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TERRORISM INFORMATION MANAGEMENT WITHIN THE NEW YORK CITY FIRE DEPARTMENT: PAST, PRESENT AND FUTURE

by

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I. INTRODUCTION

The New York City Fire Department (FDNY) is a pivotal agency that commands a position at the vanguard of terrorist-related emergency response within the City of New York. The validity of this statement was proven beyond any doubt by the unprecedented consequences of the attacks on 9-11-01. The critical positioning of the FDNY, however, has not been the result of conscious choice or the product of a carefully designed process of selective reasoning. Rather, it is largely the result of mere circumstance. 9-11 witnessed the dramatic collision of two previously uncoupled worlds. The first of these worlds is that of international terrorism, a complex and indistinct state of affairs involving highly motivated participants with evil intent who visit death and destruction upon innocents for the advancement of their preconceived ideals. The second world involved in this collision is that of emergency response, a simple endeavor of good will, residing at the intersection of government and her people, and founded in altruism and personal sacrifice. Prior to 9-11, these two worlds shared little common ground. Emergency response by the fire department had been conducted without regard to considerations related to terrorist threats. Firefighters were interested in saving lives that were jeopardized by accidental events through response activity that was characterized by well-defined limits of size and complexity. The use of information that supported this activity was limited to that contained within long-established doctrine created completely independent of terrorist concerns. And–judging by an historical absence of interaction and cooperation with other agencies–the fire department had considered itself distant and uncoupled from other stakeholders in the emergency response community.

The sudden impact between these disparate worlds–terrorism and emergency response–has had far-reaching effects. The most fundamental of these effects is the recognition that these worlds are now intimately commingled and shall forever remain coupled. Terrorist attacks will continue to occur, perhaps with greater frequency and magnitude, and emergency responders will be required to perform at extreme personal risk in previously unimagined roles. A secondary effect of the collision–related to the unanticipated ruthlessness and magnitude of destruction unveiled by the advent of the "new terrorism"–is the recognition that the emergency response community was ill-

prepared to prevent the occurrence of, and manage the consequences of, a large scale terrorist attack. On 9-11 the FDNY, a representative of the national fire community and the largest fire department in the country, was proven to be an innocent and unprepared victim of terrorism. This thesis is intended to identify problems that exist within the department that, to a certain extent, pre-dispose it to disaster. More critically, it is intended to propose reasonable solutions to these problems.

A. THE PROBLEM

It is widely understood that fire has been the traditional enemy of the fire department, and that a challenging new enemy has arrived in the form of terrorism. It is also known that the status quo was proven deficient, to some degree, by early experience with this new enemy. Why did 343 firefighters die on 9-11? Was this number excessive or reasonable given the actual needs of the immediate response (a largely unknowable parameter) balanced against the potential for collapse of the structures that effectively consummated the attack (a "knowable unknown")? Is the FDNY doing all it can to protect its members, and the citizens of New York City, from the consequences of terrorism? And can the fire community contribute more effectively to the national effort to detect, deter or prevent an attack? These are broad questions. However, analysis of the manner in which the FDNY has historically responded, how it has bolstered capability to respond since 9-11, and the mindset of those with their "boots on the ground" may provide insight into deficiencies in preparedness. Common denominators of inadequacy may thus be identified. The exploitation of these common denominators will allow for the creation of systems that improve the effectiveness and participation of the FDNY in the homeland security mission.

It is posited at this time that the deficiency of greatest significance within the FDNY is an inability on the part of that agency to successfully conduct systemic *information management and control.* It is further postulated that this condition of deficiency partially undermines the homeland security mission of the FDNY and, quite possibly, represents a dysfunction that is prevalent throughout much of the national fire service. This thesis intends to investigate the validity of this conjecture through an

analysis of past experience, interviews, surveys, comparative analysis, and analytical and deductive reasoning. The criticality and implications of addressing this problem will also be discussed, as well as the underlying reasons for its existence. Finally, concepts designed to support solutions shall be proposed. It is noted that the great variety of informational needs require the reader to maintain a focus on *information* as a broad but consistent core issue. Much can be learned by simply journeying through the experiences of information management in the FDNY. Ultimately, the result of the analysis is the proposal of relatively simple concepts that support a solution to the varied and diverse informational needs within the FDNY and the entire fire service. The analysis relies upon the use of case studies and real life examples. This thesis recognizes that the factors elucidated within the case studies, while dramatically illustrative, are not the result of impropriety or negligence but rather a function of a natural and necessary developmental process toward betterment.

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II. BACKGROUND

Terrorism has never been the pre-eminent concern of the New York City Fire Department, nor should it be. The department–known as the FDNY–conducts approximately 980,000 fire apparatus responses per year. Of these, slightly more than 5% are the result of actual fires. Approximately 40% are the result of non-fire emergencies.[1] By comparison, the percentage of responses that possess terror-related characteristics is a minor fraction of one percent. Despite the low frequency of the terrorist event, however, the potential consequences–as dramatically illustrated on 9-11–indicate the overriding need for constant readiness. In contrast with the dramatic increase in the frequency and ferocity of terrorist attacks worldwide over the past 30 years, the FDNY has experienced a sharp decline in the incidence of fires and fire fatalities. A measure of this trend that, to an extent, reduces the criticality of fire as a challenge to New York City firefighters is observed in Figure 1. Similarly, the entire nation has experienced a steady decline in the number of fires, fire casualties and economic losses from fire over the past two decades.[2] As opposed to fire related challenges such statistical measures are not necessary to grasp the heightened potentiality for death and destruction associated with the "new terrorism." The pre-eminence of the terms "Al Quaeda," "9/11," and "jihad" in the national consciousness stand as stark and constant reminders of the threat posed by radical Islamic fundamentalism.

[1] Figures are drawn from the FDNY Office of Public Information, *FDNY Annual Report Fiscal 2005* (Brooklyn, N.Y.: 2006), 1.

[2] Federal Emergency Management Agency, *A Profile of Fire in the United States, 1992-2001*, 13th Edition, October 2004, available at http://www.usfa.dhs.gov/downloads/pdf/publications/fa-293-508.pdf, 2, last accessed on March 14, 2007.

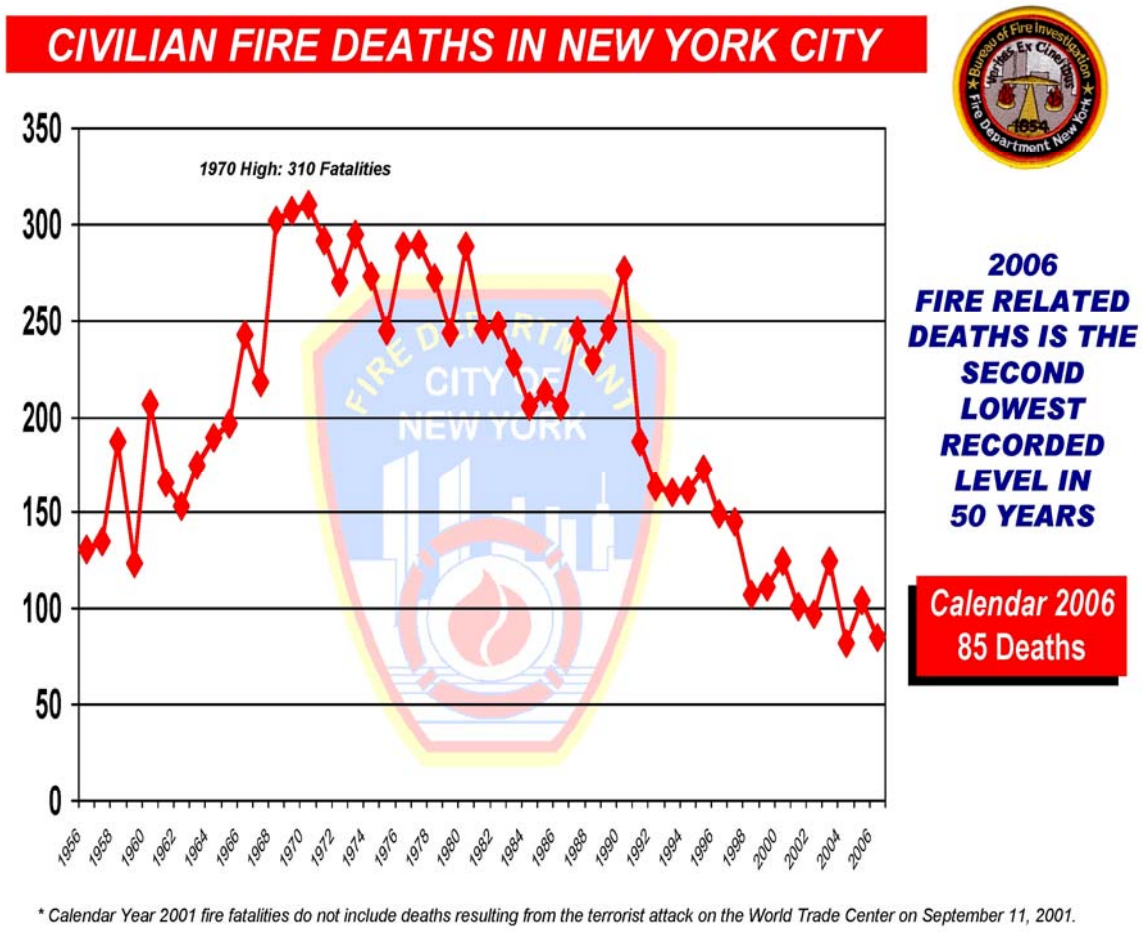

Figure 1. Chronology of Fire Deaths, NYC (From Viewpoint from 9 MetroTech, "Record-Breaking Year: Civilian Fire Fatalities Reach Historic Lows in 2006," January 2007).

Complementing the impetus for enhanced preparedness for these emergent threats is the fact that the bolstering of terrorism prevention and response capabilities will naturally improve the day-to-day capabilities of the FDNY for incidents of *all* types.

The task of maintaining terrorism awareness and satisfactory operational capability in a highly active department of over 11,346 responders in the absence of a repetitive or clearly defined threat is formidable.[3] Many improvements are possible. It is important to isolate those that solve the most critical needs at a reasonable cost. Chief Pfeifer, the initial FDNY incident commander at the World Trade Center on 9-11,

[3] FDNY Office of Public Information, *FDNY 2007-2008 Strategic Plan* (Brooklyn, N.Y., February 2007), 4.

concludes that "the single most important safety lesson learned by emergency responders on 9/11 is simply to share information."[4] Such sharing may be that which is possible between disparate agencies as well as that which can occur within the FDNY as a singular entity. A reasonable focus in the pursuit of improvement, therefore, is the manner in which information is currently managed and shared by the department. The pursuit of methods to improve information management will require a complete understanding of the existing relationship between information and the New York City Fire Department from an operational and historical perspective. Understanding what *is* will help to understand what needs to be *changed.*

A. TRADITIONAL RESPONSE MODALITY: HOW DOES THE FIRE DEPARTMENT RESPOND AND WHY?

FDNY response protocols have been defined by an extensive and relatively consistent amount of fire and life safety related activity over a period of approximately 150 years. The behavior of the department and its individual members has been conditioned by factors that have developed in response to this activity. Historically the department has acted in a manner consistently exhibiting four over-riding characteristics:

1. Response is reactive in nature.
2. Response has been directed almost exclusively toward non-terrorist related stressors.
3. The response methodology has been derived solely from the concept of consequence management.
4. The department has functioned in a manner that is largely independent of other city, state and federal agencies.

Each of these characteristics may be closely examined in order to identify deficiencies and shortfalls related to preparedness for terrorism.

[4] Joseph Pfeifer, "Understanding How Organizational Bias Influenced First Responders at the World Trade Center," Chapter 15 in *Psychology of Terrorism*, ed. Bruce Bongar et al. (New York: Oxford University Press, 2007), 210.

1. Reactive Nature of Response

Despite established protocols and procedures that pre-determine certain relatively simplistic variables (such as the location in a building at which a firefighter operates and the tools that he carries), firefighting operations by the FDNY at the scene of an emergency are not based upon a significant degree of organizational preparedness and are highly reactive in nature. Many decisions are made in response to objectives and threats perceived on-scene, after arrival. These factors vary widely from incident to incident. As pointed out by Gary Klein in *Sources of Power: How People Make Decisions*, firefighting possesses ill-defined goals and does not lend itself to analog based decision making.[5] The largely reactive nature of response is evident in a modality predicated upon the sudden receipt of a limited amount of information specific to an emergency followed by a rapid response. "Known" information that is specific to an incident and obtainable prior to arrival at the incident scene is automatically provided to the officer upon receipt of an alarm in a written form known as a "response ticket." This ticket, typically smaller than a sheet of memo-pad paper, contains details such as the location of the incident and a limited amount of information descriptive of the emergency as reported by the "caller" (or, in the event of an automatic alarm, the type of alarm transmitted). A typical response ticket is shown below:

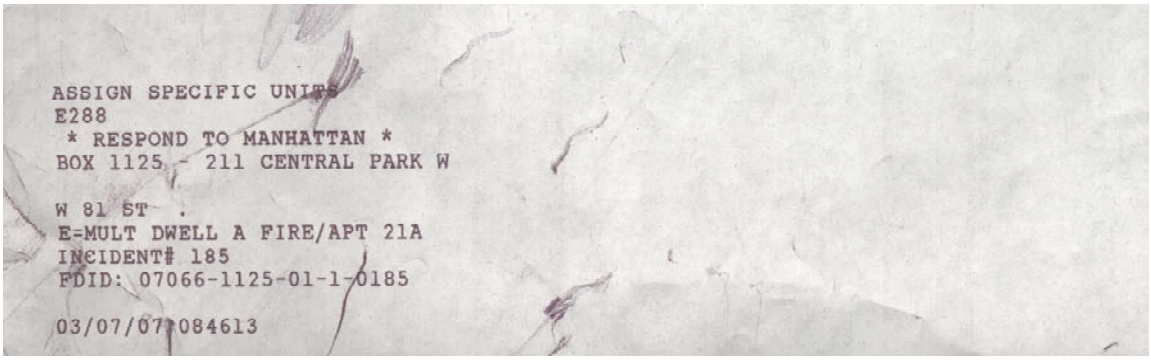

Figure 2. Typical Response Ticket, FDNY

As can be seen in the response ticket, the time, location, and the general reason for the alarm are presented in a simple and reasonably clear manner. Engine 288 (a

[5] Gary Klein, *Sources of Power: How People Make Decisions* (Cambridge, MA.: MIT Press, 1999), 12, 128.

Squad company) is to respond at 8:46 AM to a fire in Manhattan. The fire is located in the "A" apartment on the 21st floor of a multiple dwelling located at 81 Street and Central Park West.

Response tickets are variable. At times the information contained within the ticket is lengthy and complicated due to an abundance of data-based "known" information regarding that location. With an average response time of 4 minutes 31 seconds from receipt of the alarm to arrival at the scene, the officer in charge of a fire company on a typical response has a small window of time in which to review, assimilate, and share this information with his crew members.[6] At other times the information is sparse and potentially incomplete, with important information never having been "learned" by the department. In each instance – an over-abundance or dearth of information – the response is often inadequately supported.

Given the limitations associated with the existing methodology of information transfer most decisions concerning the management of an emergency are made on-site, dependent upon observable circumstances, under intense time pressure, and absent of a significant amount of supportive planning and incident-specific information. This is not to suggest an absence of policy and procedures or systemic support. Two primary mechanisms exist within the organization that serve to assist the on-scene decision making process:

- Volumes of information have been published that are related to the management of incidents and the tactics to be employed by individual members and companies. These are embodied within documents known as FDNY Firefighting Tactics and Procedures.[7] These procedures, although widely understood and consistently applied by fire department officers and firefighters at emergency scenes, are relatively general in nature. They effectively serve as guidelines for incidents that fall within any of several categories, such as fires in tenements, fires in high rise buildings, or hazardous material releases. Specific types of terrorist related incidents are not among these categories. Furthermore the information within these procedures, while general in nature and adaptable within limits at the firefighting "company" level, is simultaneously relatively fixed with little capacity for adaptation at the organizational

[6] FDNY, "New York City Fire Department Statistics, 01-01-06 to 12-31-06," available at http://home2.nyc.gov/html/fdny/pdf/stats/fire_cwsum_cy06.pdf, last accessed on February 4, 2007.

[7] FDNY Publications Office, *Firefighting Tactics and Procedures* (Brooklyn, N.Y.: variable dates).

level. For example, a company level officer at a fire can change the typical assignment of a firefighter and understand the implications of this change; however, altering the duties of the entire first alarm assignment will introduce unmanageable levels of unpredictability and uncertainty at a fire scene. Another typical example of relative rigidity in protocols is the consistent requirement for the establishment of a command post in the lobby of a building, whether or not the emergency has terrorist overtones. A fixated lobby command post may be suitable for a fire yet catastrophic for a terrorist event as evidenced on 9-11.

- Occupancy-specific information related to a response is sometimes available within an information management system known as the "Computer Information Dispatch System" (CIDS).8 This system uses the response ticket as an "enhanced" information delivery mechanism for specific locations. CIDS systemically delivers some particularly important building and occupancy characteristics of a given occupancy. This information is automatically triggered at the point of dispatch by the actual address of the emergency, and is provided to the responding officer by way of inclusion on the printed response ticket that arrives in the firehouse prior to response (illustrated in Figure 2 above). The CIDS system and its limitations are more fully explored in a later chapter.

2. Non-terrorist Causation

Department response is historically derived from the predication that all incidents are accidental in nature. This mindset has, to a large extent, become ingrained within FDNY responders and is reinforced by the overwhelming percentage of responses that result from accidental causation. Consequently, a pattern of conditioned behavior has developed over time. The response to the Twin Towers on 9-11 may be seen as an extreme, but appropriate, example of the problems associated with this routinized mindset. Despite early recognition of the event as terrorist-derived, incident command and control personnel were unable to significantly alter response protocol and proceeded largely as if the event were accidental in nature. Such a methodology ignores the fundamental nature of terrorist attacks as being "designed to kill" and, on 9-11, underestimated the potential contribution of the physical structures themselves to the terrorist intent. It may be seen that the culture within the FDNY, including expectations, training and protocols, have evolved to support and encourage this reactive response

[8] CIDS is intended to provide a mechanism whereby company officers who observe items of concern in an occupancy, i.e., hazardous materials in a building, or unusual and dangerous construction characteristics, can record such information in a manner that allows it to be automatically dispatched to future responders when an alarm is transmitted for that particular address.

methodology *regardless of the nature* of the emergency incident. A large number of diverse firefighting protocols exist within the *Firefighting Procedures*. Their characteristics are dependant upon such reasonably predictable variables as the nature of construction of a building, its age, the location and extent of fire, and the type of occupancy involved. Within this context no provision exists for differentially addressing intentionally derived versus accidental causation. This "one size fits all" response modality was proven inadequate on 9-11.

3. Consequence Management

Traditionally, the motivation that supports response has been entirely based in consequence management as opposed to such concepts as prevention, information and intelligence sharing, and collaboration with other concerned parties. Prior to 9-11, this tactical and reactive nature of response methodology had served the department well. Fires were extinguished efficiently and lives were routinely saved in a highly professional manner by firefighters who were ignorant of parameters outside of normal firefighting concerns. And although the awareness level of individual firefighters regarding terrorism has changed in natural and personal response to the horrors of 9-11, it will be seen that relatively little has been done to holistically and systemically improve the capability of the department to contribute to the prevention of a terrorist attack or to reduce the impact of such an attack. It will also become evident that there is a notable absence of recognizable counter-terrorism improvements that involve the "rank and file" of the department. For instance, the results of a survey conducted within the FDNY in late 2006 indicate that only 15% of respondents reported being aware of an entity within the department that is specifically designated to obtain terrorist related information and distribute it for response support purposes (refer to Figure 9, and Chapter V for survey details).

4. Autonomy

Lastly, and importantly, the FDNY has become conditioned to operate autonomously. The vast majority of fire and emergency incidents to which the department responds are handled exclusively by fire department personnel as a result of

the nature of those incidents. It is a simple fact that there is no need for a significant level of collaboration between the FDNY and other entities at the vast number of routine fires and medical emergencies which do not rise to the level of a "unified command." Subsequently, the pre-9/11 world of emergency response existed in an environment without true collaboration and cooperation–largely because this was not perceived as a fundamental need. Indeed, controlling doctrine specifically delineated the types of incidents for which individual first response agencies were responsible, and efforts were made at the mayoral level to address field-level problems that reflected a historic absence of cooperation.[9] The experience of 9-11 resulted in the recognition of the need for more drastic changes. A recommended "starting point" for improvement, verbalized during 9-11 related testimony by the (then) Commissioner of the New York City Office of Emergency Management, was identified as follows:

> Historically, firefighters fought fires, police officers fought crime and EMS workers treated the injured. Now, all emergency service personnel must work together to fight terrorism.[10]

The publication of the New York Citywide Incident Management System (CIMS) in May 2005, a unique derivative from, and proxy for, the federally mandated National Incident Management System (NIMS), was intended to address these needs by providing a framework for unified command and information sharing at emergency incidents in New York City. There are limitations in the efficacy of this protocol, however. First, it is intended solely to facilitate *response* activity, and contributes little toward identification, prevention, mitigation and deterrence of an event through information management. Secondly, successful implementation of CIMS remains questionable. The continued adherence by the fire department to autonomous standard operating methodology during non-terrorist responses (the vast majority of response activity) fosters independence within each agency. Furthermore, the absence of recent bona-fide

[9] "Direction and Control of Emergencies in the City of New York," signed July 2001 by Mayor Giuliani, is a mayoral directive that stipulated separate incident command responsibilities for the NYPD and the FDNY based upon incident type.

[10] Testimony of the Former Commissioner of the New York City Office of Emergency Management Richard J. Sheirer, Opening Remarks Before the National Commission on Terrorist Attacks Upon the United States, May 18, 2004, 10, available at http://www.9-11commission.gov/hearings/hearing11/sheirer_statement.pdf, last accessed on January 5, 2007.

terrorist attacks in New York City results in a largely untested cooperative terrorism response mechanism. Recent examples of autonomy in response to accidental incidents, and occasionally conflict at incident scenes, attest to the fact that the level of collaboration and cooperation has not significantly improved. These include land-based and water-based emergencies.[11] Lastly, inter-agency drills intended to reinforce and substantiate a high level of cooperation between response agencies have in reality proven that significant problems exist. For example, a recent emergency response drill was characterized by problems with inter-agency coordination. Simulated chemical release "victims" awaiting rescue for over one hour as a result of the inability of different agencies to identify and communicate the nature and severity of the hazards. Agencies responded to the drill in a manner that was not consistent with the manner that they would normally respond. Additionally, agencies placed vehicles in a manner that prohibited other agencies from efficiently entering the incident scene.[12]

B. SUMMARY

This chapter has formed a foundation for deeper analysis by describing the manner in which the FDNY has conducted business over the course of its lengthy existence. The department remains first and foremost a response agency. It has historically responded on its own to incidents that are accidental in nature. The resultant protocols developed by the FDNY are not designed for prevention nor are they specifically amenable to terrorist events. The consequences of 9-11 strongly support this contention and have provided motivation to change; however, changes have been restricted to response capabilities and remain unproven in effectiveness. The reasons that underlie the inability or unwillingness to change in a more effective manner warrant further exploration.

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[11] Robert McFadden, "Officer Imperiled Rescuer's Life, Fire Union Says," *New York Times*, July 11, 2003, B1; Michael Brick, "Crime Scene or Rescue? Man in Chimney Causes a Clash," *New York Times*, June 28, 2003, B1; and Martin Schwartz, "Ending the Battle of the Badges," *New York Times*, August 30, 2003, A15.

[12] Sewell Chan, "Flaws in March Emergency Drill are Disclosed," New York Times, 26 May 2006, Section B, Column 1, 7.

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III. EXPECTATIONS REGARDING THE FDNY

We have seen how the FDNY has responded in the face of traditional threats. How is it supposed to react in light of the terrorist threat that forced its way into the national consciousness on 9-11? The direction of effort on the part of an individual or public agency is governed by the expectations that exist regarding their respective roles. These expectations often exist at more than one level. What expectations exist for the fire community and the FDNY? An objective analysis of the current state of readiness of the FDNY and, by extension, the entire national fire community requires that the expectations that apply to the fire service be fully understood. In this pursuit four doctrines warrant evaluation. The first of these are the collective federal government directives and guidelines that are intended to underpin the readiness of the nation. These provide general direction to the entire national counter- terrorism community, including the expectations held for the fire service. The second component worthy of analysis is the policy of the governance of New York City that dictates the focus of effort for the FDNY, specifically. Thirdly, it is important to investigate what the national fire community expects of itself as indicated by a self-assessment survey. Lastly, the expectations that the FDNY holds for itself are important in understanding the extent of change necessary to implement true preparedness.

A. THE FEDERAL GOVERNMENT: WHAT DOES IT EXPECT FROM THE NATION'S FIREFIGHTERS?

The Department of Homeland Security (DHS) has been tasked by the President with developing strategies aimed at improving the security of the nation. How are firefighters considered within this context? A review of the *National Strategy for Homeland Security* reveals that the primary strategic objective of homeland security is the prevention of terrorist attacks, and the secondary strategic objective is the reduction of the nation's vulnerability.[13] Within this same document the nearly 3 million state and

[13] Office of Homeland Security, *National Strategy for Homeland Security* (Washington, D.C.: Government Printing Office, 2002), vii.

local responders of all types are considered to be vital in the response to, and aftermath of, a terrorist attack.[14] The document indicates that a primary concern regarding these assets is their mobilization "without warning," and that it is important to improve local responder *tactical* counter-terrorism capabilities.[15] A divergence exists within the document, however. The law enforcement community, while included within the various references to tactical response capabilities, is specifically directed at many locations within the document to assign priority to preventing and interdicting terrorist activity. It is also repeatedly tasked with developing information sharing capabilities and is tied to the intelligence community in this regard. No mention is made of comparable roles for the fire community. Rather, outside of directives related to response activity the fire service is included within the all-inclusive term "government agencies" regarding counter-terrorism, intelligence sharing, and preparedness generally. It is clear that the fire community is viewed within the *National Strategy* as almost exclusively a response capability, and that expectations regarding such pre-incident concerns as prevention, deterrence, and mitigation are the same as those applicable to sanitation, parks departments, public works and even private citizens. For instance, the *Strategy* identifies the need to "integrate information sharing across state and local governments, private industry, and citizens."[16] This directive lacks specificity or direct applicability to fire departments and is therefore inconsiderate of both the inordinate risk and the unique nexus of fire responders to terrorism. The national strategy is therefore notable for the absence of a clear and designated role for the fire community in the preparation for, or mitigation of, terrorist attacks, other than activities aimed at consequence management including interagency planning and exercises aimed at response and recovery.

