UHF Radio, Repeaters, and Auxiliary Radio Communication System

Communication relating to firefighters and their position can hold many relevant meanings: additional information regarding an emergency, the ability to track personnel, sending out additional alarms, among many other things. The events of September 11th, however, demonstrate that there were some serious issues regarding the FDNY emergency response radio-communication system. Therefore, improving that communication system became a priority for the Department.

Communication in high-rise buildings, tunnels, shopping areas, and many other places, has always presented some problems for many cities. However, in New York City, where there are over 2,000 high-rise buildings and an extensive subway system, these problems are more compounded. To tackle these problems, the FDNY did not focus exclusively on the use of walkie-talkies carried by FDNY personnel, but rather on the creation of an integrated system that utilizes multiple components to optimize radio performance.

In February 2003, modified walkie-talkies were tested and deployed in the field for use by emergency personnel, including the FDNY. These walkie-talkies were

analog radios that had an emergency alert function; had a powerful transmission strength; allowed for the use of a UHF band that provided better reception within buildings; and additional channels from the previous models which allowed for interoperability among the FDNY, EMS and other emergency services. These radios allowed for more messages to run along the same frequency, which was not possible during the events of September 11th.

The issue of radio reliability in high-rise buildings was resolved with the use of portable repeaters whose job is to receive, amplify, and retransmit radio communication signals with the goal of improving coverage. Vehicle cross-band repeaters provide the first chief on the scene the capability to bring his own repeater to the fireground. This greatly assists the Incident Commander, but there are some limitations.

In 2008, in an effort to enhance FDNY communications, the Auxiliary Radio Communications System (ARCS)¹² was installed in a limited number of high-rise buildings. ARCS is composed of a transmitter, a receiver, an antenna, and a cable; when transmissions are hindered by building or infrastructure elements, ARCS provides additional communication links. ARCS can be programmed to FDNY frequencies, or be programmed for their “proprietary” frequencies which require in-house radios to be provided to the members. There are currently two different systems, the Duplex Radio Repeater System and the Base Station Leaky Capable Simplex UHF or VHF Radio System, and they are installed in about 30 buildings, which include the Metropolitan Museum of Art, the NYC Transit Subway System, Rockefeller Center, Grand Central Terminal and the Lincoln Tunnel¹³.

7b. Interoperability Channels

The FDNY’s communications capacity must be completely interoperable, both internally and externally. Internally, the Fire Department and the EMS personnel need to, and are able to, communicate directly on-scene using new walkie-talkies; the new walkie-talkies are able to use the same channel and frequency. Further, communication in the field has also become possible between the FDNY and the NYPD due to the institution of radios with similar capabilities that utilize both UHF and analog formats.

Interoperable radio communication has further been enhanced with the installation of the TRP-1000, which allows a member of personnel to hear a message on any frequency, in the FDNY’s two Field Communications units¹⁴. The TRP-1000 allowed FDNY Fire Chiefs to “patch in” directly with other City agencies while using their own radios. One such channel that is dedicated using this system is “TAC U,” which is a dedicated channel between the FDNY and the NYPD that is programmed into all of the FDNY’s walkie-talkies.

Interoperability operations within the NYPD can be implemented by any FDNY Incident Commander simply by requesting the borough dispatcher to notify the NYPD dispatcher and to include the channel selected. The NYPD may initiate this as well. In conjunction with important interoperability measures, as well as incorporating all City

¹² *FDNY Communication Manual*, Fire Department of the City of New York (New York, October 28, 2008).

¹³ The decision of the location of the repeaters doesn’t concern the FDNY, but the building’s owner, which also decides what kind of system will be used. The FDNY can only suggest the presence of an Auxiliary Radio Communications System.

¹⁴ TRP-1000 is the new version of the previous ACU-1000. The ACU-1000 permitted up to 12 radios to be cross-connected. The TRP-1000 takes any and all radio frequencies in use and directs them so that personnel on any frequency can hear and communicate.

agencies that are involved, an appropriate borough system is automatically activated for two- or greater alarm incidents, as well as for pre-planned interagency events.

7c. Command Tactical Unit

In a joint effort by the Center for Terrorism and Disaster Preparedness and the Imaging Technology Unit to increase communication between the Incident Commander and members of the FDNY Operations Center (FDOC), the Command Tactical Unit (CTU) was created in September 2008. The CTU's mission was designated as to provide better awareness through the use of wireless technology. The CTU allows for documents, images, and other relevant information to be sent wirelessly between personnel at the scene and the FDOC, which allows the Incident Commander to develop a strategy to handle the scene. The Fire Department Operations Center also received live feed from the incident and is able to suggest strategies and tactics, made from Headquarters, which will assist the Incident Commander in his duties.