DHS provides further recommendations regarding the integration of various resources through its *Fusion Center Guidelines*.[17] These guidelines and the philosophy that drives them, developed in cooperation with the U.S. Department of Justice (DOJ), have been broken down into three separate phases–law enforcement, public safety, and

[14] OHS, *National Strategy for Homeland Security*, 41.

[15] Ibid., 43.

[16] Ibid., 57.

[17] U. S. Department of Justice and U.S. Department of Homeland Security, *Fusion Center Guidelines: Law Enforcement Intelligence Component* (Washington, D.C.: GPO, July 25, 2005).

the private sector. To date only the "law enforcement" guidelines have been published; presumably the fire community will be incorporated within a similarly derived "public safety" document when it becomes available. The currently published information, though law enforcement-centric, encourages an emphasis toward a culture of sharing vis-à-vis the "fusion center" concept.[18] The recommendations contained within are conceptual and strategic in nature and serve to reinforce the need for public and private entities to share and collaborate. The document also stipulates nine guidelines that will assist the development of a workable fusion center and recommends that currently existing criminal intelligence sharing plans be used as a model for fusion. It therefore provides general direction for the law enforcement community to collaborate with others. These recommendations are not packaged in a manner that is directly applicable to the fire community. Within limits they may be "borrowed" by the fire service as it approaches fusion as a counter-terrorism strategy. Shortfalls in this adaptation process, however, include the fact that the *Guidelines* are not specific to overcoming a significant barrier that is unique to the fire community: that is, a traditional mindset that is oriented toward *response* to the exclusion of other considerations. The *Guidelines* are also not useful in the implementation of specific efforts to revise policies and procedures that have evolved from this traditional mindset.

Federal recommendations are also provided within the DHS' *Office of Domestic Preparedness (ODP) Guidelines for Homeland Security: Prevention and Deterrence.*[19] This document, circa June 2003, identifies five functional categories where improvements may be made as jurisdictions embark upon the development of prevention-related plans. A consistent theme throughout these *Guidelines* is collaboration between virtually everyone involved in domestic preparedness, including the general public. Within the categories that are identified may be found several guidelines that are inclusive of the fire service. Again, as observed in the *National Strategy*, these guidelines are well intentioned and useful within limits. However, they do not form a

[18] A fusion center is defined on page 3 within the *Guidelines* as "an effective and efficient mechanism to exchange information and intelligence, maximize resources, streamline operations, and improve the ability to fight crime and terrorism by merging data from a variety of sources."

[19] U.S. Department of Homeland Security, *Office of Domestic Preparedness Guidelines for Homeland Security, Prevention and Deterrence* (Washington, D.C.: GPO, June 2003). As of January 2006, ODP is known as the Office of Grants and Training (G&T).

basis for the realization of the unique systemic potential contribution of the fire service to national preparedness. References to the fire service in the document are non-specific and "communal." They equate the fire service to entities that, if considered to be stakeholders in terrorism, represent distant stakeholders. For instance, the *Guidelines* refer to firefighters as "non-enforcement government personnel," "second and third responder agencies," and "others (e.g., fire, EMS, PW, HC, social services, etc…)."[20] Recommendations delivered in such a communal manner are naturally restricted by the capabilities of the least motivated, and least influential, communal participant. The *Guidelines* therefore fall short in the identification of the fire service as an exceptional contributor to homeland security. It does not acknowledge the proximity of firefighting to terrorism, a concept that is expanded upon later in this thesis. It also ignores the inordinate interest of individual firefighters in preventative measures, an interest that naturally derives from risk. Included among the recommendations in the *Guidelines* are the following: the suggestion that first responders be trained to recognize suspicious activity and behaviors that might forewarn of a pending terrorism conspiracy or plot, that the intelligence cycle be designed to ensure that all appropriate agencies and organizations at all tiers receive information on a need-to-know basis, and that training for all agencies and the public emphasizes collaboration.[21] These guidelines are helpful but limited by their lack of specificity. Their general nature reduces their efficacy. Additionally, the recommendations also focus on singular disassociated aspects of prevention, and exhibit a reluctance to challenge the barriers inherent in the culture of firefighting.

The *National Response Plan* is another significant post 9/11 document that concerns the activities of the national fire community, among many others. It is designed to establish a comprehensive, national, all-hazards approach to domestic incident management across a spectrum of activities including prevention, preparedness, response, and recovery.[22] It is directed toward operational coordination concerning incident

[20] DHS, *Office of Domestic Preparedness Guidelines for Homeland Security, Prevention and Deterrence*, 17, 9, 20.

[21] Ibid., 20, 12, 10.

[22] U.S. Department of Homeland Security, *National Response Plan* (Washington, D.C.: GPO, December 2004), 2.

management; however, it applies to "an evolving incident or potential incident rather than steady-state preparedness or readiness activities."[23] The document is therefore response-centric. It is inconsiderate of information management or sharing concerns that exist outside of, and in preparation for, a response, particularly those that seek to provide a broad-based foundation of improvement in prevention capabilities.

B. NEW YORK CITY: WHAT DOES IT ASK OF THE FDNY?

The local requirements specific to the FDNY and its role at terrorist incidents are encompassed within the CIMS. This is a response-specific directive that is decidedly unconcerned with preparedness as a concept in homeland security. CIMS provides information to assist in the establishment of a command structure and assigns specific responsibilities to the various agencies at the scene of an incident, based upon the core competencies of each agency. No specific identifiable mandate or recommendation for prevention, preparation, mitigation or information sharing exists within the document. Similarly, a very small percentage of training within the department is devoted to such topics as the recognition and identification of terrorist indicators and how to behave at a potential terrorist incident.[24] No training is provided for the systematized reporting of such indicators.

C. THE FIRE SERVICE: WHAT DOES IT ASK OF ITSELF?

The FDNY is in many ways a microcosm of the entire fire community. It is therefore important to understand how this larger community looks at itself. A recent self-assessment survey conducted by the NFPA (National Fire Protection Association) indicates by its very questions the manner in which the fire service evaluates its own

[23] U.S. Department of Homeland Security, *National Response Plan* (Washington, D.C.: GPO, December 2004), 4.

[24] A singular 8-hour "Weapons of Mass Destruction" class is provided to all FDNY responders, as delivered through the International Association of Firefighters Haz-Mat/WMD Training Department.

operational potential.[25] This survey is designed to elicit important information from firefighters that supports the future needs of the fire service. The construct of the survey is revealing. It is specific only to such concerns as training for technical "hands-on" rescue and haz-mat response; apparatus shortfalls; physical fitness programs; fire prevention and code enforcement; and communications capabilities. Only one section of the report is tangentially related to terrorism awareness, entitled "The Ability to Handle Unusually Challenging Incidents."[26] Even within this section of the survey report, however, the emphasis of the questions and subsequent results are pointedly tactical and responsive in nature, and do not possess a relationship to preparation or prevention.

D. WHAT DOES THE FDNY ASK OF THE FDNY?

The intentions of the FDNY are most fully elaborated upon within the *2007-2008 FDNY Strategic Plan*, the second such document in the history of the department. Within this plan is found further evidence that anticipated needs and future directions are rooted firmly in response to the exclusion of comprehensive terrorism preparedness. [27] On the surface this may be construed as reasonable. As stated previously, the overwhelming majority of fire department activity is unrelated to terrorism and may therefore be improved through extensions of time-proven traditional methodologies. The document describes plans for mechanisms to support response to all emergencies through improvements in communications, command capabilities, and training. It places a heavy emphasis on technological solutions to current problems. It does not, however, address terrorism preparedness as a key objective, nor does it identify terrorism as a concern that may require special attention prior to response. Improvements in FDNY capabilities for terrorism response will undoubtedly occur if the 5 key objectives enumerated within the document are implemented (these are as follows: improved emergency response; enhanced health and safety; strengthened management; increased diversity; and improved fire prevention). However, these improvements will be incidental to other objectives and

[25] U.S. Fire Administration and the National Fire Protection Association, *Four Years Later – A Second Needs Assessment of the U.S. Fire Service* (Washington, D.C.: GPO, October 2006).

[26] U.S. Fire Administration and the National Fire Protection Association, *Four Years Later*, 99-128.

[27] FDNY, *FDNY 2007-2008 Strategic Plan*.

will be less than what *could* be realized if terrorism was explicitly targeted as a key objective. The risk faced by firefighters warrants a concerted effort toward the **prevention** of the terrorist act, rather than simply defaulting to response because "that's the way we always did it." The document also fails to identify needs that exist at the individual firefighter level, such as the ability to better prepare for terrorism through increased awareness, improved recognition and identification skills, and methodologies to communicate information through the chain of command. In similar fashion the *Strategic Plan* fails to identify information-based prevention policies that incorporate the vast army of firefighters distributed throughout the city. The proposed organizationally derived technological and training based solutions are beneficial, but they fail to leverage the collective strength of the army of individuals who comprise the FDNY.

A promising addition to the *Strategic Plan* is the initiative that states "operational personnel will work with Fire Prevention to incorporate fire prevention databases into a risk assessment-based system" that supports response.[28] This indicates at least a measure of pre-planning, and the incorporation of operational personnel into a systematized preparedness effort.

In tandem with the *Strategic Plan*, an analysis of FDNY policies and procedures provides insight into the manner in which the department intends to function. Simply stated, the various documents that firefighters use to determine their day-to-day activities are overwhelmingly concerned with the simple mechanics of response.

E. SUMMARY

An analysis of expectations regarding the FDNY and the entire fire community indicates that a consequence management function will be satisfactory to those within that community, and to New York City itself. The federal government, on the other hand, recognizes the utility of the fire service (and virtually everyone else) as a partner in general preparedness but fails to fully comprehend the potential contribution that derives from the unique motivation and capabilities of firefighters. Despite the post-9/11 emphasis on increased readiness and information sharing across all levels of the

[28] FDNY, *FDNY 2007-2008 Strategic Plan*, 12.

government (a concept reinforced by DHS publications and the burgeoning fusion center concept), no specific and dedicated recommendation exists at the federal level for a significant involvement by the fire community in the roles of prevention or deterrence of a terrorist event. Hence there is little formal incentive at the local fire department level to manage terror related information or intelligence aimed at anything outside of response. Similarly, New York City has not formally isolated a function outside of response for the 11,163 firefighters that serve its citizens. The FDNY itself appears to be concerned with emergency response, medical response and diversity of the workforce to the exclusion of terrorism as a singular need. Analysis therefore indicates that the Department is only partially prepared for terrorist activity based upon conditioned behavior and expectations. What types of improvements might optimally enhance preparedness at the individual and organizational levels? According to FDNY needs as expressed by Chief Joseph Pfiefer, a new and expanded system of information management is worthy of investigation. Such a system is logically predicated upon a broader system of holistic information management in the FDNY.

IV. METHODOLOGY

It is apparent that the expectations and capabilities of the FDNY remain response-centric. This is justifiable for the vast majority of activity that the department engages in. It does not, however, excuse the department from having a capability to deal with terrorism in ways that optimize effectiveness. "Business as usual" will not reduce the potential for another 9-11. The need for the fire service as a whole to contribute in a more effective manner has not been extensively studied on a local or national scale. Considering this backdrop the existence of ways in which the FDNY and the fire community can further contribute is incomplete, including mechanisms to better manage information. In the search for optimal effectiveness a multi-tiered and broad-based process is in order. The first tier is fundamental and unprecedented: a survey of FDNY responders that is intended to provide insight into the level of information support as perceived by those with their "feet on the ground," and by those who supervise them. The rationale for obtaining survey results is an understanding that those who use information at the most basic level may be best equipped to identify critical needs. The perceptions gained via this survey will be used to substantiate or amplify related issues throughout the thesis. The second tier will involve the determination of a working definition of information and the identification of different types of information as they pertain to the fire service. Once defined, the influence of these concepts on the traditional FDNY response modality will be explored. In this manner shortfalls and gaps in the traditional utilization of information may be identified. Tier 3 will involve the identification of ways in which the FDNY has expanded its traditional capabilities for managing information in response to the events of 9-11, and again the goal will be the isolation of shortfalls or continuing needs. Once the limitations of both the "traditional" (pre-9/11) and "new" (post 9/11) FDNY have been identified, Tier 4 will be an illustration of the importance of information in terrorism response through an analysis of the circumstances surrounding the events that involved the Twin Towers on 9-11. Tier 5 will involve an analysis of less dramatic but equally informative case studies illustrating successes and failures of the fire service in countering terrorism through information, intended to extract lessons of value. Tier 6 will involve a comparative analysis of a

unique alternate system of sharing information, that employed by the State of Arizona, to ascertain if the Arizona system of managing information provides lessons for the City of New York. Tier 7 is an analysis of the methodology adopted by the New York City Police Department (NYPD), a leader in the management of terrorism-related information, for sharing terrorism related information within its ranks. Tier 8 will investigate the experience of the entire law enforcement community in addressing similar information, and information sharing, concerns. Lastly, Tier 9 is the expansion of the concept of information to include a multi-faceted dimension that is new to the fire service, that known as *intelligence*. In addition to the operational elements analyzed in tier fashion, the psychological implications of the perceived levels of information support are investigated as an independent concern, followed by a review of pertinent literature on the subject of information management. Finally and importantly, concepts designed to support solutions are proposed for the FDNY based upon the needs identified in each of the earlier chapters.

V. TIER 1: SURVEY OF FDNY RESPONSE AND MANAGEMENT PERSONNEL

From November 2006 to February 2007 a comprehensive survey was conducted among active (presently employed) uniformed personnel within the FDNY. The survey was developed specifically to provide informational support to this thesis. The rationale for this survey is the presumption that respondents are likely to be the best source of information regarding challenges which they face regularly. Those closest to the threat may provide the keenest insight into departmental needs, and may provide information that supports, or refutes, the basis of existing FDNY policies. The development of the survey questions involved a peer review process wherein 6 individuals of various ranks reviewed the survey during the stages of development and provided input and recommendations. The finalized survey was distributed to potential respondents via an internet-based survey website ("Zoomerang.com") through the use of e-mail addresses. These addresses were obtained by way of a number of methodologies: repeated visits to numerous widely disbursed firehouses in the solicitation of on-duty members; visits to FDNY fire academy classes attended by a geographical and hierarchal cross section of FDNY responders; and visits to administrative facilities where supervisory uniformed personnel were requested to participate. In each case no preliminary direction was provided to potential respondents regarding the content or the intent of the survey. Participation was voluntary and responses were maintained strictly confidential. The distribution of the survey was accomplished through standard e-mail delivery mechanisms. Collection was controlled such that submission from each respondent (i.e., from each e-mail address) was limited to a single completed survey. The majority of e-mail addresses were personal (non-business) addresses, permitting most respondents to complete the survey at home. Those targeted for participation included all ranks: Firefighter, Lieutenant, Captain, Battalion Chief (both operations (field) level and administrative), Deputy Chief (operations (field) level and administrative), and Staff level Chiefs. Verbal feedback indicated that the survey required an average of approximately 10 minutes to complete. Based upon the mechanics of the distribution and receipt process, only one completed survey submission was possible per e-mail address, and only

one e-mail address was accepted per individual. A copy of the entire survey and a graphical representation of results are included as an Appendix. In total, 931 individual surveys were distributed to FDNY personnel. Of these, 597 were "visited" (opened and viewed) by potential respondents. Of this number, 533 were completed and submitted. 3 respondents were determined to be inadmissible due to information that indicated that these respondents opened the survey and did not complete any portion. Additionally, one respondent was the author and therefore inadmissible. The sum total of FDNY respondents was 529 (it is noted that a relatively small number of surveys (27) were additionally distributed to Phoenix firefighters for comparison purposes. Of these, 9 completed surveys were received. These results were not included in the various analyses described in this thesis). It is further noted that consistent verbal feedback from potential survey-takers indicated technical impediments such as spam filtering prevented a significant number of potential respondents from being capable of "visiting" and completing the survey. Despite this impediment, an overall return rate of 64.1% was achieved from among FDNY personnel.

The specific purpose of the survey was multi-faceted. Several questions were directed at the characteristics of the respondents; i.e., rank, number of years on the department, time in current position, number of individuals supervised, number of terrorist-based responses actually accomplished, and level of training relative to Haz-mat/WMD (weapons of mass destruction) subject matter. These questions are numbered 1 through 7 in the actual survey (refer to the Appendix). The data obtained by these questions permitted a number of comparative and situational analyses, some of which have been conducted and which are described throughout this thesis in order to validate comments or reinforce specific conclusions. It is noted that further exploitation of the data obtained by way of this survey is possible and it is recognized that the survey may thereby support additional or continuing research by others.

It is observed that the level of support from the FDNY for terrorism-based activity as perceived by respondents would likely have both operational and psychological ramifications among the workforce. Several questions were therefore developed with the intent of determining the perceived level of support for *terrorism*-based response versus *fire*-based response. Responses specific to *fire*-based response (a relatively familiar and

therefore quantifiable parameter) are intended to serve as a "baseline" against which the perceived level of support for *terrorism*-based support could be measured. These questions are numbered 10, 11, and 22 within the survey. The informational parameters measured in this manner include the perceived *quality* of information (using indicators such as *accuracy, timeliness, comprehensiveness, relevance, and usefulness)* (questions 10 and 11), and the *value* of information (question 22). The findings regarding the quality of information are graphically displayed in Figure 7. In summary, the findings indicate that the support recognized for *fire*-based response is of significantly higher quality than that recognized for *terrorism*-based response. On average across all indicators, only 4% of respondents reported that the quality of *fire* based response was "not good at all" (question 11). Contrarily, on average 44.2% perceived *terrorism* information as "not good at all" (question 10). Furthermore, 74% of respondents directly indicated that they believed the department provided information of lesser value regarding *terrorism* versus *fire*. Only 15% felt FDNY *terrorism* information was of higher value than FDNY supplied *fire* based information (question 22).

The *value* of specific sources of information for firefighting personnel was investigated through question 20. The metric provided to respondents regarding the varying sources was "value as it contributes to a level of awareness for responding safety and efficiency to potential terrorist events." The perceived value of sources of information from entities *outside* of the department (including televised news programs, documentaries, and newspaper and magazine articles) were compared to each other, and, more informingly, to that provided by *internal* sources of information (published department policies and procedures, fire academy classroom sessions, and firehouse drills). Results indicate that the most commonly selected source of information for providing the "most value" to respondents was "televised news" (33% selected this choice), followed by fire department classroom sessions (20%), drills held in firehouse quarters (20%), televised documentaries (10%), published department policies and procedures (9%) and, least importantly, newspaper and magazine articles (7%). Reference is made to Figure 6 of this thesis. A deeper analysis of the available data across the wide range of all responses (versus analyzing only those choices selected as "most valuable" and "least valuable") was also conducted. The weighted average of

ratings across all selections on a scale of 1 (most valuable) through 6 (least valuable) regarding the value of sources of information was as follows: most valuable = televised news (3.2) followed by published departmental policies and procedures (3.3), fire department classroom sessions (3.58), televised documentaries (3.73), drills held in firehouse quarters (4.20) and lastly, newspaper and magazine articles (4.35). In this manner the reported value of "published department policies and procedures" is observed to increase significantly when viewed across all responses; however, this source still remains less valuable to firefighters than televised news programs. These televised programs tend to be concise and easy to assimilate. This seems to suggest that an element of convenience and timeliness will enhance the attractiveness of information sharing methodologies to FDNY firefighters.

The perceived relative *importance* of various categories of information was determined by way of question 8. These categories of information included those most often related to *fire*-based response (building construction characteristics, age of structure, occupancy, security measures that may be present, and the number and location of potential victims) and those most commonly associated with *terrorism*-based response (immediate threats to an occupancy, history of threats to an occupancy, history of a group that may intentionally cause danger, danger of harm from intentionally released agents, and the likelihood of a release at a specific site). Using a ranking scale of "very important," "somewhat important," and "not important," the relative importance of these two informational predicates – *fire* and *terrorism* - may thereby be determined. Additionally, question 9 asked respondents to indicate how well the department supports their needs relative to each of these categories of information, using a scale of being kept "very well informed," "somewhat well informed," and "not well informed at all." A number of tendencies may be extracted from the data obtained from these questions. First, as derived solely from question 8, these two categories of information are perceived as of relatively equal importance (the average of *fire*-related characteristics cited as "very important," "somewhat important," and "not important at all" was 75.8%, 21.6%, and 2.4%, respectively. The average for *terrorism*-related characteristics was 72.8%, 22.4%, and 4.8%, respectively). Given this, question 9 indicated that the perception of how well the department keeps personnel informed regarding each category varied significantly.

Ratings of support for *fire*-based categories as "very well informed," "somewhat well informed," and "not well informed at all" were 14.4%, 50.6%, and 35.0%, respectively. *Terrorism*-based categories received parallel ratings of 4.4%, 29.4%, and 66.2%. Reference is made to Figure 8 of this thesis. It is clear that a very strong perception exists that there is lesser departmental support for terrorism based stressors than for fire based stressors.

The perceived capability of the FDNY to organizationally obtain information from "outside" entities (such as the FBI and the NYPD) and to distribute it to the workforce was investigated by way of questions 12, 15, and 24. Note that the ability to receive information (question 12) was considered as a separate concern than the ability to internally distribute it (question 15). The perceived *improvement* of information sharing within the department since 9-11-01 was investigated by polling only those active members who were active in the FDNY at that time (question 24). Again, results obtained by these questions provide insight and support to a variety of findings within this document. Significantly, 90% of respondents indicated that they are either unaware of, or unsure of, a mechanism for the receipt of terrorism related information from entities outside of the FDNY such as the NYPD and FBI (question 12). Similarly, 84.9% of respondents indicated that no entity within the FDNY is responsible for the receipt and distribution of such information to the workforce, or that they didn't know of such an entity (question 15). Clearly either an entity should be established, or any existing entity should better make known its existence (in fact, an entity does exist – see Chapter VII). In support of this determination, response to question 24 indicates that of those with the most experience on the department (those employed by the department prior to 9-11), 43% feel that since 9-11, no improvement has been made in their ability to receive information important for safety and efficiency in response. 15% of the remaining respondents indicated that they were not sure of any improvement. 43 % indicated that improvement has occurred.

The value of existing mechanisms of information sharing within the department is investigated in questions 14, 16, 17, 18, 19, and 25. These questions specifically explore the extent to which the department encourages the observation and reporting of terrorism indicators (question 14), the extent of voluntary participation by responders regarding

information gathering and reporting (questions 16 and 17), the degree of specialized capabilities that reside within the FDNY workforce and the level of information and awareness on the part of the department regarding these capabilities (questions 18 and 19), and the degree to which improved information regarding the construction characteristics of target hazard locations has been supported since 9-11-01 (question 25). Positively, 72% of respondents indicated that the department has encouraged them to observe, identify or report indications of terrorist activity (question 14). This is believed to be the result of laminated "terrorism awareness" cards distributed by the FDNY Center for Disaster and Terrorism Preparedness (CTDP-described fully in Chapter VII). This card provides simple information regarding potential terrorism indicators and a phone number to which reports may be made. It may be inferred from these results that effective solutions to specific needs need not be complicated or involved. Also positively, in question 16, 88% of respondents indicate that they have contributed to the sole source of information sharing that directly supports response activity, the Computer Information Dispatch System (CIDS), described more fully in Chapter VI. This indicates a willingness and a capability on the part of responders to proactively engage in prevention and mitigation activity. It also indicates the potential success of any systematic mechanism for information sharing within the Department. However, the results of question 17 indicate that CIDS is not perceived as effective in the support of terrorism based response (63 % of respondents cited it as inadequate for this activity, and 16% were "not sure"). Very importantly, in response to question 18, 30% of respondents indicated that they possess specialized skills or capabilities such as a Crane Operators license, a Professional Engineering license, Dive Master certification, tractor trailer license, etc…. Only 12% of these personnel, however, believe that the FDNY is aware of their skills (question 19). The importance of this absence of information is discussed in various chapters within this document. Simple observation, however, leads to a reasonable determination that the reliance of the department upon rank as a sole determinant for positioning may detract from the ability to capitalize on untapped resources within its ranks.

In an attempt to support concepts elucidated within the thesis through a case study specific to the attacks at the World Trade Center, several questions are directed toward

determining the level of awareness on the part of those who responded on that fateful day. These questions concern critical aspects of information including knowledge of the means of egress in the towers (question 26) and the type of construction that comprised the floors (question 27). The presence or absence of this information, and the reasons for the state of knowledge that existed, are explored within the thesis in an attempt to identify shortfalls. In short, it may be inferred from the results of these questions that the vast majority of those who responded on 9-11 were not familiar with the characteristics of the Twin Towers despite their pre-eminence as target hazards (77% reported being unaware of these characteristics, and an average of 10.5% indicated being only vaguely aware).

The remaining questions in the survey are intended to provide a measure of the current general state of knowledge (or, conversely, ignorance) among FDNY responders regarding information and awareness. Knowledge of the concept of *intelligence* as an independent entity is explored though question 13. Interestingly, only 7 out of 530 respondents (2%) were capable of accurately identifying all 5 commonly accepted components of the "intelligence cycle." A further attempt was made to determine the current general level of knowledge by asking respondents to selectively identify federally funded response assets available to support FDNY activities from a group of alternatives (question 21). Of 5 alternatives, only two met the criteria of "a federally funded local emergency response asset that responds nationally." Despite this fact, all five were cited by significant numbers of respondents as meeting this criteria (60% provided one correct response, "USAR"), 57% cited DART (incorrect), 34% IMT (the second correct response), 32% NIMS (incorrect), and 17% CERT (incorrect). It appears that a higher level of general awareness regarding federally funded support mechanisms is in order, indicative of the need for expanded information regarding all support functions.

Lastly and importantly, a "comments" section was included at the end of the survey. It was not a mandatory survey item and was designed to elicit information regarding past experiences and suggestions regarding information sharing within the FDNY. The number of respondents who chose to provide comments was 112. This rate of voluntary submission and the detail contained within many of the comments seems to indicate that information sharing as a subject matter is of heightened concern to a significant percentage of firefighters. Additionally, the comments were generally and

decidedly negative in tone and most were highly critical of the existing department information sharing capabilities. Furthermore, many individuals indicated that the survey served to increase their awareness of both departmental inadequacies and their own personal level of ignorance.

A. SUMMARY

The survey conducted in the development of this thesis is unprecedented and enlightening. It represents an attempt to obtain objective insight into the perceptions of the singular group that resides closest to the consequences of a terrorist event in New York City: the first response firefighter. This is a perspective that is deserving of exploration, and which, due to an absence of research, is observed to have been neglected. Due to a recognizable homogeneity within the operations of the approximately 30,300 fire departments within the United States,[29] the survey results are likely to represent a broader perspective than the FDNY and therefore may serve a utility that extends beyond New York City. As will be seen, the survey question results have been used to provide justification and validation for explorations made in the pursuit of better information management systems. These results are also used to provide support for the conceptual solutions espoused within this document to address critical deficiencies.

[29] United States Fire Administration, "Fire Statistics," available at http://www.usfa.dhs.gov/statistics/departments/, last accessed on March 3, 2007.

VI. TIER 2: THE CONCEPT OF INFORMATION AND WHAT IT HAS MEANT TO FDNY RESPONDERS

This thesis is concerned with information management. Information as a specific entity is difficult to quantify due to the broad scope of its potential applicability and the range of factors that contribute to its development and relevance. Prior to a meaningful investigation of potential needs and the subsequent identification of solutions regarding information management it is necessary that the concept of information be more closely defined and understood in the context of the FDNY first responder.

A. INFORMATION DEFINED

A simplistic definition of information is found in *Random House Webster's College Dictionary*:

> *noun knowledge communicated or received concerning a particular fact or circumstance*[30]

and in the North American Encarta Dictionary:

> *definite knowledge acquired or supplied about something or somebody*[31]

Knowledge is observed as being intimately tied to information. Anything that is known or may become known and which supports or enhances response efforts may represent important "information" for firefighting forces under the correct circumstances. The issue of relevance derived from the above definitions is therefore important. Information that is not relevant is not considered "information." Given the broad nature of this definition in relation to the needs of the fire community it is necessary to specifically identify types of information that may reasonably be expected to provide support for firefighting and terrorist related response. In recognition of the critical mission of the fire department–rapid response and life saving–it is also important that

[30] *Random House Webster's College Dictionary, 2nd Ed.* (New York, N.Y.: Random House, 1997), 670.

[31] North American Encarta Dictionary, associated with Microsoft Word processing program.

information determined to be supportive also be actionable. Within these constraints the sources of relevant "firefighting information" in the FDNY have traditionally been limited to the following categories:

- Information garnered through training, drilling, and operations
- The content of published newspaper and magazine articles and books, and televised programs (passively available to responders during periods of non-response)
- Information provided by way of departmental bulletins
- Information contained within departmental policies and procedures
- Information provided by the caller or transmitter of an alarm
- Information obtained at the scene of a response through rapid interviews with occupants or others familiar with a given occupancy, and observation
- Information that develops within the history of experience within a given firehouse, specific to an area or location, and passed from firefighter to firefighter through "oral tradition"
- Fire-related information specific to an occupancy that is identified, captured and stored prior to a response and that is automatically disseminated to responding forces when an alarm is triggered for that occupancy. The FDNY utilizes a specific automated system for this methodology, known as CIDS, and described in detail in a later chapter

The first four categories listed above are essentially "background" sources of information that each support response in an indirect manner. The remaining four categories represent information that directly influences response activity through the enhancement of situational awareness "on scene." The last category listed above–a system known as CIDS–currently exists as the sole source of pre-determined "captured" information that is provided in an automatic fashion by the FDNY to the FDNY in direct support of response efforts. Traditionally the sources of information cited above have been juxtaposed with focused training and carefully selected equipment with the intent of permitting efficacious response to fire and various emergencies.

B. INFORMATION METHODOLOGY WITHIN THE FDNY

Given the sources of information described above it is possible to analyze the methodology by which the FDNY has traditionally prepared for response to emergencies.

The effectiveness of this methodology may then be determined. Figure 3 has been provided as a visual aid in support of the following analysis.

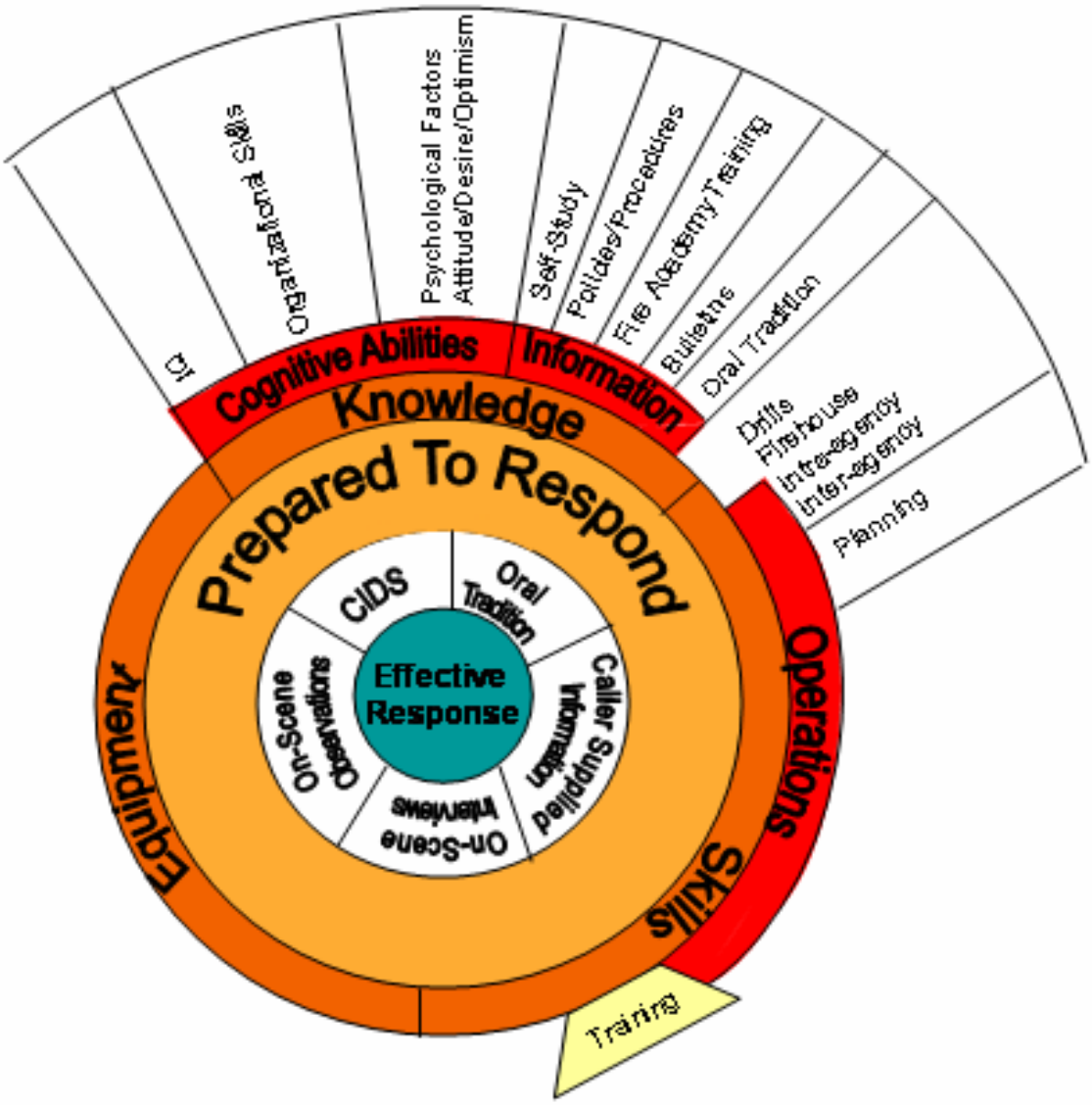

Figure 3. Traditional Use of Information by FDNY

Effective response is predicated on a satisfactory amount of useful and actionable information. Many types of information that serve firefighter's needs are those that reside within his or her mind prior to response. Other types of critical information are those that are obtained or made available only after the receipt of an alarm. Both of these information types are depicted in Figure 3 (within the white shaded areas).

As may be observed in the inner white circle, the information immediately supporting "response" is that received on-scene after arrival, or during the act of physically responding. For instance: once at the scene of an alarm a firefighter may recall past operations or stories he or she has heard specific to that occupancy through oral tradition ("I heard about this place…it has holes in the floor"); he may have obtained information from the person who reported the emergency (via telephone, for example); he may rapidly interview fleeing occupants and thereby obtain the location of victims within the building; and he may observe that specific information regarding the building has been provided automatically via a computerized database known as CIDS. While critical, these sources of information - obtained on-scene or immediately prior to arrival – are by themselves inadequate. They are necessarily complemented by other information of a less immediate nature, information that he or she obtained over time and prior to response. This "background" information (depicted in white at the upper portion of the diagram) represent supportive elements that underpin firefighting efforts by enhancing the three pillars of emergency response: *knowledge, skills*, and *equipment.* Information that prepares a responder on a personal level is primarily supportive of *knowledge* and *skills. Equipment* is largely an organizational concern.

As illustrated in Figure 3, information that exists as a backdrop to all responses (and which is therefore considered "background" information) is acquired through such mechanisms as the training academy, oral tradition within a firehouse regarding "the way we do things," and the exploitation of the content of firefighting books and magazines. This type of information has traditionally been fire-centric, is general in nature, and is relatively "distant" from the immediacy of response in both content and time. A typical example of such information is, for instance, the physical and chemical properties of carbon monoxide (a by-product of fire).

These two types of information are seen to support fire-based response in an identifiable and time-proven manner. Analysis of Figure 3 in consideration of the new threat posed by terrorism permits the identification of shortfalls in this traditional support system relative to terrorist based response:

1. This methodology has evolved over time in response to the challenges presented by fire, as opposed to terrorism. Many aspects of fire-based response are relatively predictable. For example: buildings are rectangular and possess compartments known as rooms; floors are interconnected with staircases; fire produces heat which rises; somewhere in the building is a fuel source that supplies either natural gas or heating oil. It is observed that a preponderance of information that is critical to fire based response has become "known" or predictable within limits over the course of 150 years of experience, resulting in he need for a relatively simplistic information support network. While the statement "you've seen one fire you've seen 'em all" may represent an oversimplification, it nonetheless possesses a degree of accuracy. Terrorism, on the other hand, is complex and highly unpredictable by nature, possessing "implicit unpredictability"[32] and resulting in protective service professionals facing "considerable uncertainty with regard to the nature and magnitude of the problem they face."[33] Aside from the inordinate operational demands for information engendered by this unpredictability, terrorism presents special emotional challenges that hinder the ability to acquire and process information on-scene. Actions with malevolent intent have been shown to have a much more powerful emotional impact than those which occur accidentally,[34] and the decision makers at a terrorist incident (virtually every responder) experience such capability-limiting stressors as narrowing of vision, distraction and forgetfulness.[35]

2. There is no inter-connectivity and therefore no consistency between the various sources of information that support the needs of responders. For example, drills conducted at the firehouse are not related to or supportive of drills conducted between agencies, and neither of these is related to the education that takes place in the Fire Academy. Another example is the fact that information discussed orally in the fire house is not systematically translated into bulletins or CIDS information. The result is a fractured, uncontrolled and ad-hoc system of information dissemination without centralized control. Consequences include inconsistent, incomplete, and gapped knowledge. The simplicity and relative predictability of a fire-based response tolerates this mechanism of information management. The complexity and unpredictability of terrorism based response, however, exceeds the capabilities of this system to adequately support information needs.

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[32] Douglas Paton and John Violanti, "Terrorism Stress Risk Assessment and Management," Chapter 17 in *Psychology of Terrorism*, ed. Bruce Bongar et al. (New York: Oxford University Press, 2007), 231.

[33] Ibid., 231.

[34] Larry Beutler et al., "The Need for Proficient Mental Health Professionals in the Study of Terrorism," Chapter 3 in *Psychology of Terrorism*, ed. Bruce Bongar et al. (New York: Oxford University Press, 2007), 35.

[35] Helpguide.org, "Stress: Signs, Symptoms, Causes and Effects," available at http://www.helpguide.org/mental/stress_signs.htm, last accessed on February 28, 2007.

3. The system of information management is passive in nature and does not encourage or support the proactive searching and incorporation of vital sources of information that may enhance knowledge and awareness.

4. The system has no direct nexus to other entities that may provide additional information or alternate perspectives on existing information. Other entities include the New York City Building Department (for information related concerns) and the New York City Police Department and the FBI (for criminal/terrorist related concerns).

5. Other than that afforded by CIDS, the system does not provide for the capture of information for future usage (i.e., retrieval capability) by response personnel and no formalized mechanism for true institutional learning. The widespread reliance on oral tradition within the department for both background and "on-scene" incident related information is a reflection of inadequacy in this regard.

6. The system does not utilize information to alter or direct such activities as training and planning on a short-term basis. Training and planning are relatively static. The information support system is therefore not a reactive "living system" of information and awareness but rather a fixed and inflexible methodology based upon tradition.

7. The system of information management does not possess a methodology for maintaining information accurate, timely and complete.

8. The system does not allow for the recognition of people within the department who possess specialized education or experience who might provide "added value" to information processing. Survey results of active department members substantiate this fact. 63% of those who possess specialized skills report that the FDNY is either unaware of their skill or that they are not sure if the department is aware of their skill.

9. The system does not provide for the transfer of information among and between managers and officers in different departments (such as the Bureau of Fire Prevention and the Bureau of Training), nor does it allow for a high degree of redundancy of information sharing. For instance, if personnel familiar with a fact through oral tradition retire, that information is lost forever. Similarly, relevant building construction information is collected by Fire Prevention but is not routinely shared with other bureaus.

10. There is no mechanism for the development or use of a form of information known as *intelligence*, or expertise in this regard. The concept of intelligence within the fire department is defined in Chapter XI.

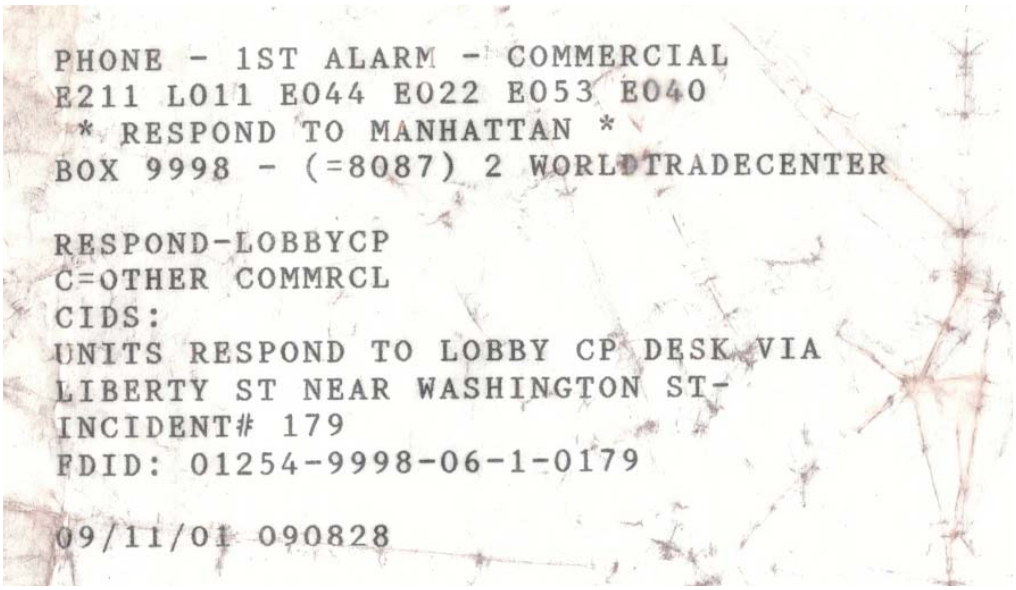
11. CIDS, as the <u>sole</u> mechanism for systematized information transfer to a responder, is a vital component in the FDNY support system. It is far from satisfactory, however, particularly for terrorist based response. Survey respondents indicate that while 88% have actively contributed to the CIDS system, only 21% believe that it is adequate for terrorism related responses. There is therefore only an incidental connection between the

CIDS information delivery mechanism and terrorism preparedness. While often helpful, the information contained within the CIDS system is subject to the following critical limitations:

- CIDS information does not exist for every building or occupancy in New York City, or for every target hazard location.
- CIDS information is entirely dependent upon information that is voluntarily submitted by company officers who elect whether or not to identify hazardous or other notable conditions. These officers may or may not observe such conditions during their normal course of business, may elect not to information, may simply not possess the time to address these issues, or may lack the skills to identify the critical nature of many conditions. The absence of CIDS information related to the susceptible nature of the floors at the World Trade Center is a striking example (refer to Chapter VIII).
- Many of the "aka's" ("also known as") within New York City, as well as many simple but commonly employed place names (such as "Macy's"), will not trigger the release of CIDS information. Only the actual address or, in some instances, a place name, will activate the system. Thus many responses that should be accompanied by CIDS information are not. Furthermore, a mere misspelling of an address or name will fail to activate the system.
- The company officers who constitute the heart of the system are untrained in subject matter outside of routine firefighting and emergency response. Consequently, the identification of hazards related to specialized categories of information such as building construction, hazardous materials, or terrorist group indicators will often be absent, incomplete, incorrect or misinterpreted.
- The information within the CIDS system is subject to obsolescence as undetected changes are made to the building or occupancy over time. Incorrect information is often provided to responders, potentially increasing the hazards beyond those already present.
- The information submitted by the company officers for inclusion in the database is condensed in format, but is not processed or analyzed to any degree prior to entry into the system. No development or exploitation of "fire intelligence" takes place.
- The CIDS system was developed in 1979 using outdated technology. Development failed to anticipate the evolution of the department in terms of the nature and number of specialized units and has subsequently been overwhelmed with "white noise." Due to age and inherent technical limitations of this system, the quantity of information is limited to a maximum of 160 characters per occupancy (inclusive of "spaces").

- Twenty specific examples of conditions that should be included in the CIDS system are enumerated in the FDNY Communications Manual, for the education of officers. All are fire-centric; none refer to terror related conditions.[36]
- The information must be read, comprehended and communicated by the company officer to his company during the response, typically a time period of less than 5 minutes, while he is simultaneously donning his protective gear, directing the operations of the chauffer (often in heavy traffic), and communicating and receiving critical information to the dispatcher via the department radio.

It is observed that CIDS, while a useful tool for some fire or accidental emergency based responses, is not a uniform, consistent or completely reliable source of information, particularly for terrorist based response. As an example, a typical CIDS response ticket that was printed for the World Trade Center response on 9-11 is illustrated in its entirety below. It represents the sum total of information available to the firefighters regarding the structures they responded into.


PHONE - 1ST ALARM - COMMERCIAL
E211 L011 E044 E022 E053 E040
* RESPOND TO MANHATTAN *
BOX 9998 - (=8087) 2 WORLD TRADECENTER

RESPOND-LOBBYCP
C=OTHER COMMRCL
CIDS:
UNITS RESPOND TO LOBBY CP DESK VIA
LIBERTY ST NEAR WASHINGTON ST-
INCIDENT# 179
FDID: 01254-9998-06-1-0179

09/11/01 090828

Figure 4. Actual Response Ticket Utilized by FDNY Engine 44 in Response to the World Trade Center, 9-11-01

[36] FDNY Publications Office, "Critical Information Dispatch System (CIDS)," Chapter 4, *Communications Manual* (July 1, 1999), 4-1 to 4-11.

C. SUMMARY

The analysis of information as a concept within the FDNY prior to 9-11 supports the observation that the fire department behaved largely in a traditional manner that had developed in response to fire related stressors. Information was delivered in identifiable and disparate "packages" in the support of response to various fire-based challenges. In this manner information supply to the responder was singular in focus, ad-hoc and fractured. The independent packages of information support that did exist were not supportive of each other. No formal attention was directed at information as a separate and distinct entity diffused within the department, and no effort had been made to acquire information from outside the department. Furthermore, a type of information known as intelligence played virtually no role in response or in the preparation for response. The incidence of 9-11 changed the department in many ways. Has it changed the fundamental manner in which the FDNY uses information to support response?

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VII. TIER 3: BEYOND TRADITION: HOW THE FDNY HAS CHANGED SINCE 9-11

9-11 served as a wake-up call and a catalyst for change for the entire fire community. The entirety of the experience surrounding that day in New York City provided an unprecedented opportunity to identify important lessons involving information management that will support future demands. Calls for change in the traditional use of information, and subsequent changes, have occurred. Have the right questions been asked, and are the subsequent changes adequate?

A. FORMAL INVESTIGATIONS

The attacks on the Towers were devastating in terms of civilian and responder casualties.[37] Numerous investigations have been performed by several entities in the aftermath of that day in an attempt to identify problems, inadequacies, and gaps in existing knowledge. These investigations are intended to enhance the safety, resilience and well being of our society as a whole, and to improve our understanding of the terrorist threat. They include psychological studies of the terrorists, the victims, the responders and the affected communities; investigations into the efficacy of information sharing between federal agencies; and structural investigations to determine how and why the Twin Towers collapsed. None of the studies are truly specific to the mechanics of emergency preparedness at the local level, despite the reality that these mechanics critically influenced the safety and well being of both victimized civilians and responders. More specifically, none of the studies delve into the adequacy of local information sharing, management and control relative to the incident.

The two significant investigative reports that involved an examination of local emergency responder capabilities in any regard are as follows:

[37] 2,749 individuals were killed at the World Trade Center on 9-11.

- The 9-11 Commission Report[38] and subsequent recommendations represent a comprehensive review of the circumstances leading up to and surrounding the events of 9-11. The focus of this study was on the actions of the terrorists themselves, the performance of the Federal homeland security apparatus, and a detailed description of the tactical *response* activities of the local agencies on that day. It does not provide insight into the internal structure of the local agencies relative to information sharing and preparedness, nor does it study the needs relative to these issues. It critically evaluated information sharing deficiencies among federal intelligence and criminal investigation assets (i.e., the CIA and the FBI), but essentially assumed a "kid gloves" approach to local agencies regarding similar concerns.

- The McKinsey Report is more specific to activity at the local level. It was conducted in order to identify deficiencies that exist within the FDNY (specifically), and the entire New York City emergency response system (more generally) as evidenced on 9-11. [39] The findings are intended to enhance future preparedness for major incidents. The report concluded that the chief officers at the Command Post "had no reliable sources of intelligence,"[40] and that "this lack of information hindered their ability to evaluate the overall situation."[41] It also indicates that the FDNY and NYPD "rarely exchanged information relative to command and control."[42] Several key findings and recommendations are proffered by the report, and those relative to information management are contained within the sections designated "operations" and "planning and management." Regarding "operations," the report recommends improvements in the ability to obtain information from on-scene sources and agencies, improve inter-agency coordination and communications, enhance situational awareness, and develop specialized teams for specific responses. It is noted that these improvements do not involve a systemic *non-response* driven improvement in the overall ability of the FDNY to manage information prior to an event, nor does it encourage the department to develop internal background support mechanisms. Rather, it focuses on the direct support of response to specific incidents with specific personnel. Relative to the planning and management functions, the report is also largely response-centric but does offer the more systemically based important recommendation to "improve risk assessment through the creation of an FDNY risk database, with would compile information on

[38] The 9-11 Commission, *Final Report of the National Commission on Terrorist Attacks Upon the United States* (W.W. Norton & Company, Inc., New York, N.Y., 2004).

[39] McKinsey and Company, Inc., *McKinsey Report / Increasing the FDNY's Preparedness* (New York, N.Y., September 20, 2002), available at http://www.nyc.gov/html/fdny/html/mck_report/toc.html, last accessed on February 4, 2007.

[40] Ibid., 8.

[41] Ibid., 8.

[42] Ibid., 9.

unique hazards at specific locations, and … lead to the development of pre-plans."[43] This singular recommendation serves to support the search for solutions to some of the problems recognized by this investigation, as described in Chapter XVI.