The CTU is staffed 24-hours a day by one officer and one firefighter per scheduled tour. It responds to incidents that are two- or greater alarms and other unusual incidents. The CTU is able to connect wirelessly to the Internet via a broadband network and onto the New York City Wireless Network¹⁵. This connection allows for access and file-sharing in real-time and provides a means to send operational video and data to Staff Chiefs, Fire Department Operations Center personnel and other FDNY members that are on the network. Some of the specialized equipment utilized by the CTU are: the Wireless Independent Network System (WINS), which is a portable system used to establish a wireless computer mesh network throughout operations; Tactical Access Point (TAP), units that are deployed around the incident to assist in the wireless computer mesh network; satellite dishes are used to connect the internet via satellite; a wireless camera system used to receive video transmissions from news helicopters; and digital-still cameras, digital video recorders, and DV video camera that take photos or video that can be accessed remotely via the wireless network.

The CTU's main focus is providing information to the Incident Commander in the field by setting up remote video and data feeds through the course of the incident. However, when the emergency is over, the Incident Commander is able to request a copy of all video and data for training purposes and Fire Marshals are able to use the video to investigate fires which had injuries or fatalities.

7d. Fire Department Operations Center

The Fire Department Operations Center (FDOC) went online in September, 2006. It is located at the FDNY Headquarters in Brooklyn and staffed by uniformed personnel who monitor fire and EMS activity across the five boroughs, 24 hours a day, seven days a week. It is managed by a director with a staff of two Fire Department

¹⁵ Since May 2009, the NYC first responders have high-speed wireless connectivity anywhere across the city, thanks to the newly deployed NYCWiN (New York City Wireless Network). The project was started in 2006 by the NYC Department of Information Technology and Telecommunications (DoITT) and vendor Northrop, and on April 1, 2009 it was rolled out to 70 percent of the city's police precincts and firehouses. NYCWiN is powered by a Universal Mobile Telecommunications System (UMTS), which uses radio towers built throughout the city that keep a user connected as he/she moves from tower to tower. Many of the citywide wireless networks proposed in the past used Wi-Fi, which requires users to reconnect as they move from one transmitter's field range to another's. The UMTS technology also enables data transfer rates 50 times faster than before.

officers, four firefighters, an EMS supervisor, and two Emergency Medical Service technicians (Paramedics) on each scheduled tour.

The FDOC is the operational nucleus of the FDNY and it facilitates communication among all of responding members and specialized units. It disseminates updates with different commanders in the field and provides important data required when responding to an emergency. The FDOC allows the FDNY to increase its interoperability with other City agencies, and allowed for the ability of senior-ranked fire commanders to monitor multiple alarm and large scale incidents across the City from Headquarters.

Through the utilization of the Citywide Public Safety Wireless Network, the FDOC has at its disposal a real-time link to City, State, and Federal agencies, greater situational awareness, and resource coordination in case of a large-scale emergency. It is further equipped with advanced technology that is available to first responders that are able to access live video feed from NYPD helicopters and traffic cameras that are installed throughout the City.

The FDOC is separated into two divisions: the Emergency Operations Center, which supervises the Department's daily response action, and the Incident Support Center. The Incident Support Center manages large-scale emergencies and/or events and is activated to serve as the operations facility for the Crisis Management Team which is composed of the Fire Commissioner, the First Deputy Commissioner, the Assistant Commissioner, the Chief Fire Marshal, as well as other personnel.

8. The Dispatch

8a. The Expedited Dispatch Model

One of the main core indicators that ensure the success of the FDNY is being able to decrease the average response time in emergencies. Many projects have been initiated to achieve this goal.

It has been found that reducing the time that it takes for firefighters arriving from the firehouse to the place of incident is dangerous and not advisable. However, it is possible to expedite the arrival of the fire fighters by reducing the amount of time spent on the 911 call.

Prior to May 2008, units were dispatched to scenes only after the FDNY dispatcher asked a predetermined set of questions to the caller; the answering process could take up to a minute of valuable time. With the advent of the Expedited Dispatch System, introduced Citywide in May 2008, dispatchers assign fire units to the emergency scene as soon as the location and nature of the emergency is obtained. The dispatcher will continue to ask questions of the caller, and if additional information is provided, it will be relayed to the engines en route via radio.

Response has been reduced as evidenced in the 2009 Fiscal Year in which response time to structural fires was reduced to 4.05¹⁶. This number was the lowest response time since the FDNY started to track response time in 1988; the lowest response time previous to 2009 was in 1994, when it was 4.08.

8b. Unified Call Taking

An additional step taken by New York City in an effort to improve response time by emergency personnel has been the introduction of the Unified Call Taking system (UCT) within the City's emergency Communication Transformation Program (ECTP).

¹⁶ Data from the 2009 Fiscal Year (New York: Fire Department of the City of New York), <http://www.nyc.gov/fdny>.