B. TERRORISM SPECIFIC INITIATIVES DUE TO 9-11

The traditional response modality employed by FDNY personnel on a day-to-day basis has been analyzed. Prior to 9-11 this standard operating philosophy and the mindset that it represented encompassed virtually all operations of the entire department. Since 9-11 important changes have been implemented in an effort to address the terrorist challenge while simultaneously continuing "business as usual." These initiatives are evolving rapidly and have received exceptional support from the FDNY administration. Progress has been made despite the tremendous challenges represented by the sheer number and complexity of terrorist potentialities and target hazard characteristics throughout New York City. The various terrorism derived initiatives are described as follows and are illustrated, reflective of their nexus to the department, in Figure 6:

- The West Point Counter-Terrorism Institute. This classroom-based training program was developed in an effort to increase the level of awareness of selected mid-level Officers regarding the history, character, and operational methodologies of terrorist groups, particularly those deriving from radical Islamic extremism. The curriculum is academic in nature. Approximately 30 students pass through this program each 6 months; approximately 150 officers have participated in the program. The classes meet on a weekly basis and develop innovative solutions to problems that are designed to enhance FDNY operations. Specific group projects are developed that are intended to provide "real world" solutions to terrorist related problems that the Department faces.
- The Fire Officers Management Institute (FOMI). The upper ranks of the FDNY are not filled with individuals who have achieved success as typified in the business world, that is, by way of higher education and successful experience in the management of personnel, finances, and infrastructure. Rather, these individuals have achieved their rank by passing a series of focused one-day exams at intervals during the course of their careers. For example, a chief responsible for the borough of Manhattan would be required to pass 4 examinations that were all derived from the same "set of books." These exams, while comprehensive and

[43] McKinsey and Company, Inc., *McKinsey Report / Increasing the FDNY's Preparedness*, 17.

extremely challenging, have been developed primarily to ascertain how successful an individual is in the science of the extinguishment of fire and the provision of emergency and rescue services. Elemental management skills form a very small percentage of the material studied. The exams do not measure the acumen of an individual in the completion of tasks related to the efficient implementation of business practices. In recognition of this fact and in a post 9-11 environment that saw the FDNY interact with many relatively sophisticated entities for the first time, the department began a program to educate chief officers in order to enhance business and communication skills. This unique initiative is provided through a partnership with General Electric and Columbia University. Approximately 80 chief officers had participated in this program prior to 2007. Each class is tasked with the completion of several projects intended to advance the management capabilities of the Department.

- The FDNY Center for Terrorism and Disaster Preparedness (CTDP). This very significant recent development within the FDNY is the result of a realization that an exceptionally dedicated and focused effort must be made to prepare the FDNY as an organization for the potential for terrorist attack. It is also designed to support response to natural hazards of all types. This group is comprised of three separate entities:

  1. Exercise Design. A Chief Officer who specializes in exercise design manages this program, designed to develop dedicated (singular) exercises for response personnel. He is augmented largely by personnel who have received special training in exercise design and who are drawn from the field on a temporary and "as needed" basis. Exercises are performed inter-departmentally among field units at selected target hazard sites, as well as collaboratively with other agencies. Table-top, functional, and full scale exercises have all been utilized as preparedness aids.

  2. Emergency Response Planning. This program is dedicated to the development of plans for responding to predictable extreme events and circumstances. Information that pertains to a potential threat with a relatively high potential for occurrence or an occupancy designated as a target hazard is gathered from a variety of sources through dedicated and focused research and development efforts. Plans are then developed for the deployment of FDNY resources to these events and locations. Examples include the FDNY Bio-Pod Response Plan, Collapse Response Plan and the Improvised Explosive Device Plan.

  3. Risk Assessment. New York City is replete with target hazard locations of every conceivable nature. This program is intended to develop a database containing as much information as possible regarding the nature and characteristics of especially vulnerable locations and populations. Special projects include the analysis of vulnerabilities for bridges and tunnels, for instance. It is intended

that ultimately the database information will be automatically accessible to incident commanders during response activity through the use of sophisticated wireless computerized equipment.

4. Additionally, the CTDP has forged informal relationships with the Federal Bureau of Investigation (FBI) and the Department of Homeland Security (DHS) that are designed to improve information sharing capabilities with the Federal Government.

- The Development of Incident Management Teams (IMT's). Following 9-11 the FDNY established a Type 2 Incident Management Team. This development was in response to recommendations deriving from the McKinsey Report "Increasing FDNY's Preparedness."[44] The intent of these recommendations was to provide specialized, highly trained personnel who use Incident Command System (ICS) principles to manage large and complex incidents. Training was provided to selected Chief Officers from the FDNY in two week long classes provided by the United State's Department of Agriculture (USDA) Forestry Service branch. Selection is based upon rank – Chief Officers comprise the team structure. Two 35 member teams have been trained and may be deployed nationally.[45]

- The enhancement of Haz Mat and Weapons of Mass Destruction (WMD) capabilities. The FDNY has significantly bolstered the capabilities that can be activated in the event of a singular, or multi faceted, WMD event. The size of the Haz Mat response group in terms of personnel has increased by a factor of over 400%. Prior to 9-11 the response capability consisted of 14 units (approximately 400 personnel) whose members were trained to the Haz Mat Technician level or higher. Since 9-11, approximately 1200 personnel have received this training and the number of Haz Mat related units has expanded from 39 to 139. The support mechanism for these units has grown by a factor of 800%.[46] Growth has included equipment, apparatus, and response personnel. Associated with and in support of this development has been the production of several new directives and protocols regarding new operational challenges facing the FDNY. These include methods of decontamination and accomplishing specialized entry for search and extrication.

- The procurement of levels of clearance by FDNY personnel and the establishment of an FDNY presence on the New York City Joint Terrorist Task Force (JTTF). The aftermath of 9-11 witnessed an increased level of concern regarding terrorism on the part of individuals in the upper echelon of the Department. Six of these headquarters-based personnel obtained

[44] McKinsey & Co., *Increasing FDNY's Preparedness*.

[45] Ronald Spadafora, "Origin and Development of FDNY Incident Management Teams – Part 1," *WNYF Magazine*, 4th issue of 2003, 16-17.

[46] Figures were obtained in a personal interview with Battalion Chief Robert Ingram, Chief of Haz Mat Operations, Randall's Island, N.Y., conducted on 12-21-06.

security clearances during this time period, as did the two representatives of the FDNY on the New York City Joint Terrorist Task Force (JTTF) (two Fire Marshals). These Fire Marshals attend monthly meetings with the JTTF and provide the details of any information deemed relevant to the command staff of the FDNY. Immediate concerns are conveyed to headquarters personnel without delay; concerns without time demands are conveyed at weekly meetings with the security-cleared command officers.[47]

- The attendance of FDNY personnel in the federally funded Naval Post Graduate School Master's Degree Program in Homeland Defense and Security. A small number of officers have attended this 18 month program. Most of the initiatives cited above have been implemented or significantly bolstered by these personnel. In this regard the impact of this program on the Department has been unprecedented. It has served as a broad based support mechanism for many departmental needs and will therefore not be considered as a separate entity. Its value is observed in all of the initiatives illustrated in Figure 6.

The relationship of these initiatives to the methodology of information support within the department is illustrated in Figure 5.

[47] Interview by author, FDNY Fire Marshal Patrick Campbell, liaison to NYC JTTF, Queens, N.Y., October 18, 2007.

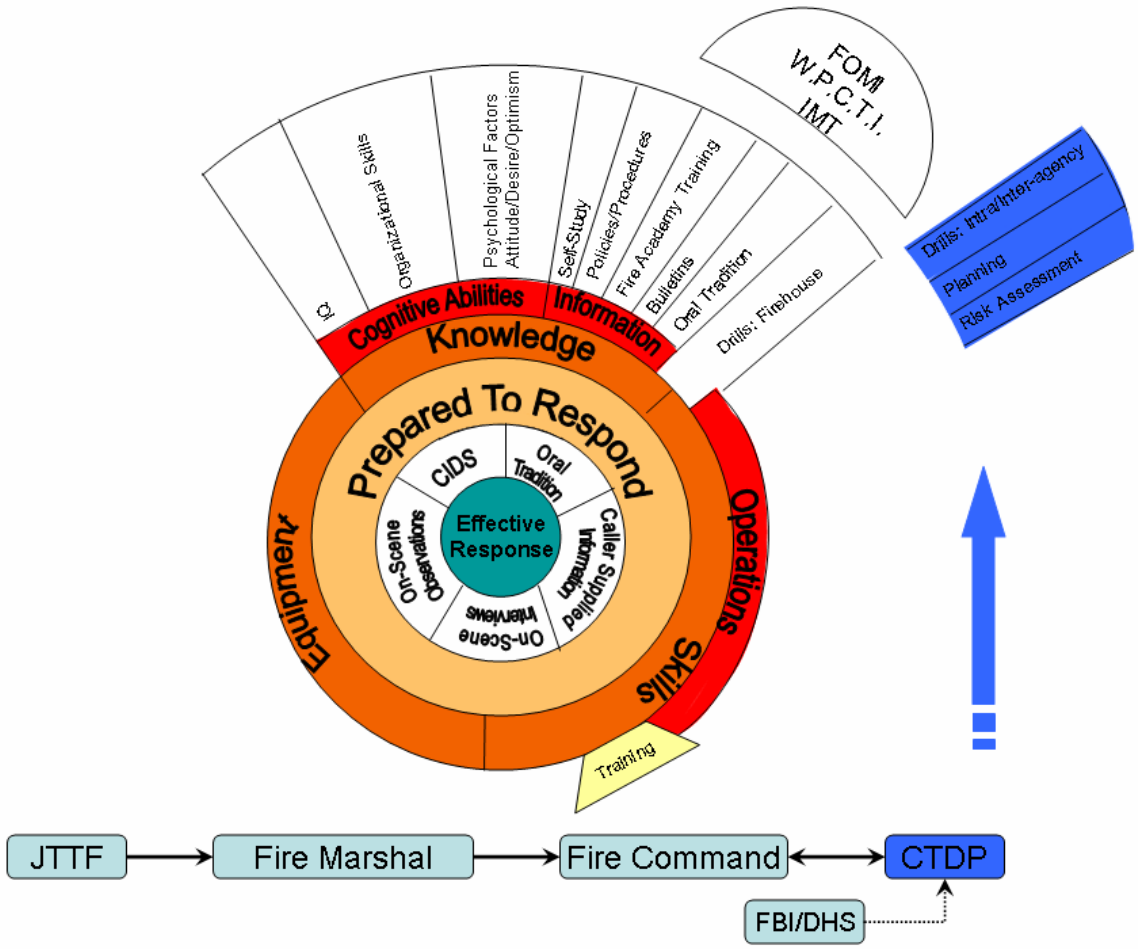

Figure 5. Information Support System, Post-9/11 FDNY

The well-intentioned initiatives described above are in the process of evolving. They have undoubtedly advanced the general level of awareness regarding terrorism on the part of a limited number of the 2,468 Officers that supervise the FDNY, have increased the response capabilities for WMD events, and have resulted in the development of response plans for several of the target hazards in New York City. As indicated by Figure 5, however, it may be seen that these initiatives have not addressed the need for a holistic information management system. The initiatives have simply supplemented the existing information sharing methodology, and marginally so. Importantly, the improvements include the implementation of two new pillars of informational preparedness: *planning* and *risk assessment,* as delivered through the CTDP. They have also provided a closer tie to the intelligence community through the Joint Terrorism Task Force. Note, however, that these improvements are independent of

response related personnel and their activities. It is clear from both survey results and interviews with knowledgeable field and management level personnel that the improvements that have been made have been accomplished in a vacuum relative to field personnel, and that they pertain to issues perceived as being unrelated to day-to-day response activity. For instance:

- A question was asked regarding the *value* of different sources of terrorism related information to FDNY personnel as pertaining to safety and efficiency in response (question 20). Options included televised news and documentaries, published department policies and procedures, newspaper and magazine articles, fire department classroom sessions, and firehouse drills. As stated in Chapter V, the source of information most frequently identified as "most valuable" was "televised news and documentaries" (33% of respondents). Among the least valuable of sources was "published departmental policies and procedures" (9% of respondents) (see Figure 6). It is interesting and possibly useful to note that written sources fared poorly relative to more visual and interactive sources of information. The department may wish to consider this observation in the development of future programs, so as to include a higher degree of visual and physical interaction in training programs.

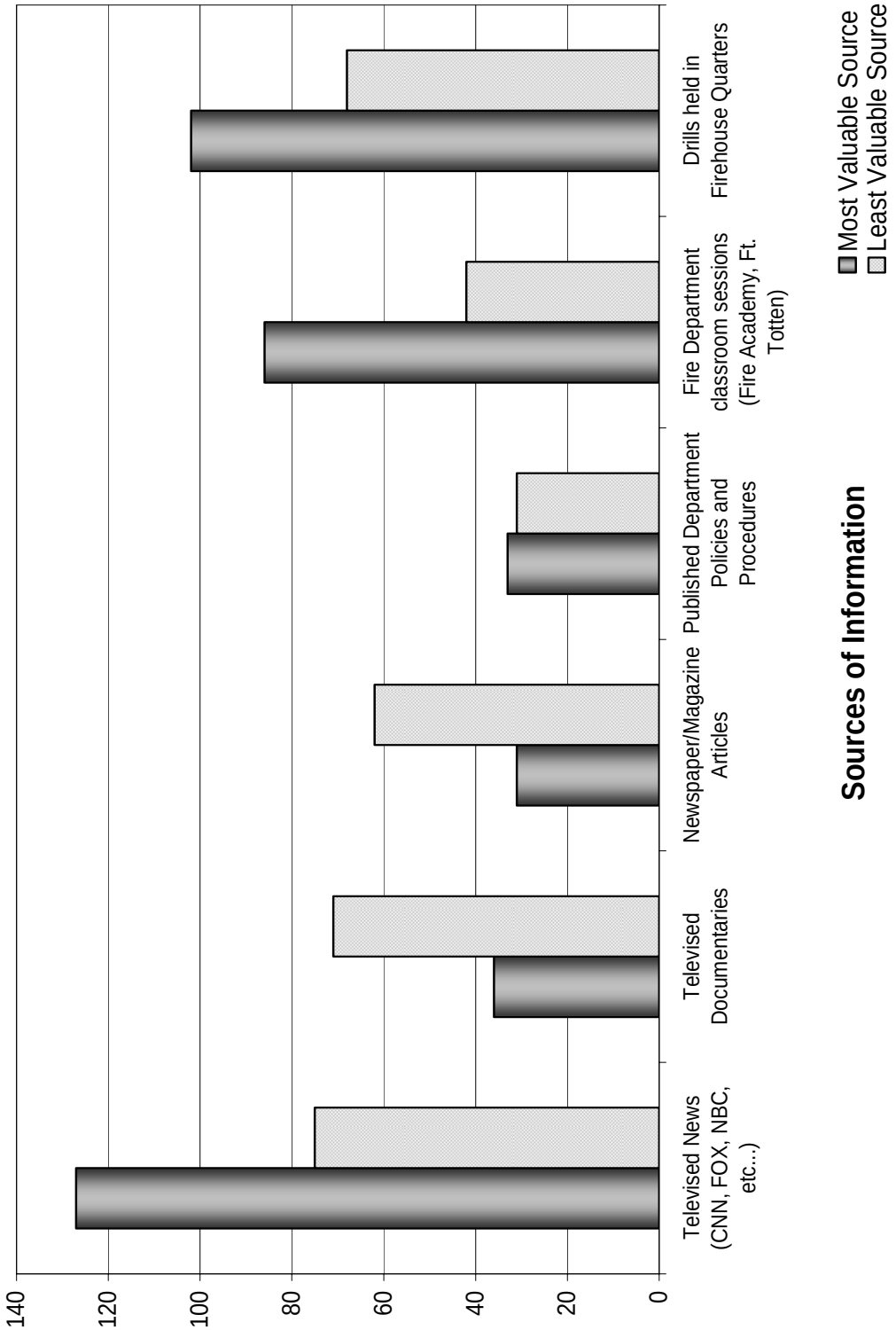

Figure 6. Relative Value of Information Sources for Safety and Efficiency in Response: Publicly Available Sources versus Internally Available Sources

- In questions designed to identify the perceived *quality of information for terrorist response* provided by the department relative to that provided for fire response (questions 10 and 11), a virtual inversely proportional and extreme relationship was found to exist, as reflected in Figure 7. The percentage who rated terrorism as poorly supported was approximately equivalent to the percentage who rated fire support as very good. Five indicators of quality were identified: accuracy, timeliness, comprehensiveness, relevance, and usefulness. Respondents were asked to rate fire and terrorism related support, respectively, as "not good at all," "just ok," or "very good" for each indicator. On average, *fire* related information was observed to be perceived by 46.6% as "very good" across all indicators. Conversely, *terrorism* related information was rated by only 6.2% respondents as "very good." An average of 44.2% of respondents considered the quality of terrorism information to be "not good at all." Only 4.0% placed the quality of fire related information into this same category. Note: the figures in Figure 7 represent the total number of respondents for each indicator of quality.

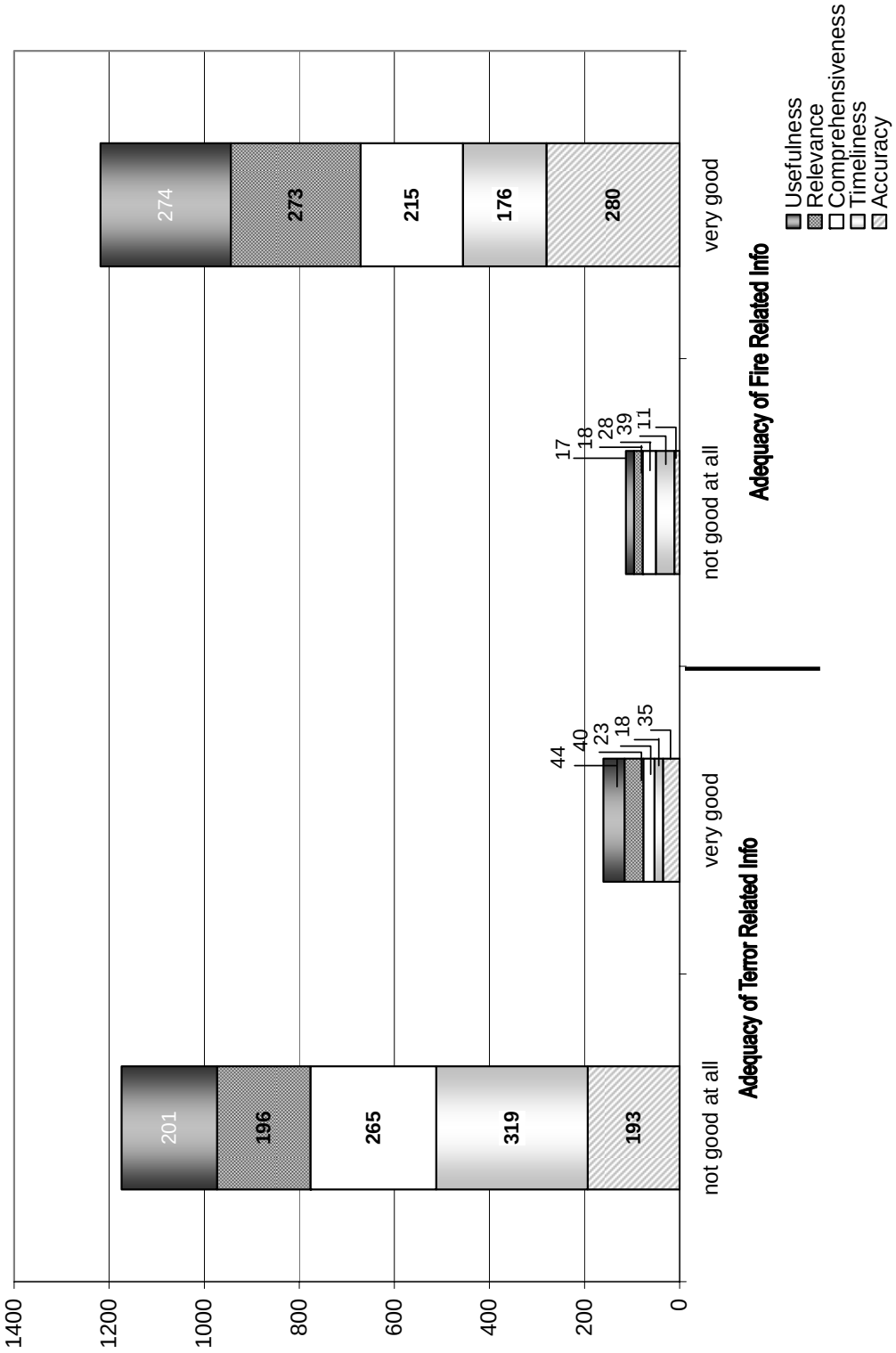

Figure 7. Quality of Information Based Upon Various Indicators: Terror Related Information versus Fire Related Information

- Information support provided by the department relative to the *importance* of fire and terrorism based parameters was investigated by asking respondents to first rate the importance of various parameters, and then describe the perceived level of support for each of those parameters. Four fire related parameters, and six terrorism related parameters, were provided to respondents. The ratio of the number who cited a parameter as "very important" to the number who cited that parameter as "not well informed at all" was significantly higher for terrorism related parameters than for fire related parameters (see Figure 8).

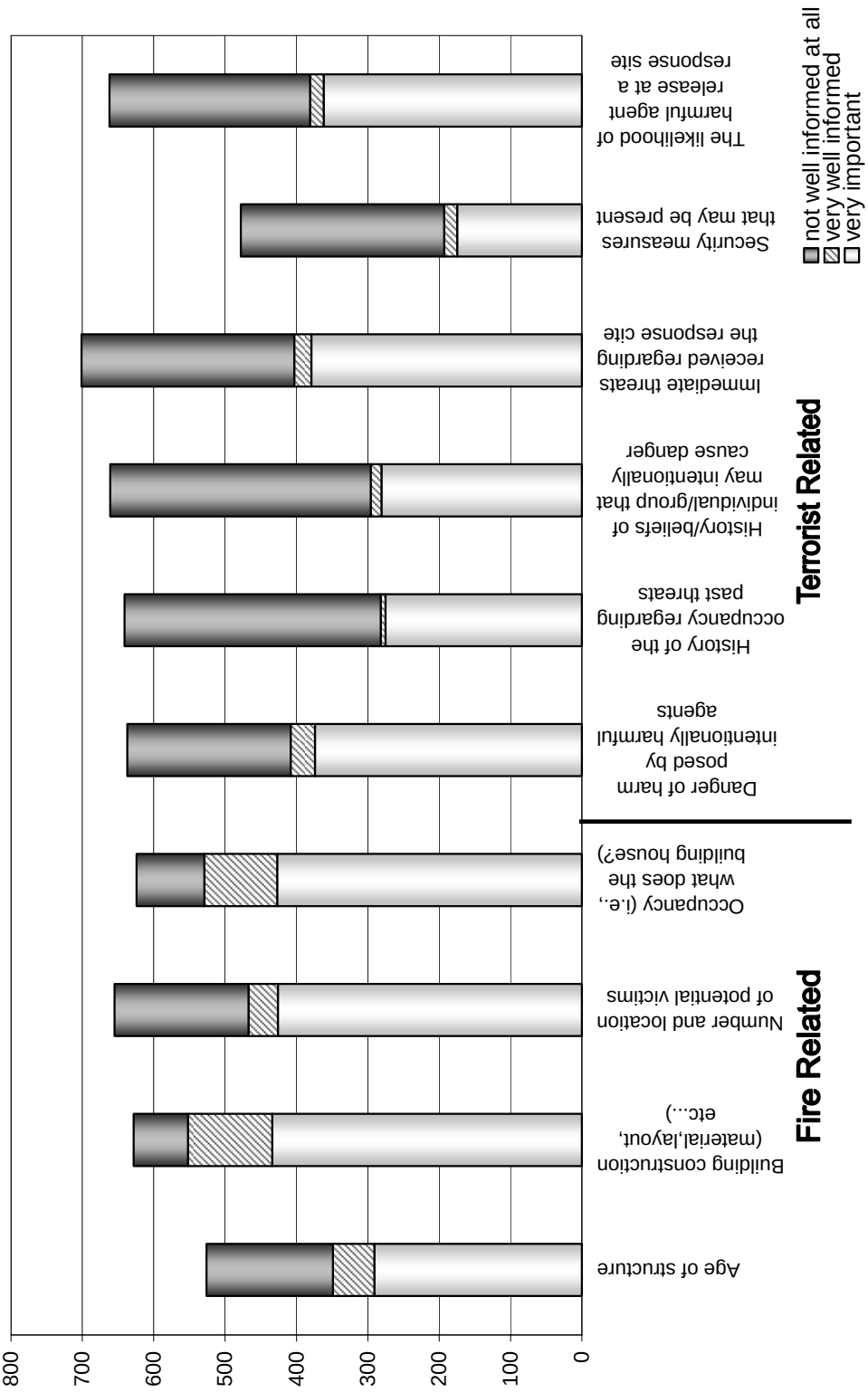

Figure 8. Rating of Departmental Support Relative to Importance of Information: Fire Related Information versus Terror Related Information

Why does a divergence exist between the various post-9/11 terrorist driven activities of the FDNY (described earlier in this Chapter) and the recognition of these activities at the responder level?

The immediate answer to this question appears to be complex and multi-faceted. Among the most likely reasons for divergence between action and recognition are the following factors:

- Initiatives that promote pro-activity by response personnel in functions that support terrorism resistance are absent. These include the identification, observation, reporting, planning, and sharing of information at the field level. Importantly, these types of activities, if implemented, would serve to support the development of what will herein be defined as "fire intelligence" (refer to Chapter XIII). In their absence no fire intelligence occurs. Those with the most potential in terms of mitigation and prevention activity are also those with the most to lose in the event of an attack – the first response firefighter. Despite these incentives for activity the average firefighter is virtually excluded from terrorism driven initiatives.
- The selection of officers for the West Point Counterterrorism Institute, Incident Management Teams, and the FOMI program is extremely limited given the small class sizes relative to the large number of personnel within the FDNY. Less than 15% of the Officers in the department have participated in these programs. Furthermore, the subject matter in these programs is largely non-specific to terrorism responder support issues, is historic or sociological in nature, and is largely unrelated to the concepts of developing or obtaining information or intelligence. Lastly, the vast majority of the well-intentioned projects developed by attendees of the West Point and FOMI programs, intended to bolster aspects of response capabilities, are not acted upon by the administration. After the final demonstration of each proposed project is provided to command personnel (including the FDNY Fire Commissioner), in most instances no further action is taken to implement the proposals and no feedback is provided to the groups regarding the status of their proposals. The Institute, therefore, has limited impact on response and preparation for response, is not associated with systemic information management or control within the Department, and fails to "close the deal" on the implementation of its own projects.
- Relative to the operations of the Center for Terrorism and Disaster Preparedness (CTDP): these operations are orchestrated by a small group of officers that operate in relative obscurity from the response entities of the Department. Excellent work is being accomplished and great potential exists within this group. What value does such work hold if it is not made available to the "troops"? The reality of the impact of the CTDP on the

Department as a whole is reflected in survey results that indicate that 84.9% of response personnel are unaware of the existence of a dedicated "terrorism information" group (see Figure 9). Furthermore, an analysis of the efforts of the Center – such as site-specific drills and development of response plans for specific events - show that they are not directed at the "typical" firefighter involved in day-to-day response, but rather at inordinate vulnerabilities and threats. Additionally, the risk assessments are not currently "deliverable" to incident commanders in the field due to technical and procedural limitations. Lastly, the number of risk assessments performed are minimal relative to the many target hazards in New York City. The CTDP, while effective in many of its objectives, is therefore not effective in providing holistic systemic enhancements to prevention and response capability in the department. It does not capitalize of the ability of the individual firefighter to contribute to the counter terrorism mission, nor does it measurably support the needs of the average firefighter. Why the limited effectiveness? Simply stated, the Center cannot do everything. This is not the fault of any individual or entity; however, the limits of the Center are dictated by a shortfall of personnel and, in the words of Chief Joseph Pfeifer (the Director of the Center), inadequate "capacity." Given the potential consequences of inadequacy the bolstering of "capacity" appears in order, in terms of funding, resources and personnel.

- Regarding the form of information known as "intelligence" (further described in Chapter XIII), several impediments to efficacious and holistic availability have been identified:
    - The sole mechanism that is available for formally interfacing with other agencies in a pre-incident capacity – the JTTF – is distinguished by an absence of representation of FDNY response personnel.
    - The current system of gathering intelligence is not associated with an established mechanism to disseminate or share information within and throughout the department, particularly at the "field" level.
    - The "rank and file" is unaware of the existence of the relationships described above and has not seen tangible evidence of an effective and reliable means of obtaining and disseminating information, including intelligence and fire intelligence. This fact is strongly corroborated by the results of survey question 12. 92.2% of respondents are unaware of an organized structure for the transfer of terrorism information from other entities (such as the NYPD and FBI) to the FDNY (see Figure 9).

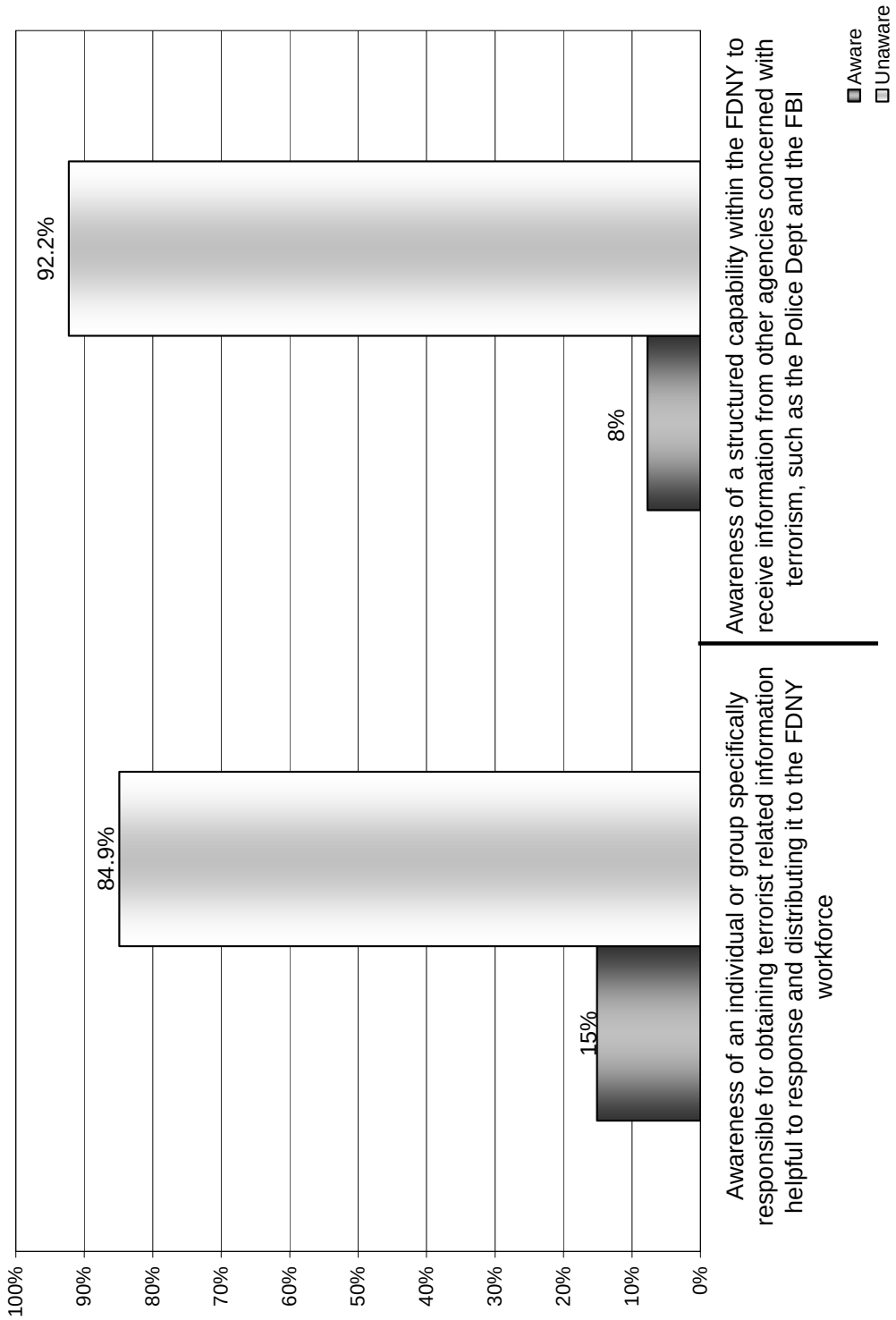

Figure 9. The Level of Awareness of FDNY Personnel with Regard to Terror Related Support Functions

- The two members of the FDNY who have been provided positions within the JTTF are not associated directly with FDNY response personnel but are rather Fire Marshals, former firefighters who have been trained to emphasize law enforcement related concerns rather than those that involve responder considerations. The Fire Marshal ranks number approximately 100, less than 1% of the responder population of the department. They are also distantly removed from the response-directed personnel in terms of administration, work location, and chain-of-command, as depicted in Figure 5. Fire Marshals are tasked with the investigation of fires among other administrative duties. They are not operational personnel and as such they correspond directly with "management" rather than "the field." The present system is therefore, at best, an indirect method of intelligence transfer to the "end user" (response personnel). It is also a methodology that remains invisible to the "rank and file" (those most likely to be critically impacted by an event).

- The adequacy of FDNY representation on the JTTF in terms of sheer numbers is poor. The NYPD commands 120 representatives on the JTTF. Contrarily, two seats are provided to the FDNY. A ratio of 60 to 1 is not likely to be optimal for adequate relationship-building, redundant communications, visibility and accessibility. If all participants in the JTTF from all agencies are considered, the FDNY ratio falls to a fraction of a percent. Greater FDNY exposure will improve effectiveness. The Arizona model of agency interaction is evaluated in this context for comparative purposes (see Chapter X).

- There is no provision within the current system of intelligence control for the development of fire related intelligence by members of the FDNY and the sharing of such information with outside agencies. Field level response personnel possess unique knowledge and skill sets and are involved with response and building inspection activity on a day-to-day basis. They become intimately familiar with the neighborhoods that they respond in and develop contacts with the people they serve. The absence of a means of developing information and readily sharing it will reduce the potential for the early detection and prevention of terrorist activity.

- Lastly, the improvement of Haz Mat/WMD capabilities, while tremendously valuable for response in the event of an unorthodox terrorist attack, have not been accomplished in a manner that is associated with prevention or increased awareness. Analysis of survey results that compare those who possess advanced Haz Mat training to those who do not shows no appreciable difference in the percent who believe that the quality of terrorist information is "very good" (see Figure 10).

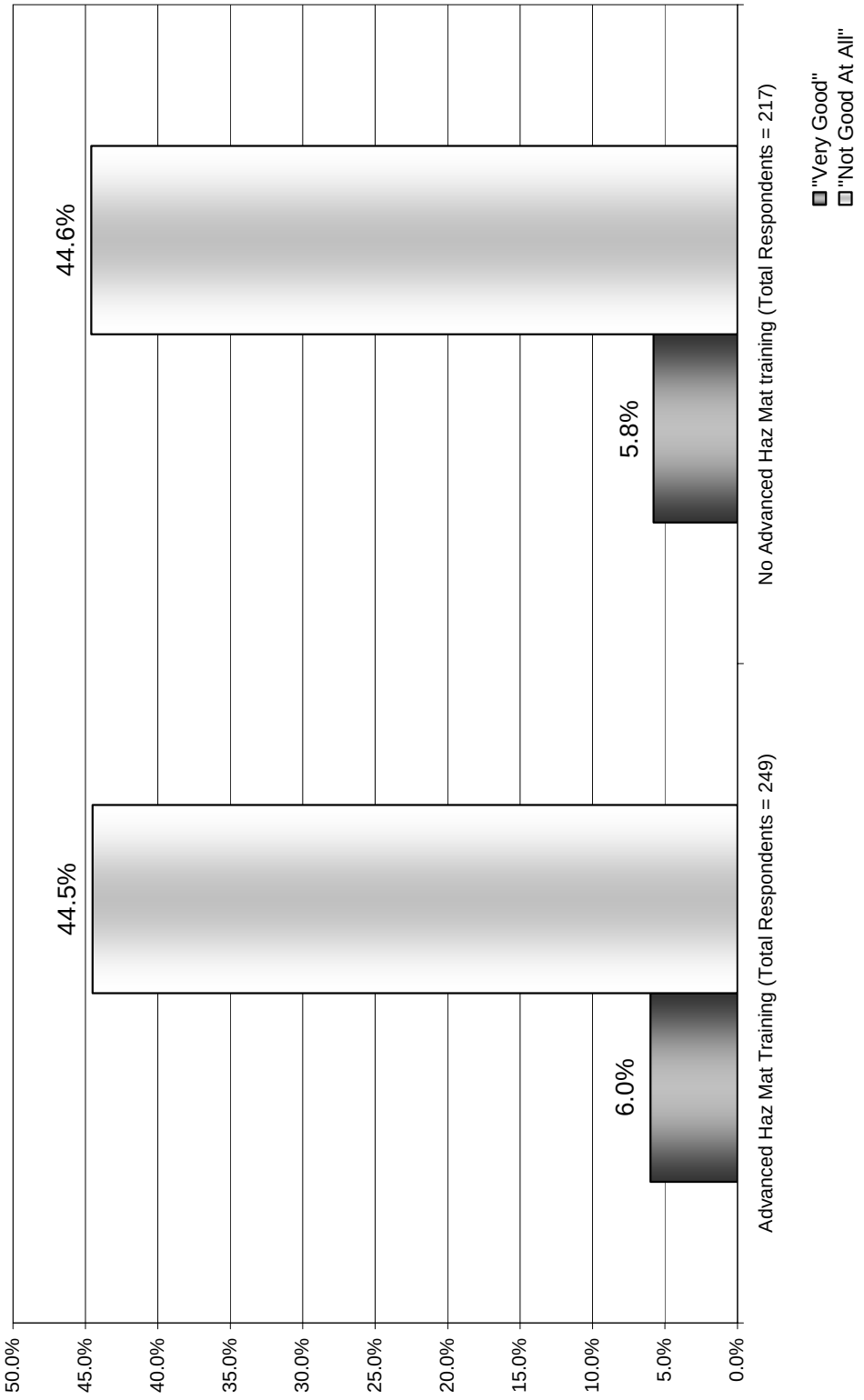

Figure 10. Quality of FDNY Terror Information as Perceived by Haz Mat Trained versus Non-Haz Mat Trained Personnel

C. SUMMARY

The investigative studies of significance surrounding 9-11, paralleling the requirements contained within the relevant government directives, have not truly addressed the potential contribution of firefighters to preparedness and prevention at either the local agency or interagency level. Emphasis of these investigations and their recommendations has been on response related activity alone and has been inconsiderate of the need to better obtain and manage terrorist related information, and to encourage prevention as a core function. Furthermore the initiatives instituted by the FDNY since 9-11 are novel and well intentioned improvements in preparedness but fall short of truly enhancing the awareness of the average firefighter in his daily routine as he awaits the next terrorist event. It is also quite obvious from survey results that these organizational initiatives are considered inadequate by those they are designed to support - response personnel within the department. This has operational and psychological implications for these responders. Operational implications are relatively self-evident and described throughout this document. Psychological implications of the absence of awareness are discussed in Chapter XIV of this report.

It appears that despite the events of 9-11 the United States and New York City will be satisfied with a consequence management role and the FDNY has been constrained by this expectation. Is this what is best for the FDNY, the city, and the country? It also appears that the FDNY has continued to use information in a manner that does not holistically address terrorism. An example of the dire consequences of a collective mindset that focuses on response to the relative exclusion of information management may be observed in the events leading up to and characterizing 9-11.

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VIII. TIER 4: 9-11, AN EXAMPLE OF THE IMPORTANCE OF INFORMATION MANAGEMENT

Critical evaluation of the circumstances that foreshadowed and influenced the events of 9-11 is a necessity in any study of local responder preparedness. Previous studies have failed to penetrate "into the weeds" of the event and thereby failed to derive lessons that are truly useful to local response assets. As stated in the New York Times Bestselling Book *102 Minutes*, "If history is to be a tool for the living, it must be unflinchingly candid."[48] The facts surrounding the events of 9-11, while complex when viewed *en masse*, upon deconstruction reveal a relatively uncomplicated explanation as to why thousands of people unnecessarily died in the towers versus the hundreds who necessarily perished in the zones of aircraft impact, and why a staggering number of firefighters were committed into structures doomed to fail. The collapse of the Towers was not an unpredictable phenomenon. A strong argument may be made that it was highly predictable based upon the nature of construction and the science of firefighting as understood on 9-11. It was, however, *unpredicted*, due to an organizational failure to identify and collect a variety of causative factors in a deliverable fashion prior to the event. Comprehension of this rationale necessarily begins with the history of the Towers, and derives from two complimentary influences: the willingness and latitude of the Port Authority during the late 1960's to pursue inexpensively constructed buildings at the cost of unknown performance in fires, and the ignorance of the New York City Fire Department relative to the hazards resulting from this unregulated conduct. The primary lessons to be learned by the fire service include those which identify any commonality that underlies deficiencies in information management that contributed to the loss of life. The information of concern in this investigation is not that which developed on scene on the morning of 9-11; rather, it is information that developed since the moment the Towers were conceptualized, a period of approximately 40 years.

Among the myriad of information-related factors that may be examined to derive "lessons learned" for the fire department are those that most directly contributed to the successful nature of the attacks on a local level, and those that contributed directly to the

[48] Jim Dwyer and Kevin Flynn, *102 Minutes* (New York, N.Y.: Times Books, 2005), 251.

massive death toll of both civilians and responders. These factors include information deficiencies relative to the history and nature of construction; the impact of information from the 1993 attacks on the preparedness of the FDNY in 2001; informational coordination between the various response agencies; and the use of information in pre-incident planning and preparation.

A notable consideration that underscores the value of each of the following observations is the fact that the World Trade Center had been clearly identified as a target hazard many years before 9-11. This fact was dramatically illustrated by the depiction of the targeting of the Two Towers to illustrate the cover of the U.S. Department of Justice textbook that was used nation-wide from 1997 to 2001 to prepare responders for terrorist events (see Figure 11).[49] Sadly and ironically, many of the firefighters who died on 9-11 had studied from this text.

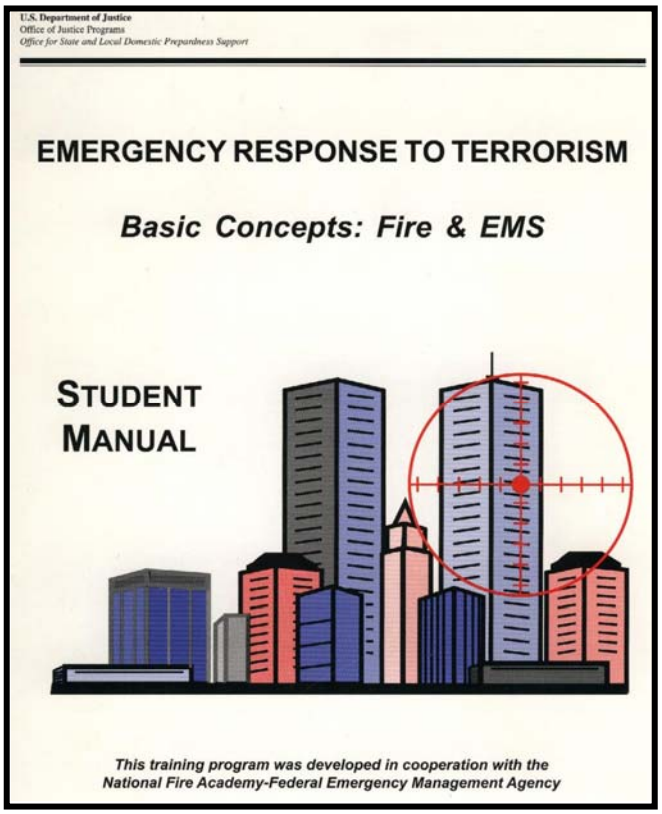

Figure 11. Cover of U.S. Department of Justice Textbook Utilized by First Responders Prior to 9-11.

[49] U.S. Department of Justice, *Student Manual, Emergency Response to Terrorism, Basic Concepts: Fire & EMS* (Washington, D.C., GPO, 1997), cover.

A. HISTORY AND NATURE OF CONSTRUCTION

The structural nature of the Towers was unique in many ways. An understanding of the uniqueness of these structures in light of the decisions made on 9-11 will reinforce the argument that information management is critically important both on the scene of an incident and in the days, months and years preceding an event. By necessity the succeeding analysis is detailed and specific in nature.

Quite simply, in the construction industry *weight* coincides with *cost*. Very typically, the lighter a structure, the cheaper it is to construct. Even a small amount of research in support of a simple calculation by a concerned individual may have served to provide firefighters with information that supported a more reasonable response. Although it will not be found in published literature, each of the Towers, had they been constructed with a solid mass of balsa wood, would have outweighed the actual structure as it stood in place. The Towers were a fraction of the weight-per-cubic foot of earlier high rise structures. Building owners understand the relationship between mass and cost; building engineers and architects consider it within the design process. Conversely, firefighters intuitively correlate mass with fire resistance. Several of the unique measures taken by the Port Authority in the pursuit of lighter and thence cheaper structures, and their ramifications, are described herein.

Most fundamentally, the structures were permitted to be designed and constructed without the mandated constraints of a building code, at the discretion of the owner, due to privileged constitutional exception. Bi-state agencies such as the PANYNJ are exempt from conformance to local laws; the Building Code is a local law.[50] Such a provision does not exist under "normal" circumstances. Building Codes are predicated at the most basic level on occupant life safety. Therefore, this unique historical allowance formed a legal and organizational hurdle divergent from the mission of the fire department – fire and life safety – which could not be eliminated, mitigated, or circumvented at the time of construction. The buildings were subsequently constructed, by design, to a lesser standard than would have been permitted by the New York City Building Code in effect

[50] National Institute of Standards and Technology, *Final Report on the Collapse of the World Trade Center Towers* (Washington, D.C.: GPO, September 2005), 53.

at the beginning of the design process (as described below).[51] Several of the fire prevention measures utilized were unsubstantiated in performance. Despite voluntary "conditional" promises to the contrary,[52] the Port of New York Authority (now Port Authority of New York and New Jersey (PANYNJ)) did not adhere entirely to provisions of the Building Code in effect at the time.[53] The construction and design were therefore beyond the control of the fire department. What remained within the control of the FDNY, however, was the ability to observe and to maintain records over time relative to the nature of construction, and the ability to disseminate such information to the response units. A survey of FDNY firefighters indicates the fact that the unique nature of the towers was unknown to a high percentage of response personnel, including Chief Officers, despite the widely recognized status of the towers as target hazards (refer to Figures 9, 10, and 11). This absence of information resulted in dire consequences during and after the attacks of 9-11. In the realization that the "devil is in the details," a few of the factors related to this concern are described as follows:

1. Floor Construction

The floors of the Twin Towers were constructed with lightweight steel parallel chord trusses that spanned a distance of 60'. At the time of construction the use of such trusses was unique and unprecedented in high rise construction (the Towers were, for a time, the tallest structures in the world). Data regarding the anticipated performance of the World Trade Center Tower floor trusses under fire conditions was non-existent due to an absence of testing (despite building code requirements to the contrary). The fire resistance of the floors was therefore unknown and efforts to determine it were neglected. This fact combined with the absence of fire sprinklers in the buildings for over 20 years[54] provides insight into the design considerations related to fire safety. Importantly, the

[51] The design process was initiated using the 1938 NY City Building Code. During the design process the Port Authority notified engineers to revise the design by utilizing provisions of an anticipated new code, ultimately published in November of 1968 (The 1968 NY City Building Code). The design was therefore partially in conformance with this newer Code.

[52] Internal FDNY memo, *Applicability of Local Law to the Port of New York Authority,* Honorable Robert. O. Lowery, Fire Commissioner, to Samual Sheres, Deputy Fire Commissioner, March 6, 1969.

[53] 1938 New York City Building Code.

[54] FEMA, *World Trade Center Building Performance Study*, 2-12.

trusses were instrumental in the initiation and progression of Tower collapse (described below). Prior to 9-11 and over the course of many years the use of steel trusses had become associated with a significantly increased danger of firefighter fatality due to the frequency of collapse incidents. These trusses were most commonly encountered by firefighters as roof beams in "taxpayer" type occupancies,[55] under an identical loading condition as seen in floor construction (i.e., vertical loading). The preponderance of documentation within the fire service regarding trusses was based upon this load condition. Numerous publications by firefighting experts had decried the exceptional hazards represented by this modern method of constructing floors and roofs,[56] to the extent that the saying "Beware the Truss" became a commonplace reference in publications and training.[57] This statement and the rationale behind it were repeatedly emphasized in FDNY departmental protocols and bulletins in effect on 9-11:

- Failure of one truss element can cause a failure of the entire truss. This in turn may pull down a number of trusses, in a domino effect which will cause the entire roof, or a large portion, to collapse. Failure can occur in the early stages of the fire.[58]
- Trusses are composed of smaller and lighter weight members and they span greater distances than the conventional roof beam construction. Fire will affect them more rapidly.[59]
- When these steel beams are heated from 1000 (deg.) F to 1500 (deg) F, their yield strength drops dramatically and they start to soften and fail. This temperature can be reached in five to ten minutes at a fire and it is only a matter of time at an uncontrolled fire (thirty minutes for the smaller beam sections), until these beams can be heated beyond their strength limitations.[60]
- Some of the warning signs that will signal a potential structural collapse during firefighting operations are:

[55] A *taxpayer* occupancy is FDNY jargon for a one or two story commercial occupancy, usually a storefront, common throughout N.Y. City.

[56] Chief Vincent Dunn, FDNY (ret.) is among the most prolific experts on the hazards of truss construction as observed in such publications as *Collapse of Burning Buildings: A Guide to Fireground Safety* (Saddle Brook, N.J., Penwell Publishing, 1988), and numerous articles, including "Building Construction and Collapse," *WNYF Magazine*, 4th issue of 1999, 7-9.

[57] FDNY Publications Office, "Beware the Truss," *Safety Bulletin 85, Gypsum Roof Decking*, (June 25, 2001), 1.

[58] FDNY Publications Office, *Firefighting Procedures: Taxpayers* (October 6, 2000), 5.

[59] Ibid., 5.

[60] Ibid., 9.

Heavy body of fire which has been burning out of control for 20 minutes or more, particularly in a large open floor area.

Inability to make successful headway against a heavy fire condition within 20 minutes into the operation at a fire.[61]

- "Beware the Truss"…open web steel joists are found in modern commercial structures. They are used to span long distances (up to 60 feet). Unprotected lightweight open web steel joists are vulnerable to high temperatures and may collapse within 5 to 10 minutes in a heavy fire situation.[62]
- Truss roofs are not designed nor constructed to be used as a Fire Department working platform. Early collapse of a roof must be anticipated in a heavy fire condition and members should not be committed to roof operations.[63]
- A significant element of the Incident Commander's size-up, is to determine the length of time of burning. When fires are advanced and headway cannot be made, be prepared to evacuate the roof, withdraw interior units and initiate an exterior attack.[64]

Some of the worst incidents involving firefighter fatalities had involved metal trusses, including the 1941 Brockton, Massachusetts Strand Theatre Fire (13 fatalities) and the Wichita, Kansas auto dealership fire (4 fatalities).[65] Consequently and as noted above, at the time of the 9-11 attacks FDNY standard operating procedures for truss roof buildings disallowed extended operations on single-story buildings of this construction. How, then, were hundreds of firefighters permitted to enter and operate for an extended period of time in 110 story structures that possessed this unusual characteristic? The missing portion of the equation that corresponds risk to reward–the fundamental equation at every emergency response–was the absence of information as it pertained to the unusual and untested construction characteristics of these target hazard buildings. Given the knowledge of massive fire conditions and the likelihood of exposed steel elements on the fire floors, awareness on the part of the incident commanders regarding the presence

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[61] FDNY Publications Office, *Firefighting Procedures: Taxpayers* (October 6, 2000), 16.

[62] FDNY Publications Office, "Safety Bulletin 85 – Gypsum Roof Decking" (June 25, 2001), 1.

[63] FDNY Publications Office, "Safety Bulletin 85," 2.

[64] Ibid., 2.