This program was introduced in May, 2009 and it was designed to centralize and integrate call-taking and dispatch operations among the NYPD, FDNY, and EMS.

With the implementation of the UCT, a NYPD civilian dispatcher is able to collect valuable information from the 911 caller and electronically transfer the information to the FDNY dispatchers, saving valuable time and relieving the caller of repeating important information more than once. Through this, the UCT enable the police dispatcher to handle both fire and law enforcement related phone calls, sharing the information electronically and with the appropriate agency. In July, 2009, dispatch time to structural fires was 32 seconds; this was significantly lower than the 48 second response time prior to the implementation of the UCT; further, this was the lowest response time in recorded history. This system is new, and though the results are very good, improvements will continue to be made as needed.

The next step needed is to include calls that require an EMS response, and in particular, there is a need to create the first Public Safety Answering Center (PSAC 1) in Brooklyn which will be able to combine all dispatching operations for the Police and Fire Departments. This can, and should, be supplemented with a second Public Safety Answering Center (PSAC 2) in the Bronx. Each PSAC will have the capacity to support the entire City's 911 operations, and serve as back-up facilities for each other in the event of a catastrophic event or emergency.

9. The Inspection's System

10a. Buildings Under Construction, Demolition, and Alterations

One of the many FDNY's duties is the inspection of the buildings and the local fire company is the one that is responsible for the local administrative district.

Inspections are required for buildings that are under construction, demolition or having any major altercations. The need for these inspections came to the fore on August 18, 2007, when a fire broke out at 130 Liberty Street. The Deutsche Bank Building, a skyscraper that was at one time 41 stories, had been reduced to 26 due to heavy damage sustained on the September 11th Terrorists Attacks. The Bank Building was under demolition in which crews worked to remove one floor per week. The fire, caused by the careless smoking of the construction workers, spread wildly in all direction, and affected a total of 10 floors. Due to several contributing factors, such as non-working standpipes and flammable materials in the building, two firefighters died on the 14th floor. Further, the building had been mandated to be inspected every 15 days but the building had not been inspected since March.

The Deutsche Bank Building tragedy was a turning point in the FDNY and it catalyzed the changes that would be made in the FDNY's inspections program. Some of those changes include: a third inspection period each work for every field unit of uniformed inspectors; the introduction of new software programs to allow for local Fire Companies to track impending inspections; the Building Inspection Safety Program, which added an oversight of uniformed inspections at the Borough Command level with compliance measures implemented at FDNY Headquarters; Fire Academy curricula amended to include material on fire prevention and inspection; and, new standards of operating procedures were implemented to facilitate inspections of demolition and construction sites. Further, new guidelines were established that stated that buildings less than 75 feet in height have to be inspected every 30 days, and buildings that are higher will be continued to be inspected every 15 days. These inspections are to be tracked in the Building Inspection Safety Program (BISP) database.

9b. Coordinated Building Inspection and Data Analysis System Computerization Project

After the tragic Deutsche Bank Building fire that killed two firefighters, a Mayor's Working Group was convened to improve safety in construction, demolition, and abatement sites for workers, first responders, and the public. The group analyzed agencies' internal operations and the inter-agency coordination and communications, and in July, 2008 identified 28 issues which were developed into 33 recommendations that were focused on four key areas: data sharing, inspections, oversight of abatement operations, and oversight of demolition operations.

One of the recommendations followed in step with one of the objectives presented by the FDNY Strategic Plan of 2009-2010, which was to develop an automated, computer-based system that facilitates the sharing of inspection data throughout the agency. The data system created is the new Coordinated Building Inspection and Data Analysis System (CBIDAS) and it allows the FDNY to concentrate its fire prevention resources on buildings and neighborhoods that face the greatest risk of serious fires.

In the beginning of 2009, the Fire Department of New York asked IBM to create a system with the aim of collecting and sharing data in real-time that potentially could prevent fires and protect firefighters and other first responders when fires occur. The database is intended to use business intelligence technologies, including predictive modeling and advanced data analytics, to anticipate fire exposures, analyze the possible impacts of fires, and to improve the processes that minimize risk (e.g., collecting and disseminating data on building inspection, permits and violations).

The CBIDAS is useful for two reasons: it assists the FDNY in scheduling inspections on a risk basis and it is meant to improve data sharing that will ensure the safety of the public and first responders. Enabling better communication and coordination of fire inspection and site/building structure information within the FDNY Bureaus and other City agencies will advance the mission of the FDNY greatly. There is, however, one large obstacle: currently, all buildings are recognized by street addresses, but this is not an accurate method. The reason for this is that a single building can have multiple street addresses. One solution to this unique problem is to introduce a Building Identification Number (BIN) which would be used by all agencies.

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