[65] National Institute for Occupational Safety and Health, *NIOSH Alert: Preventing Injuries and Deaths of Fire Fighters Due to Truss System Failures* (NIOSH Publications Dissemination, Cincinnati, OH, April 2005), 19.

of steel trusses would have caused them, by virtue of experience and departmental policy, to alter their methodology. No such alteration was made. As determined by survey, 77.8% of the respondent FDNY firefighters who were employed by the department prior to 9-11 and who worked in the immediate vicinity of the towers were unfamiliar with the construction characteristics of the floors (Figure 12). Based upon this survey a similar percentage of firefighters who worked remote from the towers (outside of the 1st Division) - 77.0% - were unfamiliar with floor characteristics (also Figure 12).

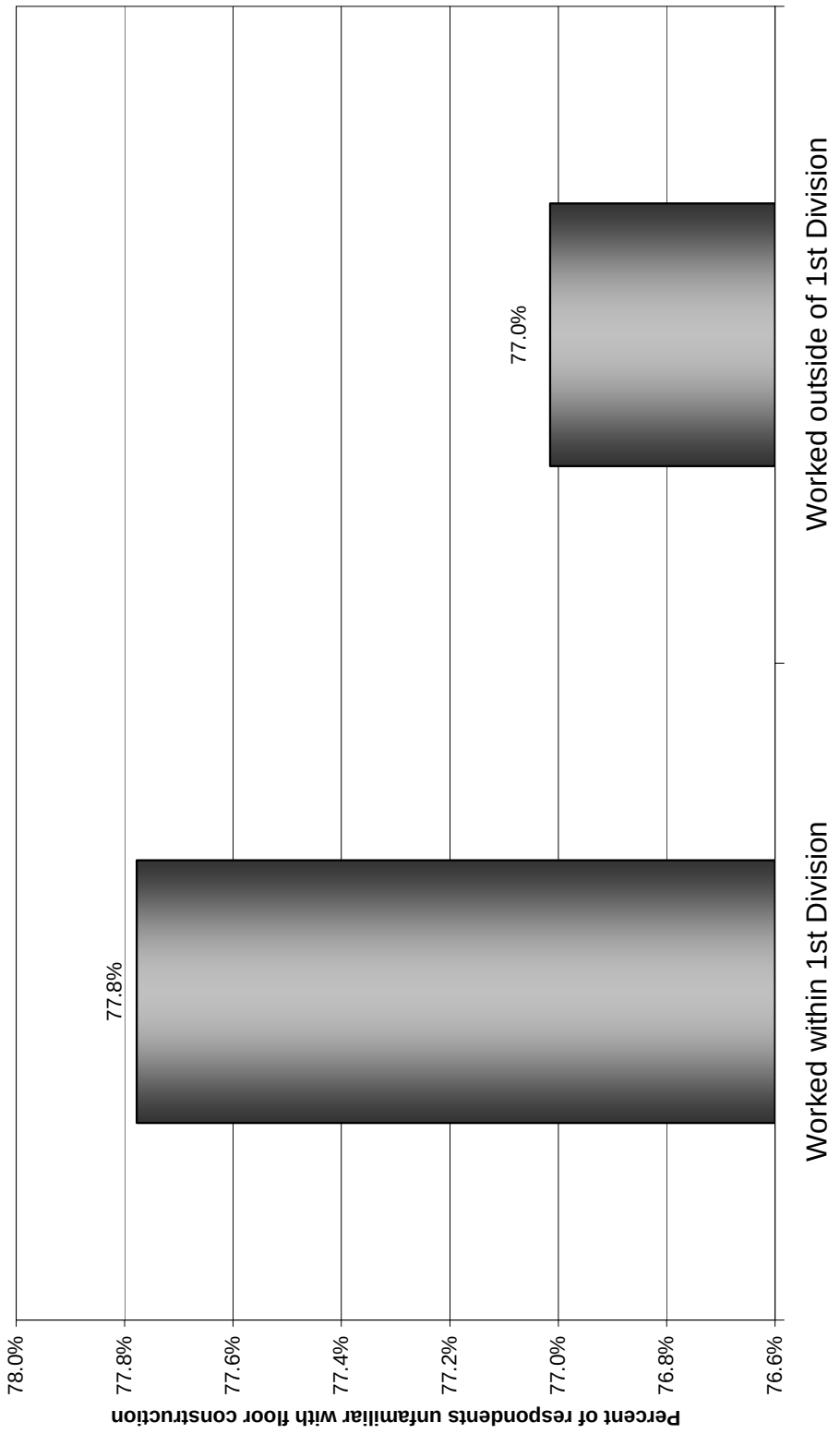

Figure 12. Familiarity of Pre-9/11 Firefighters with Floor Construction, WTC Towers: First Division Firefighters versus Firefighters from Remote Areas

What of the respondents who comprised the command structure prior to 9-11, in particular? A relatively high percentage of Fire Chiefs who were involved with FDNY field operations prior to 9-11, the most important decision makers at the scene, reported being unfamiliar with these construction characteristics of the buildings (66% - see Figure 13).

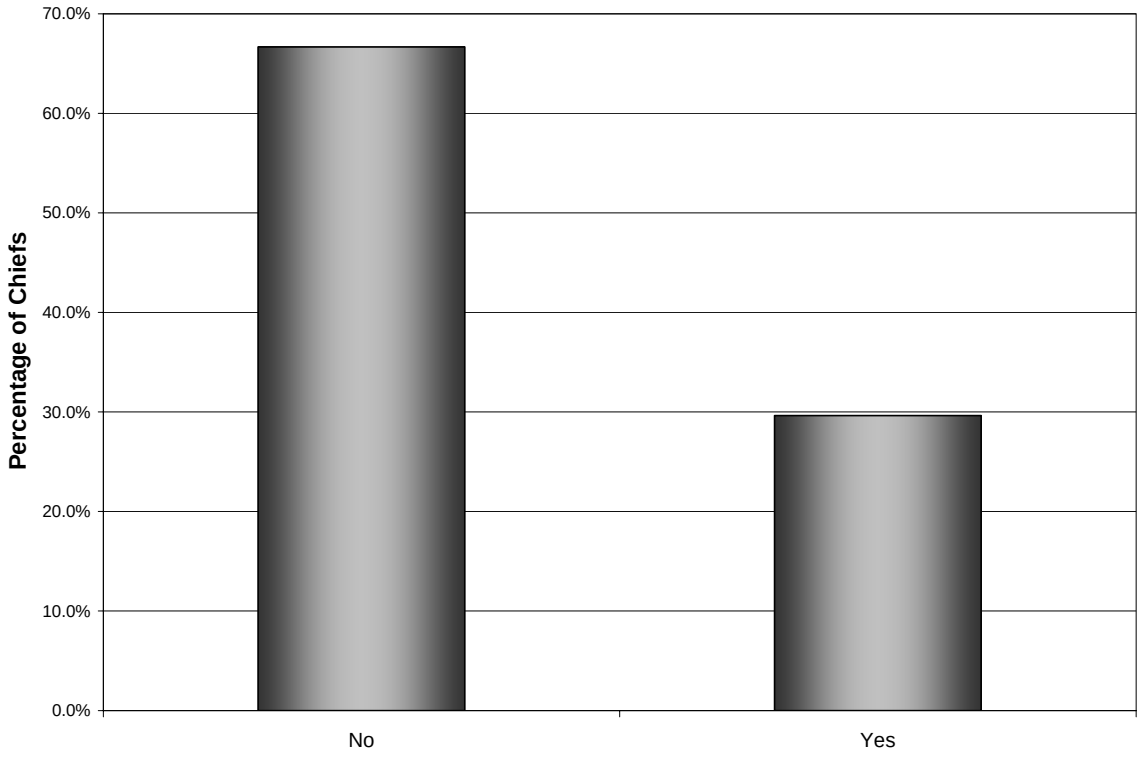

Figure 13. Field Level Chief Officers Prior to 9-11: Familiarity with Floor Construction at WTC

Ignorance of structural characteristics is also reflected in the perspective of the single surviving Safety Battalion Chief (of three who responded). These Chiefs are most responsible for overall safety evaluation at an incident scene. Safety Chief Michael Telesca, a survivor of both Tower collapses, reported that none of the Safety Chiefs were familiar with the floor construction or building egress characteristics.[66] (A familiarization drill at the Towers involving these Chiefs had been scheduled several months prior to 9-11. It was summarily cancelled as a result of a fire in lower Manhattan, and was never rescheduled). The floors have been found to have been complicit in the early collapse of

[66] Interview by author, FDNY Safety Chief Michael Telesca (ret.), Yonkers, N.Y., September 20, 2006.

the structures through the assumption of a heat derived catenary (sagging) shape and a resultant inward force on the exterior columns, initiating an instability type failure.[67] Experience indicates that conventional steel beams would not have behaved in this manner.[68] Therefore, the ignorance regarding the *presence* of trusses was accompanied by a mindset among responders that the building elements were *conventional* elements and therefore would behave differently. The observed mechanism of failure had never been experienced in conventionally constructed buildings, and no steel framed structure had ever collapsed, despite several wide area uncontrolled fires with similar temperature extremes in high rise buildings of steel frame construction. Most notably, these past fires far exceeded the duration of the fires in the Two Towers (56 and 102 minutes, respectively). A few examples of these past fires are as follows:

- A 1991 fire in Philadelphia involved nine floors of a 38 story office building and raged for *18 hours* without collapse. Two firefighters were killed by smoke inhalation[69]
- A 1988 fire in Los Angeles involved five floors of a 62 story office building and raged for *4 hours* without collapse. One civilian was killed[70]
- A 1970 fire in New York City involved two floors of a 50 story office building and raged for *5 hours* without collapse[71]

Notes:

1. Each of these buildings was constructed during the same time period (within 5 years) of the World Trade Center towers. All used conventional steel framing methodology versus the novel and untested methods employed in the towers
2. The extent of structural damage from aircraft impact on 9-11 was unknown to responding FDNY personnel. Importantly, the NIST investigation determined that the impacted structures would have continued to stand in the absence of fire[72]

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[67] NIST, *Final Report,* 150, 152.

[68] As observed in numerous past fires, some described below.

[69] Harvey Eisner and Bill Manning, "One Meridian Plaza," *Fire Engineering Magazine,* August 1991, 51-70.

[70] Harvey Eisner, "Towering Inferno," *Firehouse Magazine,* October 1988, 51-58.

[71] John O'Hagan, "One N.Y. Plaza: An Architects Dream-A Firefighter's Nightmare," *WNYF Magazine,* 1st Issue 1973, 4 – 9.

[72] NIST, *Final Report,* xxxvii.

3. Problems associated with the failure of the NYPD to share their observations with firefighters on scene were critical to evacuation and have been well documented. "The FDNY, as well as the Port Authority Police, were never provided with the information that the NYPD possessed."[73]

Given the above information it is therefore reasonable to conclude that the first responders - including line officers who made decisions for single companies and Chief Officers responsible for multiple companies - were ignorant of information regarding the presence of failure-prone trusses with uncertain fire resistance at each floor level. The information that was available and upon which decisions were made was necessarily based upon the previous experience of steel framed high rise buildings when exposed to fire – a resistance of multiple hours without collapse. In concert these factors are likely to have contributed to an over-commitment of resources. Had the characteristics of the floors been investigated and captured prior to the incident, and subsequently disseminated to those on-scene– an easily conceivable derivative of a pro-active information collection and sharing network–the operating tactics would likely have been altered. At the very least, a basis for sound decision making would have been available. A reasonable tactic based upon this information would have involved a reduced number of more mobile firefighters being committed to enter the Towers, possibly for limited evacuation purposes rather then for firefighting. As stated regarding 9-11: "the concept of 'situational awareness'–using modern tools to provide information needed by people making life-and-death decisions in fast moving environments–had become a foundation for military maneuvers, air-traffic control, power plant operations, and advanced manufacturing. That concept had not taken hold at many fire departments, including New York's."[74] In the absence of significant organizational improvements in the five years that have transpired since 9-11, a repeat of these circumstances cannot be considered unlikely.

[73] Pfeifer, *Psychology of Terrorism,* 210.

[74] J. Dwyer and K. Flynn, *102 Minutes,* 53.

2. Egress

Each tower was provided with three stairways designed to provide emergency evacuation routes. Each of these stairways was enclosed with gypsum based panels that achieved a fire rating of 2 hours, and all were relatively closely spaced within the core. Contrarily, the Building Code in effect at the inception of the design process,[75] had it been utilized, would have required a minimum of *seven* stairways, widely dispersed, and protected by concrete masonry units (concrete block) with a fire rating of 3 hours. The difference between what would have been constructed in a "normally" code compliant building (prior to 1968) and the protection chosen by the PANYNJ in terms of both blast and fire resistance is significant and was contributory to the death toll. The staircases were limited in number and their relatively close spacing, and lightweight walls, caused all to be heavily damaged. Impact compromised stairways have been indicted as the reason why virtually all viable building occupants above the point of aircraft impact – estimated at over 1,250 people[76] – were unable to escape the Towers. The fact that 18 people who were above the impact zone in Tower 2 managed to negotiate the singular (barely) passable staircase and survive further reinforces the criticality that code-compliant stairways would have represented to the hundreds trapped at the top of each building. Importantly, as determined by survey, 43% of current firefighters who worked in the immediate vicinity of the Towers (i.e., First Battalion firefighters) prior to 9-11 reported that they were unfamiliar with the location, size, nature and number of exits from the buildings (see Figure 14). 19% were only vaguely familiar. The percentage who were unfamiliar among pre 9-11 surveyed firefighters who did not routinely respond into this location as a result of distance (i.e., non-First Battalion firefighters) was even greater – 78% (see Figure 15). It is observed that the actual responders on 9-11 likely possessed unrealistic expectations regarding the nature and number of staircases, and therefore an incomplete understanding of the nature of evacuation assistance that would be required.

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[75] 1938 New York City Building Code.

[76] This number has been linearly extrapolated from figures provided within the NIST *Final Report* wherein occupants on the impact floors were not differentiated from those above. In arriving at the figure of 1250 occupants above the zones of impact, it was assumed that the occupancy was evenly distributed between all floors and that all those on the floors of impact were immediately killed by aircraft impact.

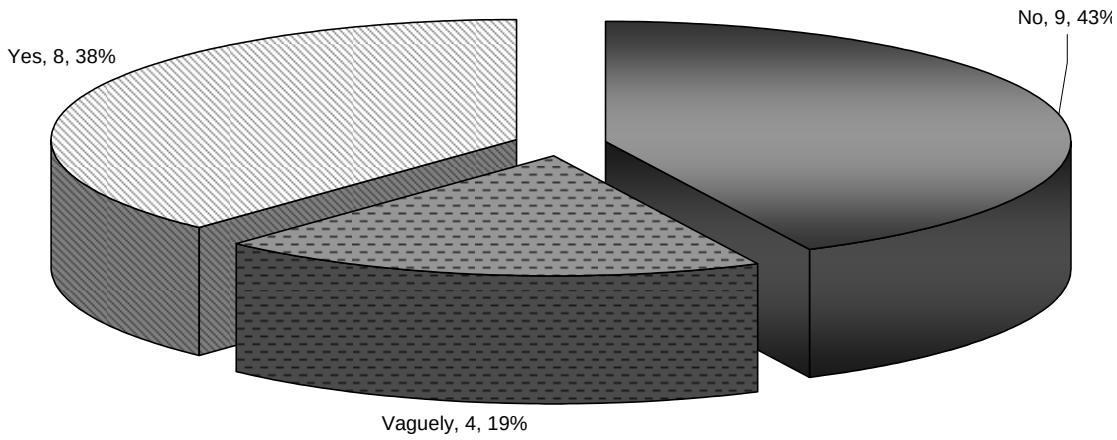

Figure 14. Pre-9/11 First Battalion Responders and Their Familiarity with Means of Egress in WTC Towers

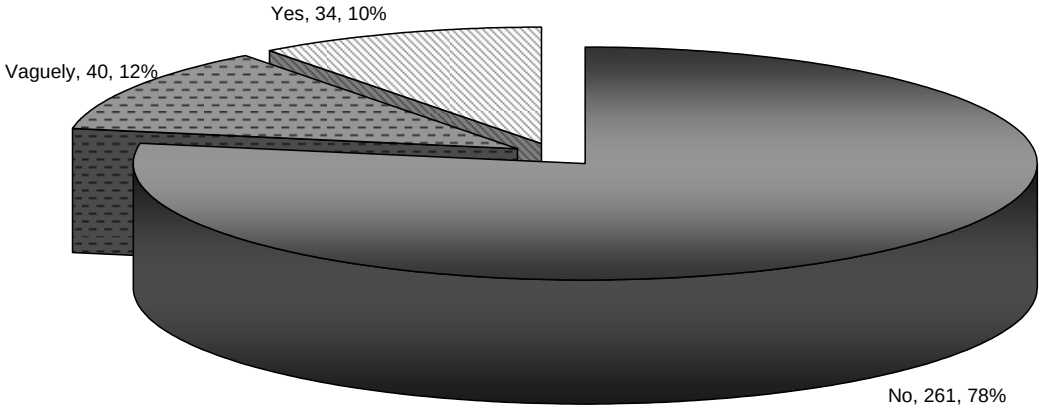

Figure 15. Pre-9/11 Firefighters Outside of the First Battalion and Their Familiarity with Means of Egress in WTC Towers

3. Fireproofing

Measures taken by the PANYNJ include the fact that the material used to fireproof the lightweight steel truss-supported floors - sprayed fire resistant material, or SFRM - was unprecedented in high rise construction,[77] was untested, and with a

[77] NIST, *Final Report*, 69.

thickness that was chosen arbitrarily and without a basis in technical knowledge.[78] Furthermore, the use of the 2 hour fire rating chosen as the basis of design was significantly less than the 3 hour fire rating required by the 1938 Building Code. Remarkably the fireproofing that was used was never actually tested against this (reduced) fire rating.[79] The reduced (design) fire rating was therefore complemented by an absence of information as to whether this lesser rating could be met. The 3 hour fire rating was standard for high rises constructed from 1938 to 1968. Based upon the survey, the presence of a lesser fire rating on inordinately slender steel members was likely to have been unknown to a high percentage of firefighters who responded into the Towers. These personnel would naturally assume a longer resistance to fire based upon the "standard" thicknesses observed during their firefighting careers. The fireproofing situation can therefore be reasonably assumed to have been misleading to the responders relative to the period of time that the buildings would remain structurally sound, based upon their experience with high rise construction. The absence of this information presumably increased the potential for over-confidence in the structures, and resultant over-commitment. A factor that must be considered is the contribution of the damage that occurred to the fireproofing prior to collapse, a consideration not present at the earlier fires. It is now known that the fireproofing was likely compromised by the impact of the aircraft, resulting in a lesser degree of fire resistance on many of the floor trusses than had been characteristic of earlier hi-rise fires. It may therefore be argued that the impact of the aircraft was an unprecedented contributor to an early fire-induced collapse, lessening the importance of information regarding what type of fireproofing was present. It is noted, however, that the significance of this factor in the minds of the responders would reasonably be mitigated by several observations:

- The more typical cementitious fireproofing is hardier and more likely to have survived impact pressure and fragmentation. Thoughtful responders would likely have assumed survival of the fireproofing based upon the natural expectation that it was cementitious.
- The conditioned assumption of the presence of steel beams by responders, versus lightweight trusses, was significant. Steel beams would tend to provide a much larger and more uniform surface area for adhesion of the

[78] NIST, *Final Report*, 70.

[79] Ibid.

fire-proofing material, and more protection due to dissipation of the blast wave. Responders would naturally predict a better potential for survival of the fire-proofing than actually occurred.

- The behavior of conventional steel roof and floor beams in Building 5 of the World Trade Center Complex indicates that heavily impacted and unprotected steel beams (versus trusses) will sag rather than collapse under fire conditions. This building suffered complete burn-out of contents over a period of several hours. Despite this fact, collapse did not occur.[80] Such behavior had also been observed prior to 9-11: for instance, in the Broadgate Phase 8 fire in the United Kingdom in 1990, unprotected steel beams sustained fire for 4.5 hours without collapse.[81]

B. SUMMARY

The factors cited above are illustrative of numerous examples of poor information management that are likely to have contributed to the devastation of 9-11. Although extreme, the circumstances of this event are suggestive of a potentially high level of ignorance on the part of firefighters to *all* responses. This ignorance is more understandable and, arguably, unavoidable for "ordinary" structures due to their vast numbers and minimal attraction as targets. It becomes especially problematic, however, when considered with regard to pre-determined target hazard structures such as the World Trade Center Towers. The events of 9-11 highlighted a particularly significant and unnecessary void in the realm of knowledge possessed by firefighters. This void may be reasonably concluded to have caused over-commitment, inadequate mental preparation, and relative pre-incident complacency on the part of the firefighting forces. A system designed to collect and analyze critical information *prior to* a response, combined with a capability for sharing it with on-scene responders, would have served to reduce the dire consequences of that day. The value of specific information to responders is dramatically illustrated by these events. As determined by survey, the level of awareness on the part of many firefighters regarding the construction characteristics of *any* target hazard

[80] Federal Emergency Management Agency, *World Trade Center Building Performance Study* (New York, N.Y.: Greenhorne & O'Mara, Inc., September 2002), 4-12.

[81] Ibid., A-9, A-10.

location in New York City has not improved appreciably since 9-11. Only 52% of respondents report being more familiar with the characteristics of *any* target hazard location since 9-11 (survey question number 25).

IX. TIER 5: CASE STUDIES AND LESSONS LEARNED

A. CASE STUDIES

A compilation of recent terrorist related events associated with the fire community provides additional real life examples of the impact of information management capabilities on firefighter effectiveness, preparedness and safety. Each of these circumstances may be analyzed to determine the criticality of the fundamental need for observing, collecting, archiving, protecting and sharing terrorist-critical information. These examples are as follows:

- In the early 1990's design drawings from the construction of the World Trade Center towers were knowingly but unwittingly provided by high-level personnel within the FDNY Commissioner's Office to an individual who was later discovered to be an accomplice and disciple of Sheikh Omar Abdel Rahman (the Blind Sheikh), a primary figure in domestic-based Islamic terrorist activity at that time. The individual in receipt of these drawings was also a trusted employee of the FDNY.[82] The details surrounding the release of these documents to this individual indicate an absence of awareness of the utility of their content. Although not known with certainty, it is entirely possible that the building plans were fundamental to an understanding of the building structural systems by the perpetrators of both terrorist attacks on the World Trade Center (1993 and 2001). Such an understanding on the part of the terrorists would dramatically increase the potential for destruction and structural collapse during an attack. The need to recognize, and protect, critical information is apparent.
- The Republican National Convention was held in New York City in the summer of 2004. A portal-type radiation detector was situated over the city-bound lanes of the George Washington Bridge by Port Authority personnel in an effort to detect and interdict shipments of radioactive material that could be used malevolently. The presence of this detector was not brought to the attention of FDNY personnel. On the eve of the convention the system detected the passage of vehicle-borne material emitting a significant amount of radiation. The vehicle of concern was not immediately identified due to the large number of vehicles which passed the detector simultaneously–in fact, identification was accomplished only after two days (the emitter was determined to be innocuous). Of significance was the fact that a large number of FDNY personnel had been positioned in and around the mid-town Manhattan area during this time period in conformance with an emergency action plan for the Convention.

[82] Peter Lance, *1000 Years for Revenge* (New York, N.Y.: Harper Collins Publishers, 2003), 43-44, 398-390.

The departmental plans were therefore inconsiderate of the potential for a radiation alarm and required adjustment "on the fly." A system of information sharing, based upon established relationships and trust and familiarity, would have enabled the foreknowledge of detectors prior to the event. Preparation and response plans would have been subsequently altered. The need to establish trusted relationships with other agencies is made clear by these circumstances.

- In 1995 Ramsi Yousef, the mastermind behind several large-scale terrorist plots and attacks (including the 1993 World Trade Center bombing), was in the process of constructing explosive devices in a plot to destroy multiple international airliners in flight. This plot was discovered during this "bomb-making" stage as a result of an incidental chemical fire in his Manila apartment.[83] Numerous and volatile pre-curser chemicals were present in the occupancy of the bomb makers; despite this fact, the responding firefighters failed to detect the intent and significance of the activities. They left the scene in a routine manner.[84] An observant and insightful police officer pieced together the indicators and returned to the scene, resulting in the arrest of an accomplice of Ramsi Yousef and disruption of the plot. Ramsi Yousef fled the country and remained at-large, ultimately being captured in Pakistan. Increased awareness on the part of the firefighters, through a concerted education program, may have resulted in earlier detection and a more successful and complete interdiction on the part of police personnel through the interdiction of Yousef. It is apparent that a sense of heightened awareness, and recognition and identification skills, are essential among fire personnel.

- In April of 2006 an Engine Company with the Seattle Fire Department conducted an impromptu building inspection based upon the observation of potentially unsafe conditions at a building that had formerly been occupied as a Mosque. This inspection for fire related hazards resulted in the discovery of hundreds of military chemical and biological hoods in an occupancy that would not normally house such items. Recognizing this as a potential indicator of terrorist activity, the officer notified the Seattle Police Department who in turn notified the FBI. The officer also provided names and contact phone numbers for occupants who may have been involved with the procurement and storage of the masks.[85] This case study illustrates the benefits of awareness, detection skills, and pro-activity within a fire department.

- Over time a large number of interdictions of criminal activity have resulted from standard firefighter activity. These events indicate the value

[83] Lance, *1000 Years for* Revenge, 262-269.

[84] "Oplan Bojinka," in Wikopedia, available at http://en.wikipedia.org/wiki/Oplan_Bojinka, last accessed on February 4, 2007.

[85] Captain Thomas Richardson, Seattle Fire Department, "Official Report 'For Official Use Only'," April 20, 2006, 1.

of firefighters as potential detectors of terrorism. Most of these events occur in relative isolation and subsequently the significant potential of this mechanism remains largely unrecognized. Two very recent examples include the discovery of a cache of horded mail (20 sacks) within the Queens, N.Y. residence of an errant postal worker as a result of the response of firefighters to an odor of smoke.[86] Another recent example is the discovery of a massive hydroponic marijuana growing facility in an apartment in Brooklyn, discovered as a result of an otherwise typical response of firefighting units to a water leak.[87] Firefighters respond everywhere and it is apparent that such response is a continual opportunity for interdiction.

- The World Trade Center was first attacked in 1993. One of the principal investigators of the structural damage following these attacks was Mr. Edward Wallace, a Registered Architect who was also a detective with the NYPD.[88] Detective Wallace had been identified by the NYPD early in his career as an individual with unique architectural skills. Based upon these skills he was assigned to the Crime Scene Investigations unit, a position he maintained at the time of the 1993 attacks. Immediately after the attacks NYPD Commissioner Kelly assigned Detective Wallace to investigate the bombings. During this process Detective Wallace became intimately familiar with the construction characteristics of the entire complex. He also identified critical locations of damage that jeopardized police officers involved in rescue operations, and presented this information to Commissioner Kelly and many Commanders. The endangered officers were promptly removed. Detective Wallace thereafter maintained copies of the construction drawings (blueprints) for the Towers at his home. Although not on the scene following the 9-11 attacks, Detective Wallace witnessed the attacks on television. Upon observation of the extent of fire, and based upon his knowledge of the construction characteristics, he determined immediately that the Towers were in danger of imminent collapse as a result of fire load and poor fire resistance of major structural elements. Detective Wallace repeatedly attempted to convey this information to the Incident Commanders at the scene but was unable to reach them via telephone. The experience of Wallace, while not consequential in this instance due to his inability to contact the incident commanders, stands as testimony to the value of having uniquely qualified individuals in possession of specific information prior to an event. It also indicates the need for reliable communications equipment in the hands of such individuals. The failure of the NYPD was simply one of

[86] Lorena Mongelli, Leonard Greene and Zach Haberman, "Fire Mailman's 'Seinfeld' Excuse." *New York Post*, May 5, 2006, 3.

[87] Peter Kadushin and Robert Moore, "Water Leak Leads Cops to Pot Stash," *New York Daily News*, January 28, 2007, 2; also Larry Celona, "Leaky Building Goes to Pot," *New York Post*, January 28, 2007, 3.

[88] Information obtained from Detective Edward Wallace, interview by author, Brooklyn, N.Y., February 2, 2007.

communications: the agency had taken definitive steps over many years to improve its reservoir of information and had identified a critical human asset (a Registered Architect). Contrarily, the failure of the FDNY was three-fold: information management, asset identification and communications. Detective Wallace was knowledgeable, experienced and capable of obtaining specific and actionable information. He was identified as an asset. The New York City Fire Department did not take such proactive measures but returned to "business as usual" as it awaited the next attack. Had similar steps been initiated by the FDNY in 1993 (notably, similarly experienced individuals existed within its ranks) – the complexion of the response on 9-11 may have been different. Critically, a survey of FDNY personnel indicate that only 12% of those FDNY respondents with specialized skills (such as a rigging certification, crane operator's license, and professional engineering license) indicate that the Department is aware of these skills (survey question numbers 18 and 19).

- The FDNY has shown a remarkable inability, or reluctance, to identify and utilize key resources that it can leverage in the fight against terrorism. An absence of information regarding the value of these assets reduces the resistance of New York City to the effects of an attack. An example that illustrates this point derives from a federal program to assist local governments. The department supports a specialized FEMA sponsored Urban Search and Rescue (USAR) Task Force. Federal funding for the New York City Task Force (NY TF-1) amounted to $ 3,596,264 in fiscal year 2005. Nationally, FEMA spent $ 60 million on the entire task force system in each of FY 2003 and 2004.[89] In the days and hours following the attacks of 9-11 USAR Task Forces from around the country reported into the various command posts to notify FDNY command personnel as to the availability of their expertise and equipment. Many of these teams, due to the fact that their existence was unknown to the FDNY officers in command and who materialized in a highly stressful environment, were ordered to "stand down" 20 blocks away from the site while relatively untrained volunteer firefighters and civilians "worked the pile." Several Structural Specialists (a specific task force position) from Indiana Task Force 1, New Jersey Task Force 1, and elsewhere reported amazement and disappointment at the alarming absence of awareness on the part of the FDNY to recognize their rescue counterparts.[90] Simply put, information regarding the nature of these task forces was unknown to the FDNY Chiefs who assumed command, despite the fact that New York City itself had staffed such a team for over 10 years. The unknowing chiefs were primarily and necessarily interested in site control through a reduction in

[89] Kieth Bea, CRS Report to Congress, *Urban Search and Rescue Task Forces: Facts and Issues*, updated January 10, 2005, available at http//www.fas.org/sgp/crs/RS21073.pdf, last accessed February 7, 2007, 4.

[90] David Cook, Registered Architect (Indiana TF-1), interviewed by author via telephone, January 3, 2007; also James Cohen, P.E.(NJ TF-1), interviewed by author via telephone, January 5, 2007, and Al Brenner, P.E. (NJ TF-1), interviewed via telephone, January 5, 2007.

the size of the workforce, and accountability. They did not possess the time or the inclination to become educated about the federal task force concept while conducting operations. Many of the disciplined task forces obeyed the standby orders until it became apparent that their expertise would not be utilized as a result of ignorance on the part of the incident commanders – a delay of several days. They then self-deployed to perform functions that they themselves deemed appropriate to their level of training and expertise. Critical information – specifically awareness of the federal USAR system – that was available to only a small number of FDNY personnel to the exclusion of the remainder of the department resulted in a delayed and fractured federal response effort. Other problems continue to exist with this Task Force. The composition of the membership is drawn from only the Special Operations Command (SOC) division within the FDNY–limiting the pool of talent to less than 5% of the workforce. Furthermore, several key positions are not filled with personnel who meet minimum qualifications. This is partially a consequence of the fact that NY TF-1 is the only task force in the country that is fully self-staffing: that is, as a rule it fills all positions from within the FDNY, NYPD and EMS ranks. Therefore, requirements for the "Structural Specialist" position such as a Professional Engineering (P.E.) license or Registered Architect's (R.A.) License and five years of experience in the analysis, design or investigation of structures.[91] often cannot be filled from within these ranks. Ironically, although such P.E.'s do exist within the department, this fact remains either unknown or unrecognized by the command hierarchy. Qualified individuals are not given the opportunity to participate; rather, those selected meet criteria that is undefined, unregulated, and highly unorthodox. Training of task force members on structural related subject matter is also delivered by personnel who lack requisite qualifications, a circumstance that pre-dated 9-11 and remains extant. Other task forces necessarily pursue certain types of expertise outside of the municipal agencies that govern their structure and therefore fill these positions in accordance with minimum standards. The circumstances accompanying the management of NY TF-1 call into question the entire oversight mechanism regarding federal spending for homeland security initiatives. They also stand in stark contrast to the recommendations of both the World Trade Center Building Performance Study and the NIST post-9/11 reports, which call for an increased level of collaboration and training between structural and fire protection engineers and response personnel as a result of the limitations in structural knowledge evidenced by fire personnel on 9-11.[92],[93]

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[91] *DisasterEngineer.org*, a resource for FEMA USAR technical sub-committee, available at www.disasterengineer.org/aboutus.shtml, last accessed January 6, 2007.

[92] Federal Emergency Management Agency, *World Trade Center Building Performance Study* (New York, N.Y.: Greenhorne & O'Mara, Inc., September 2002), 8-12.

[93] NIST, *Final Report*, 222-223.

- A series of deadly bombings took place in the London subway system on July 7, 2005 at 8:50 AM (during rush hour). These bombings occurred at 2:50 AM eastern seaboard time (EST). Despite the potential for coordinated attacks and the similarity of New York and London as attractive potential targets for radical Islamic extremists, no early notification of the London bombings was made to any of the 350 units within the FDNY. On-duty responders remained unaware of these bombings until approximately 9 AM EST, a period of 6 hours.[94] Those firefighters who had not yet learned of the events via the morning newscasts were informed through a teleprinter message at that time. In the interim time period many units city-wide had participated in responses, ignorant of the heightened threat potential. A similar situation was observed in the absence of notification to the FDNY regarding information long known by the NYPD concerning attacks on the subway system on specific identifiable dates (October 5 and 7, 2005). A source determined to be reputable had indicated that explosive devices were to be utilized in the attacks. In response to this information Mayor Bloomberg stated:

"We believe that there is some credibility to this, and if I'm going to make a mistake you can rest assured it is going to be on the side of being cautious."[95]

- Despite these assurances, fire department response personnel learned of this threat on the eve of the targeted day, through televised news programs.[96] If a mechanism for inter-agency information sharing existed, it was not utilized.

- In another series of events novel bombing techniques were utilized to kill civilians in Baghdad, Iraq, on February 21 and 22, 2007. In the first incident a large chlorine tanker was exploded; in the second, a pick-up truck carrying chlorine cylinders was detonated.[97] Many people were killed or injured. On February 22, 2007 a chemical munitions and bomb assembly plant stocked with propane cylinders and "ordinary chemicals" was discovered near Fallujah.[98] Despite the recognition of new tactics and the potential for copy-cat or related attacks on US soil, no rapid information collection, analysis or even notification was evident within the ranks of the FDNY. In the days immediately following these attacks

[94] Interviews with Lt. Peter Kearney and Firefighter Mark Gianni, FDNY, Queens, N.Y., February 20, 2007.

[95] Jamie McIntyre, et al., *Official: Threat Cited This Weekend*, on "CNN.COM," October 7, 2005, available at http://www.cnn.com/2005/US/10/07/newyork.subways/index.html, last accessed on February 7, 2007.

[96] Personal Interview with Firefighter Edward Kennedy, Engine 44, New York, N.Y., October 7, 2005.

[97] Sebastian Abbot, et al., "Attacks Using Chlorine Gas Trucks Underscores Threat of Chemical Bombs," *International Herald Tribune*, available at http://www.iht.com/bin/print.php?id=4689579, last accessed on February 22, 2007.

[98] Ibid.

information was obtained by firefighters from the evening news. Importantly and for the first time, on February 27, 2007 a "Counterterrorism Information Bulletin" on this subject was distributed by the CTDP in conjunction with the routinely published and widely disseminated "Department Orders." Entitled "Terrorism Awareness – Improvised Chemical Weapon Attacks in Iraq" this document serves to both alert and inform the operational elements in the department of the newly recognized threat.[99] Although a potentially critical delay of 6 days ensued after the initial causative incident, this distribution represents a novel positive step taken by the department to recognize and address emerging threats at the "field" level. This mechanism will support the conceptual recommendations for solutions as proposed in Chapter XVI of this thesis.

- On October 11, 2006 an aircraft carrying New York Yankee pitcher Cory Lidle and a flight instructor crashed into a high rise building on the upper east-side of Manhattan.[100] Subsequent investigations proved that this incident was accidental in nature.[101] In the immediate aftermath of the crash, however, the potential for terrorist causation was recognized by both the NYPD and the FDNY. Subsequently, the incident was treated by the NYPD as a terrorist event. The FDNY attempted to respond in routine fashion.[102] NYPD dispatched hundreds of heavily armed officers to the scene and placed a "lock-down" on a significant portion of Manhattan. The FDNY response, as reported by the first arriving FDNY Officer on the scene (Lt. Ed Ryan, Engine 44), was characterized by an absence of information that led to significant confusion on the part of firefighting forces:

- The building was "missing" 10 floors (consecutive floor level designations transitioned from floor 12 to floor 23 without the presence of actual intermediate floors). This practice is uncommon, but not unheard of, in Manhattan where real estate perceived to exist at higher elevations possesses greater market value. This unique but critical numbering system was unknown to fire department personnel, was not included in CIMS, and resulted in significant confusion for forces within the building attempting to locate the "fire apartment." It also severely challenged communications between those inside the building and those observing the building from the exterior, who commonly count window openings to identify the fire floor. This confusion included communications with the

[99] FDNY, *Counterterrorism Information Bulletin: Improvised Chemical Weapons in Iraq,* distributed with "Department Order Number 18," dated February 26, 2007.

[100] Maria Newman and William Rashbaum, "Yankee Dies in Plane Crash, Official Says," *New York Times*, October 11, 2005, 1.

[101] Matthew Wald, "Inexperience Noted in Yankee's Plane Crash," *New York Times*, Metro Section, February 6, 2007, B3.

[102] All information regarding this response was obtained from first arriving FDNY Officer Lt. Ed Ryan, Engine 44, interviewed by the author, New York, N.Y., February 7, 2007.

Incident Commander, as reflected in taped records of the on-scene audio transmissions.[103]

- The apartment which suffered aircraft impact was actually a very large combined apartment wherein three individual occupancies had been conjoined by the removal of partition walls. This fact was unknown to the fire department personnel and was not included within CIDS. The location of maximum fire was actually distant from the point of impact. Significant confusion resulted from the nature of the apartment layout in terms of locating and extinguishing the fire.
- Supportive ("second due") firefighting forces were significantly delayed by the NYPD lockdown procedures, and the movement of firefighters at the scene of this accident was hindered by security measures emplaced at street level by the NYPD. Security-related obstruction of firefighting forces continued after fire extinguishment was accomplished, hindering access to location such as the Command Post. This impediment existed partially as a result of an absence of information sharing between the FDNY and the NYPD.

B. SUMMARY

Analysis of these varied case studies allows for the identification of critical capabilities within the fire community that have proven to be beneficial to the counter terrorism effort (if present) and harmful (where absent or incomplete). Unfortunately, much of the experience has been defined by inadequacy, and the successes have been largely incidental (the result of chance). The necessary capabilities derived from these case studies that are deserving of specific attention are as follows:

- An awareness of the necessity to maintain and protect important information and to constantly maintain a defensive posture (as observed in the failure of the FDNY to secure important documents)
- The necessity of developing systemic information sharing capabilities with information gatherers, and the importance of a "trusted network" of communication (as evidenced by the absence of inter-agency information sharing during the 2004 RNC Convention)
- Recognition and identification skills at the field level concerning terrorist activity indicators (successfully observed in both Seattle and New York City) and awareness of the need to convey such information to the appropriate authorities

[103] FDNY Bureau of Communications, Audio transmission record of 9th Battalion Chief recorder, Alarm Box 1031, Manhattan, October 11, 2006.

- The need for firefighters in all places and at all times to be situationally aware of terrorist indicators, including during seemingly routine emergencies (as elucidated by the Manila incident)
- The absolute necessity for the FDNY to acquire and share information regarding world-wide terrorist events with the response units *as rapidly as possible*. Delay could equal death. The inability to satisfy this need, as observed in the New York City subway case studies, has had serious potential implications for responders
- The ability to gather information prior to an event and to "operationalize" this information, as evidenced by the Cory Lidle event, wherein critical information that *was* retrievable (the floor numbering system) remained unknown to responders

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X. TIER 6: ARIZONA COUNTER TERRORISM INFORMATION CENTER (ACTIC)

One of the recently established fusion centers in the United States is the Arizona Counter Terrorism Information Center (ACTIC). ACTIC is unique in the extent of involvement of fire department personnel in the activities of the center. For this reason– as well as the recognition by many in the national law enforcement and firefighting communities that it is a highly effective fusion center–it was chosen for analysis intended to identify policies and procedures that may help address some of the deficiencies associated with the use of intelligence and information by the FDNY. [104] The information below was obtained primarily through an interview of Captain Rick Salyers,[105] Phoenix Fire Department, who was instrumental in the establishment of the mechanisms described below.

ACTIC is a state-sponsored entity comprised of 43 local, state, federal and military agencies. It has established mechanisms for obtaining, capturing, sharing and disseminating information to improve both general awareness and situational awareness at an incident scene.

The development of ACTIC occurred in evolutionary stages. Initially the ACTIC utilized a "collection plan" system, common to many fusion centers, wherein information that meets certain pre-determined criteria is garnered from routine police reports by "Terrorism Officers" and placed within an information repository intended to serve future needs. "Terrorism officers" were police officers who did not necessarily possess security clearances and were untrained in intelligence matters. Over time police patrol personnel became familiar with the criteria of concern to the "Terrorism Officers" and earmarked certain information on the reports in order to make identification and extraction easier. A second group of individuals known as "Intelligence Officers," on the other hand,

[104] For instance, investigation of ACTIC as a model was recommended by Eric Lamar, International Association of Firefighters (IAFF). ACTIC activity has also been contributory to several thesis, including William Forsyth, State and Local Intelligence Fusion Centers: An Evaluative Approach in Modeling A State Fusion Center (Monterey Ca.: NPS, September 2005), and Alicia Welch, Terrorism Awareness and Education as a Prevention Strategy for First Responders (Monterey, CA: NPS, March 2006).

[105] Captain Rick Salyers, Phoenix Fire Department, interviewed by author, Phoenix, AZ., December 7, 2006.

concentrated solely on conducting vulnerability assessments of fixed facilities. These two functions–the collection plan and the vulnerability assessments–were conducted independently of each other and by different personnel. Neither of these groups was involved in the active support of operations.

The personnel involved in managing ACTIC recognized that operations were disjointed and of little use to field personnel involved in emergency response. A solution evolved that consists of several components:

- The Terrorism Officers became Terrorism Liaison Officer (TLOs) who can be drawn from only specific backgrounds: police, fire or military. Additionally, they are required to possess a security clearance.
- TLOs originate from the operational ranks of a multitude of agencies and jurisdictions and therefore deliver a wide range of capabilities and resources. They are "loaned" to ACTIC by their respective agencies for 10 hours per week and are on call within their jurisdictions at other times. They also possess the ability to respond to jurisdictions outside of their own.
- TLOs are provided with fully equipped Chemical, Biological, Radiological, Nuclear, or High-yield Explosive (CBRNE) vehicles that enable them to participate actively in operations support. The equipment they carry includes a laptop computer with wireless internet capability, a printer, a digital camera, a camcorder, a Global Positioning System (GPS), binoculars, and a spotting scope.
- Operations support consists of direct assistance to various agencies in the field at the scene of an incident as it develops. The TLOs possess "reach back" capability that allows them to access information through ACTIC that would otherwise not be available. The assignment of a TLO to various response functions – such as police, fire, and emergency operations – permits an on-scene yet "behind the scenes" communication capability between different agencies. Furthermore, the unique knowledge of the TLOs, and the contacts that they have developed, permit easier inter-agency cooperation.
- The TLOs are in close physical and functional daily contact with criminal and intelligence personnel with whom they are co-located at ACTIC.
- The TLOs maintain the collection plan and actively perform vulnerability assessments and building intelligence collection. Corroboration between TLOs from different agencies through mutual assistance in performing vulnerability assessments permits a diverse perspective and therefore the likelihood of a more comprehensive final product. Similarly, in performing "distant" vulnerability assessments the TLOs become familiar with a wide range of target hazards throughout the state.

- The TLOs provide "added value" to their home agencies by sharing ("reporting back") information and intelligence that is garnered during their time at the ACTIC. Such cross pollination acts as a catalyst in the dissemination of useful information, and the spreading of techniques and practices.
- The involvement of the TLOs with the long-term cultivation of information, the performance of vulnerability assessments, collaboration with other agencies including intelligence and criminal entities, and active support of operations results in a comprehensive capability to enhance information management within the ACTIC.

A real life example of the manner in which the TLO can effectively function in support of operations occurred on February 23, 2006. A hostage situation developed on an upper floor of a high rise building in Phoenix, Arizona. TLOs responded immediately and remotely retrieved and provided the Phoenix Police Department Swat team with color photographs of the suspect. Command staff were concurrently provided with a criminal and mental health history of the suspect, and fire and EMS personnel were provided with color photographs of each of the nine hostages. The presence of several TLOs and their interoperability permitted fire department and EMS personnel to be staged two floors below the incident to permit rapid response in the event of a sudden emergency. After nearly 7 hours of negotiation the suspect surrendered peacefully and was taken into custody without any injuries.[106]

A. LESSONS FROM ACTIC

Several positive lessons may be extracted from the above analysis of the working mechanism of ACTIC:

- The importance of selecting personnel based upon qualifications and experience
- The importance of a consistent terrorism prevention and response methodology within the department
- The importance of the various and diverse components within the department collaborating in preparation for response

[106] Rick Salyers and Troy Lutrick, "Best Defense: Arizona's Terrorism Liaison Officers Program Allows the Fire Service to Take a Proactive Role in Intelligence Gathering and Sharing," *Fire Chief*, February 2007, 48 – 53.

- The importance of maintaining a close relationship between personnel within the Fire Department who are dedicated to terrorism and operations-level personnel within the fire department who do not possess terrorism as a primary mission
- The importance of intra-departmental relationships between personnel with counter-terrorism missions; i.e., intelligence personnel in the fire department speaking on a regular basis with intelligence personnel within the police department, and cooperating in joint projects such as vulnerability assessments
- The need for a collaborative process, involving fire department personnel, to develop intelligence specific to fire operations using analysts dedicated to this activity
- The need for a capability to provide support to operations through interconnectivity and "reach-back" mechanisms, and the use of technology to accomplish reach-back and information sharing with commanders on-scene. This capability may be contrasted with the inability of Detective Wallace to convey critical structural information to commanders at the World Trade Center on 9-11 (refer to Chapter IX)

Many of these lessons and considerations may prove important for the FDNY in the contemplation of methods to better manage information.

XI. TIER 7: THE NEW YORK CITY POLICE DEPARTMENT

Perhaps the most illustrative and comprehensive example of the development of an information management system in response to the terrorist threat is that of the post-9/11 New York City Police Department (NYPD). Commissioner Raymond Kelly has taken dramatic and targeted steps to improve the capabilities of his agency to handle intelligence related information. The following information was obtained largely from information provided by New York City Police Officer/Field Intelligence Officer Daniel Kirwin.[107]

Prior to 9/11 the intelligence component of the NYPD consisted of a singular counterterrorism module that operated out of One Police Plaza (police headquarters) and provided "coverage" of the entire city. Following the attacks, the need for change was recognized and acted upon. Changes took place at several levels. First, the singular counterterrorism module was enlarged and expanded. Recognition of the need to perform more systemic information control and dissemination within the department resulted in the establishment of additional similarly structured counterterrorism modules collocated in a precinct in each of the five boroughs of New York City. Due to complexity and size Queens, Manhattan and Brooklyn were provided with two such modules (north and south). Furthermore, modules were established within the Transit and Housing Divisions of the NYPD. Thus the total number of modules was increased from one to twelve, with the number of personnel assigned to each of these modules established at approximately three to four. The counterterrorism modules are staffed by uniformed police personnel chosen based upon aptitude, capabilities, and experience related to the recognition of value within large quantities of diverse information. The primary function of these officers is to collect and sift through terrorist related information (obtained from a wide variety of sources including open source, law enforcement periodicals, intelligence related information sharing networks, and hot line derived "leads"), identify that which is of particular relevance to their particular borough, extract this "added value" information while recognizing patterns, synergies and

[107] P.O. Daniel Kirwin, NYPD Counter-Terrorism, interviewed by author, Queens, N.Y., December 19, 2006.

commonalities that may exist, combine and condense the information so obtained, and fashion the information into a practical and deliverable form for a variety of "users" within the borough. Primary among these users is the Borough Commander, who is briefed on a daily basis regarding that which has been determined to be particularly important to the interests of the borough and its citizens. The Borough Commander in turn discusses this information with the precinct commanders within his purview; with Field Intelligence Officers (described below); with his immediate superior (Patrol Commander); and with the balance of Borough Commanders at weekly meetings and through conference calls. Other users within the Borough police structure who receive selected information from the counter-terrorism module include individual precinct Field Intelligence Officers (described below), precinct and borough training officers, and operational units who may be required to take careful and deliberate, or swift and decisive, action based upon the nature of the information received. The counter-terrorism module also provides information that dictates the activity and staffing level of the "Atlas" team. This team is comprised of a supervisor and police officers who are assigned to counter terrorism duties and are given a list of high priority locations (such as bridges and tunnels) and specialty events (such as parades) for the purposes of special attention, deterrence and rapid interdiction. These individuals are kept informed of terrorist related developments on a real-time basis. The counter-terrorism module also serves as a liaison with other city agencies, develops specific training programs, and serves as a conduit for information received from other intelligence-related NYPD functionaries. These functionaries include a new domestic and international terrorism research center (described below) and a program whereby NYPD operatives maintain a presence in several foreign countries for the purpose of obtaining first-hand terrorism related information tied to actual events. Information so derived is disseminated to the precincts through the counter-terrorism modules. These dedicated counter-terrorism modules are therefore a critical component in affecting the collection, analyzing, dissemination and actionable implementation of intelligence and information. A security clearance is required to perform these functions.

A second and completely new enhancement to the NYPD following 9/11 is the establishment of a diffuse intelligence management capability. This system revolves around a position known as the Field Intelligence Officer (FIO). There is one such individual in each of the 76 precincts throughout the city. The FIO is tasked primarily with the localized collection of important information. As he serves the needs of the Precinct Commander, this individual is concerned with both criminal and terrorist activity. In short, his or her role is to "find it out, write it down, and get it out" to the hierarchy and to the intelligence operatives (including the counter-terrorism modules) for widespread, or targeted, distribution within the department. He also acts as a conduit for information that is received from other counter terrorism functionaries and provides this information directly to precinct level personnel (including patrol officers). The individual chosen for this position is a capable supervisor who is familiar with the "personality" and inner workings of the precinct. He is therefore likely to experience a sense of responsibility and affinity for those within his domain. The FIO therefore provides a consequential and pivotal role: intimate precinct knowledge and an appreciation for, and contacts within, the larger NYPD intelligence community.

Two additional and illustrative examples of pro-activity on the part of the NYPD include the following:

- The establishment of a counter-terror training center wherein detailed replicas of actual terrorist facilities and bomb factories are constructed for the purpose of training NYPD patrol officers. Mock-ups include the van used in the 1993 World Trade Center bombing, the apartment within which the bombs used in the 2005 London transit attacks were fabricated, and the apartment/ bomb factory of a potential suicide bomber who detonated a device in Oklahoma in 2005. These models are replete with actual chemicals and bomb ingredients intended to enhance police officer recognition and identification skills.[108]
- The detailed investigation of significant terrorist events, including those occurring in foreign countries, by highly trained NYPD personnel dedicated to this effort.[109] The end result is the development of informational presentations provided to NYPD personnel ranging from the Police Commissioner to newly appointed patrol officers by way of the mechanisms described above. These presentations have also been

[108] Alison Gendar, "Windows on Terror: Cops Learn How to Spot Bomb Labs," *New York Daily News*, May 7, 2006, 14.

[109] Erika Martinez, "NYPD's Global Eyes and Ears," *New York Post*, November 28, 2005, 3.

> disseminated among various elements of the national homeland security community and have been observed as possessing more value than similar efforts on the part of the Department of Homeland Security (DHS).[110]

The operations-level personnel who comprise the Counter Terrorism and Intelligence divisions together form a network of intelligence and information management that serves the needs of the department and the citizenry. These internally directed efforts of the NYPD in response to the new terrorist threat are observed to be comprehensive, actuated by competent personnel, organized toward effectiveness, and largely in conformance with the widely recommended post-9/11 strategies of information sharing.

No system is perfect, however, and although many positive lessons may be learned from the above analysis several shortfalls may be identified with the NYPD system of information management:

- The system does not account or allow for the formal participation of those within homeland security who do not serve a law enforcement mission (i.e., the FDNY). The continued existence of significant organizational bias between the NYPD and the FDNY, markedly visible in response activity (as described by Chief Joseph Pfeifer[111]), can be reasonably assumed to also exist in the information-sharing realm. There is no reason to believe that cooperation will be natural or expected in the absence of a formal structure for information sharing.
- Paralleling the experience of the FDNY as primarily a firefighting organization, the primary mission of the operational component of the NYPD is not intelligence or terrorism. Rather, it is crime. Many of those involved with intelligence, including the FIO, also possess responsibility deriving from the more visible day-to-day criminal aspects of the NYPD. The performance of those they report to – such as the Precinct Commander - is largely determined by crime related indicators of success. A strong compulsion to act in response to the ever-present criminal concern, versus the rarely visible terrorist threat, is likely to distract the efforts of those with a joint mission. A dedicated effort for counter-terrorism is likely to produce better results.

[110] Deputy Chief John Ball, Indianapolis Metro. Police Department and Director of Indianapolis and Marin County Emergency Services, telephone interview by the author, February 6, 2007.

[111] Pfeifer, "Understanding How Organizational Bias Influenced First Responders at the World Trade Center," in *Psychology of Terror*.

A. LESSONS FROM THE NYPD INITIATIVES

The management of information has been recognized as a critical need by the NYPD and has been dealt with in a serious and organized manner. This in and of itself serves as a fundamental lesson to the FDNY. Other, more specific, lessons are available as follows:

- The selection of personnel based upon recognized capabilities and qualifications
- The ability to manage information in a manner that allows it to be supportive of both the general knowledge level of police officers and specialized operational forces in the field (i.e., the Atlas Teams)
- A system of obtaining information from a wide variety of sources and performing in-house analysis and dissemination
- The ability to process intelligence from the available information
- A widespread and highly visible informational presence throughout the department and at all levels within the department
- A capability to directly support, and benefit from, those personnel who function at the most basic operational level – the patrol officers

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XII. TIER 8: THE EXPERIENCE OF THE LAW ENFORCEMENT COMMUNITY

Contrary to the experience of the fire community, advancements have been made by the law enforcement community who by nature of the nexus between terrorism and crime are a step closer than firefighters to the terrorist threat in the hierarchy of emergency response. Lessons may be learned by firefighters from the observation of post-9/11 advancements on the part of local law enforcement entities, and perhaps many of these lessons may be applied to the firefighting community to increase its efficacy. Advances by the law enforcement community have been seen in the form of several initiatives:

- The planned adaptation of Problem Oriented Policing (POP), Community Oriented Policing (COP) and Intelligence Led Policing (ILP) as enhanced methodologies for dealing with both crime and terrorism
- Since 2003, the concept of "fusion centers" has advanced so as to encompass an increasing number of states and regions. These centers have been established to support information sharing primarily between police agencies, with several centers including participants from a variety of entities in the community
- Law enforcement agencies and professional organizations have invested considerable effort into establishing protocols, resources, websites, training programs, and horizontal information sharing mechanisms that serve the needs of the law enforcement community relative to terrorism prevention. These entities include the Department of Justice Bureau of Justice Assistance (BJA), the Federal Law Enforcement Training Center (FLETC), the International Association of Chiefs of Police (IACP), and the Office of Community Oriented Policing Services (COPS)
- The development and implementation of information-sharing systems available to the police officer on the street, capable of providing timely access to computerized databases containing such stored information as criminal identities and stolen vehicles
- The development of information sharing networks designed to continually convey vital intelligence and information to a large number of law enforcement entities. These dissemination systems include Law Enforcement Online (LEO), Regional Information Sharing System (RISS), and many others

The fire community as a whole has not experienced a similar enhancement of education and information sharing mechanisms. Since 9-11 firefighters are *generally*

more aware of the terrorist threat and its potential consequences, based upon their simple observation and realization of the potential catastrophic effects of attack. However, firefighters do not routinely participate in most fusion centers and do not possess a formal methodology for collecting, reporting, analyzing, sharing, receiving and disseminating intelligence (as previously indicated, the participation of firefighters in the Joint Terrorism Task Force in New York City is limited to two non-responders without a direct tie to the "field"). There is no national or regional mechanism for the collaboration of firefighters with other participants in national security, nor is there a national or regional capability for sharing with other firefighters. Participation of firefighters in federally funded programs within the National Domestic Preparedness Consortium[112] has increased substantially; however, only a small portion of this training is related to prevention-related or intelligence/information sharing subject matter. There are no formalized professionally based programs available to firefighters for the enhancement of these capabilities. Contrary to the experience of the law enforcement community, the firefighting agencies and professional organizations have failed to provide for the development and support of mechanisms that enhance capabilities to utilize and share information and intelligence on a local, regional or national level.

A significant and largely unrecognized factor in the failure of the FDNY to mature in an intelligence capacity is the reality that firefighters, during the normal conduct of their duties, are capable of innocuously entering locations wherein covert terrorist activity may be taking place. As stated by the State of Illinois Governor's Deputy Chief of Staff for Public Safety and Homeland Security: "when police officers enter an occupancy bad guys run out the back door. When firefighters enter an occupancy people continue business-as-usual."[113] The advantage of this capability is enhanced by case law that is supportive of the "plain view doctrine."[114] If government

[112] Five training partners comprise this consortium: The Center for Domestic Preparedness ; New Mexico Institute of Mining and Technology; Louisiana State University; Texas A&M; and the Department of Energy's Nevada Test Site. Information available at http://www.ojp.usdoj.gov/odp/training_ndpc.htm, last accessed on January 28, 2007.

[113] Colonel (Retired) Jill Morgenthaler, Illinois Governor's Chief of Staff for Public Safety and Homeland Security, presentation to student body (Cohorts 0503/0504), Naval Postgraduate School CHDS Master's Degree Program, January 10, 2007.

[114] *Horton* v. *California*, 496 U.S. 128, 136-137 (1990); *Texas* v. *Brown*, 460 U.S. 730, 739 (1983).

officials are lawfully in a position from which they view an object, if its incriminating character is immediately apparent, and if the officers have a lawful right of access to the object, they may seize it without a warrant. Opportunities arise from such fire department activities as building inspection, complaint enforcement and response. Within the City of New York in 2005 firefighting companies performed 68,595 building inspections.[115] The department engaged in 1,129,842 Emergency Medical Services incidents, the vast majority of them indoors.[116] These all represent opportunities to casually observe and report nefarious behavior. Regular access is thereby obtained to locations that are not routinely accessed by the law enforcement community under non-emergency conditions, a distinct advantage for the *identification* and *collection* of information. This advantage is only possible if firefighters are conscious of the need to observe and are trained to identify and collect this information. Such training and awareness has not been part-and-parcel with either the firefighter's continual training or his of her daily activities. An initial 8 hour training class on WMD has been provided to field level firefighters and is provided to all FDNY recruit classes.[117] This class provides information on general recognition and identification; no additional "refresher" training is provided to field units following the initial class, and no formal mechanism for maintaining terrorism awareness or for systematized information dissemination exists.

There is a further advantage that accrues to the fire service in the observance and reporting of information in both public and private venues. Firefighters are not constrained by the challenges faced within the law enforcement community regarding the constitutionally derived rights of U.S. citizens specific to illegal search and seizure. Alert firefighters, capable of recognizing indicators of terrorist activity and in the course of normal business activity, do not require probable cause. These firefighters enter occupancies on a regular and frequent basis. For example, during a medical related response to an apartment firefighters may observe indicators of terrorism, such as bomb-making chemicals or detonators, and report them to either the law enforcement or intelligence communities. Firefighters therefore possess a significant capability not

[115] FDNY *Annual Report Fiscal 2005,* 13.

[116] Ibid., 11.

[117] *Emergency Response to Terrorism: Operations – Student Manual,* U.S. Department of Justice, Office of Justice Programs, Washington, D.C.; September 2001.

commonly available to law enforcement personnel. Entry into an occupancy for fire or emergency purposes may therefore be incidentally, but immediately, productive for prevention and interdiction purposes.

XIII. TIER 9: INTELLIGENCE AS INFORMATION

A. INTELLIGENCE

Many of the systemic shortfalls in the FDNY regarding the use of information have been identified. A new and special category of information that has been discussed within this report possesses special relevance to the firefighter. This type of information is known as "intelligence" in defense and law enforcement communities. The consideration of intelligence for firefighters was largely non-existent prior to 9-11. The loss of 343 personnel as a direct result of gaps in intelligence (identified in the *9-11 Commission Report*) indicates a serious need for the FDNY to embrace the concept at this time. Despite the unprecedented toll on the department due to 9-11, a survey question asking respondents to identify the five commonly cited elements of the intelligence cycle revealed that less than 2% were capable of doing so (survey question 13). A suitable and workable definition of intelligence as it pertains to firefighting is therefore considered important prior to embarking on a search for solutions to information needs.

Definitions of the term "intelligence" in literature are abundant, each framed by the perspective, needs, characteristics and intentions of the definer. Intelligence as a concept first developed in response to the secretive needs of developing nation states, such as England during the reign of Elizabeth I.[118] The "global" nature of intelligence in its formative and developmental years resulted in a preponderance of definitions which revolve around nation-centric interpretations of the term. As a result, most definitions of intelligence have come to represent a concept supportive of national defense related issues. The result has been a preponderance of descriptions such as:

> *The product resulting from the collection, processing, integration, analysis, evaluation, and interpretation of available information concerning foreign countries or areas.*[119]

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[118] Mark Lowenthal, *Intelligence: From Secrets to Policy* (Washington, D.C.: CQ Press, 2006),12.

[119] This definition, cited in "Toward a Theory of Intelligence, Workshop Report," Gregory Treverton, et al., RAND Corporation, 2006, is derived from *Department of Defense Dictionary of Military and Associated Terms* (as amended through 9 May 2005), available at http://www.dtic.mil/doctrine/jel/new_pubs/jp1_02.pdf, last accessed on November 15, 2006.

Other definitions revolve around the secretive nature of intelligence, resulting from the competitive nature of the concept observed in foreign affairs:

> *The secret collection of someone else's secrets.*[120]

The more recent development of threats within the borders of the nation has resulted in still more varied definitions of the term, more closely specific to the law enforcement community. For instance:

> *Intelligence, therefore, is a synergistic product intended to provide meaningful and trustworthy direction to law enforcement decision makers about complex criminality, criminal enterprises, criminal extremists, and terrorists.*[121]

It may be observed that intelligence as a concept has been defined many times over by many different entities in response to developing needs over time. It is therefore difficult for the fire service to "adopt" a definition. Furthermore, most intelligence is developed and implemented in ways that are completely foreign to the fire service environment. Terms such as Human Intelligence (HUMINT), Measurement and Signature Intelligence (MASINT), Signals Intelligence (SIGINT),[122] and activities such as espionage and propaganda, for instance, are associated with the most commonly understood definitions of intelligence but are useless in considering the needs of first responders. The novelty of intelligence to the fire community and the need for the FDNY to internalize an awareness of the new radical terrorist threat create the need for a loose definition that is both solvent and practical. Prior to such a definition important boundaries should be established:

- Because the fire service is primarily a consumer of intelligence, the term "intelligence" will be used to indicate a commodity that is processed from information by others and *provided to* firefighters, either directly or indirectly, by those who are considered intelligence professionals; i.e., agents and analysts working outside of the traditional role of the fire service.

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[120] This definition, cited in "Toward a Theory of Intelligence, Workshop Report," Gregory Treverton, et al., RAND Corporation, 2006, is attributable to K.G. Robertson in his article, "Intelligence, Terrorism and Civil Liberties," *Conflict Quarterly* VII, no. 2: 43-62.

[121] David L. Carter, *Law Enforcement Intelligence: A Guide for State, Local and Tribal Enforcement Agencies*, November 2004, 7.

[122] These are acronyms for *human* intelligence, *measurement and signals* intelligence, and *signals* intelligence, examples of commonly employed collection techniques.

- Intelligence shall refer to the end-product of a process conducted by analysts. It is a tangible entity designed to be utilized, as opposed to the process whereby it is derived, or the sources from which it originates.
- Despite an absence of history in this pursuit, the fire community is not incapable of developing its own intelligence. In order to differentiate intelligence formulated by the fire service from that provided by others, the specific term "fire intelligence," as opposed to "intelligence," will be used to identify, and distinguish, the product of the processing of information that is performed by and within the fire community.

In conformance with these characteristics the following definition of intelligence is proposed:

> *Meaningful and trustworthy information that is provided to firefighting forces by intelligence professionals, in order to provide warning, and to improve the safety and efficacy of response, in support of the homeland security mission.*

Similarly, "fire intelligence" shall be defined as follows:

> *Iinformation derived by the fire service for the fire service, and for the utilization of others, intended to provide meaningful and trustworthy direction and support to decision makers in pursuit of the homeland security mission.*

Three distinct new terms have therefore been isolated: information, intelligence, and fire intelligence. In an ideal world intelligence originates outside of the department and is provided by others who determine the department's "need to know." An example would be a developing threat that is communicated to the FDNY by the NYPD, such as the discovery of information that a terrorist group will target the subway system on a specific date. Information, on the other hand, is actively collected by the department. It exists both within the department and outside of the department: for instance, the location of sprinklers in a target hazard building is known by the FDNY and the location of exits is known by the Department of Buildings. This information is not co-located, however, and must be actively collected and consolidated. The current system of information support, described and illustrated above, does not provide for such activity. Both intelligence and information can be important in the preparation for, and response to, a terrorist incident. Collectively they can form the basis for the development of fire intelligence, a derivative of careful selection and processing by people designated to this

task. Under normal day-to-day circumstances of response fire intelligence is not a consideration; however, when it becomes a consideration it is likely to be immensely critical, as evidenced by the consequences of 9-11.

B. SUMMARY

This chapter focused on the related concepts of information and intelligence as they have been traditionally recognized. It also expanded the concept of information to include new considerations important to firefighters. In this regard three terms were newly defined - *information, intelligence, and fire intelligence*. Other jurisdictions and firefighting entities may wish to adopt these fundamental terms as they confront future challenges related to terrorism.

XIV. BEYOND THE OBVIOUS: THE PSYCHOLOGICAL IMPLICATIONS OF THE STATUS QUO

This paper has investigated the organizational characteristics of information management within the FDNY as it prepares for terrorist events. The direct impact of information on operational capabilities and effectiveness are readily apparent. Less visible, however, are the potential implications of existing information-sharing methodologies on the psychological preparedness of the individual responder and the agency as a whole.

Responders are people and are therefore subject to the same vulnerabilities that characterize any individual exposed to trauma. "The protective services professionals … who respond to the needs of a community as a result of acts of terrorism are not immune from these consequences."[123] The potential degree of exposure of any first responder to the manifestations of terrorism can range from complete immersion in the event as it unfolds–essentially causing the responder to become a direct physical and emotional victim, regardless of his level of "success" in performance–to the full range of experiences realized by the general population through such mechanisms as reliving the event visa-vi media coverage. The "psychology of terrorism" is a relatively new and explorative area of expertise that intends to improve awareness of the implications of terrorism for the human psyche. The youthfulness of this endeavor does not preclude the use of related research that supports other disciplines, or the exploitation of the terrorist-specific knowledge that has accumulated in the recent past, in the support of better policies.

Ideally, any FDNY strategy should incorporate elements that seek to improve the emotional and mental health of those who implement it. At the very least, strategy should strive to "do no harm." In this light two considerations warrant exploration: the impact of strategy that is perceived as poorly supporting responder needs, and the benefits of a considerate and informed strategy on operational forces.

[123] D.Paton and J. Violanti, *Psychology of Terrorism,* 225.

Where does one start in the pursuit of these considerations? The survey of FDNY responders has clearly identified concerns regarding the manner in which the adequacy of informational support is perceived by firefighters. What are the likely implications of these shortfalls in information sharing?

A. PRE-INCIDENT

Terrorism has been identified as "the 'perfect' traumatic stressor, because it defines the elements of malevolent intent, actual or threatened extreme harm, and *unending fear of the future*"[124] (emphasis provided). The negative emotional aspects associated with the anticipation of a future attack–particularly anxiety and, to some degree, a feeling of helplessness–are fueled by inadequate knowledge and information regarding terrorists, their methods, motives, and agents.

> *Fear is usually a transient, adaptive response … anxiety represents a longer-term response to impending danger, which may range from a well defined circumstance to situations that are very vague. Anxiety is marked by apprehension, vigilance, negative thoughts and feelings (e.g. worry), motor tension, and physiological arousal. …fear and anxiety help us cope in the short run, but when they persist, they can have serious negative consequences for general health and mental functioning.*[125]

Aside from the direct effects described above, pre-incident anxiety may exacerbate other underlying issues related to mental health, increase the potential for post-incident distress, and may cause distraction, and under-emphasis or over-emphasis on particular aspects of a potential threat that, in the presence of better information, would be more accurately predicted. More and better information will reduce the potential for "guessing" what may happen and will provide the individual who anticipates response with a clearer picture of what he may "truly expect," resulting in a less worried, more confident, and better focused responder.

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[124] L. Miller, "Psychological Interventions for Terroristic Trauma: Symptoms, Syndromes, and Treatment Strategies," *Psychotherapy: Theory/ Research/Practice/Training,* 2002, 296.

[125] Rachel Yahuda and Steven Hyman, "The Impact of Terrorism on Brain, and Behavior: What We Know and What We Need to Know," *Neuropsychopharmacology* 30 (2005): 1773-1780.

B. DURING RESPONSE

The degree of shock or surprise experienced by a responder at a terrorist incident is likely to be greater than that experienced during his or her normal or "routine" response activity. To the firefighter inordinate stress is considered normal, and expected levels of stress actually represent an opportunity to more fully appreciate the joys of life by knowing and understanding human tragedy.[126] The pre-incident expectations held by a responder relative to the fulfillment, or deconstruction, of those realizations at an incident has been shown to directly impact his or her level of distress during an event.

> *The degree of fit between (responders) expectations and what they encounter is a significant indicator of stress risk."*[127] and *"It is important to recognize that expectations and perceptions mediate the impact of many stressors and that an event has a stressful impact to the extent that it is appraised as taxing or exceeding one's resources…*[128]

Stress among responders is therefore increased by an absence of accurate knowledge regarding likely outcomes. What are the ramifications of inordinately excessive stress at an incident scene? Studies have shown that emotional distress is sufficient to impair the performance of even the most highly trained people, and that too much stress reduces the accuracy of vigilance tasks. Effects include maladaptive behavior including insensitivity or oversensitivity to clues and defensive avoidance, and a reduction in the ability to develop creative solutions.[129] The variable nature of individual responses to stress can result in such effects contributing to confusion and chaos. These effects have been proposed as being part of the very strategy of asymmetric terrorism.[130] Additionally, stress can cause disharmony and fracturing of emergency response

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[126] S.J. Woodall, "Hearts on Fire: An Exploration of the Emotional World of Firefighters," *Clinical Sociology Review* 15 (1997): 155.

[127] Douglas Paton, "Disaster Relief Work: An Assessment of Training Effectiveness," *Journal of Traumatic Stress (*1994): 275-288.

[128] Susan Brandon and Andrew Silke, "Near- and Long- Term Psychological Effects of Exposure to Terrorist Attacks," Chapter 13 in *Psychology of Terrorism* (New York, N.Y.: Oxford University Press, 2007), 178.

[129] Douglas Paton and R. Flin, "Disaster Stress: An Emergency Management Perspective", *Disaster Prevention and Management* 8 (1999): 261-267.

[130] Denis Embry, "Psychological Weapons of Mass Disruption through Vicarious Classical Conditioning," Chapter 12 in *Psychology of Terrorism* (New York, N.Y.: Oxford University Press, 2007), 170.

operations, a factor magnified by the reliance firefighters place upon teamwork. A firefighter may experience debilitating levels of stress at a challenging incident while others under the same circumstances remain relatively unaffected. The impact of stress has been shown to have deleterious effects on the efficacy of rescue efforts at past incidents. As determined by the McKinsey investigation and subsequent report, many of the firefighters responding to 9-11 broke ranks, disobeyed orders, and acted impulsively, rushing up the towers in a way that has been likened to "Pickett's charge" of futility.[131]

Lastly, studies have shown that active coping (e.g., taking action to improve the situation) is inversely associated with distress and general anxiety.[132] The inclination to take positive action, and the effectiveness of that action, will inarguably be enhanced by improved systems of information management and recognized institutional support. The absence of these mechanisms will tend to encourage the opposite effect; that is, the avoidance of action and a decrease in the efficacy of action, when taken.

C. POST-INCIDENT

Although "firefighters are human too," a lesser incidence of post-incident distress is likely to occur within first responders than among the civilian population. A portion of this phenomena is likely attributable to career self-selection.[133] It is reasonable to conclude, however, that some degree of protection is afforded by a mindset of preparedness, the perception of adequate support, and good information sources. Greater levels of stress during an incident have been consistently and positively correlated with an increased potential for post-incident indicators of mental instability such as ASD (Anxiety Stress Disorder) and PTSD (Post Traumatic Stress Disorder). This determinant - the level of stress experienced during response – has been shown to be inversely related to a crucial competence of responders, a competence known as "situational awareness." This has been defined as "the ability to extract salient clues that assist in adapting plans

[131] A.J.W. Taylor, "Defusing the Terrorism of Terror," Chapter 24 in *Psychology of Terrorism* (New York, N.Y.: Oxford University Press, 2007), 384.

[132] Josef Rusek, et al., "Evidence-Based Interventions for Survivors of Terrorism," Chapter 18 in *Psychology of Terrorism* (New York, N.Y.: Oxford University Press, 2007), 260.

[133] Lisa Butler, et al., *Psychology of Terrorism*, 407.

and response actions to fit unpredictable situational demands."[134] The stress reduction cycle is therefore presented as follows: Information (both pre-incident and that developed on-scene) enhances situational awareness. Situational awareness reduces the level of the "unknown," and therefore the level of stress that is experienced. This reduction translates into a reduced potential for post-incident psychosomatic distress. Conversely, a "feedback loop" can develop in an absence of information under extreme stress. Incomplete or absent information decreases the level of situational awareness. Poor situational awareness increases stress and decreases the capacity of an individual or organization to collect and share information, further reducing situational awareness, further increasing stress, etc…, perpetuating a downward spiral at a time when every advantage is critical. Both sides of this phenomenon are illustrated in the divergent experiences of the FDNY and the NYPD as reported by the initial incident commander at the World Trade Center on 9-11.[135] The NYPD possesses better support in the form of knowledge relative to the collapse potential of the buildings. Evacuation was consistent and the relative losses were low (23 fatalities in a force of over 35,000). Many within the ranks of fire responders remained ignorant of the inherent dangers and evacuation was variable. Units stationed two blocks away suffered no losses while units from 10 miles away suffered losses measured in the tens of firefighters.

In summary, the recognition of the short- and long- term implications of an absence of information on operating personnel must be realized. Improvements for obtaining and sharing information are justified from this perspective alone. The mere perception of support by firefighters is likely to provide benefits to both the individual and the department. The absence of this perception may prove costly on a variety of levels.

[134] D. Paton and J. Violanti, *Psychology of Terrorism*, 231.

[135] Pfeifer, *Psychology of Terrorism*, 210.

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XV. LITERATURE REVIEW

Information in written form that is directly related to the participation of the firefighting community in terrorism prevention and mitigation is relatively scant. The perceived distance between these two once-distant worlds – firefighting and terrorism - has resulted in an absence of concentration on the subject and a subsequent dearth of directly reflective literature. Furthermore, the firefighting community has proven reluctant or unable to record any instances of experience in this regard. Simply put: the profession of firefighting does not have a strong history of recording information that is tangential to its past priorities of extinguishing fire and performing rescue. New York City is no exception: literature specific to terrorism-related information and intelligence sharing within and by the FDNY is virtually non-existent. Research indicates that a significant amount of literature *has* evolved concerning parallel and related subject matter as found in other professions. The investigation of these recorded sources will assist an intuitive understanding of the challenges, limits, and potential benefits and drawbacks of more fully integrating firefighters into the intelligence community. It is observed that the firefighting community is most closely allied with the local law enforcement community in this regard. It is further observed that the abundance of literature in that community related to terrorism and information sharing concerns that brand of information defined as "intelligence." Many of the recorded initiatives that pertain to law enforcement and intelligence may therefore be investigated for applicability to firefighters.

In *Intelligence: From Secrets to Policy*, Mark Lowenthal defines the intelligence cycle and each of its interrelated parts.[136] The book provides fundamental information concerning intelligence as a concept; as a policy; its historical development within the United States and elsewhere; its relationship with the policy maker; recent challenges to the intelligence community; and moral and ethical considerations. These topics contribute to a foundation of understanding regarding the global and national intelligence community, portions of which may be extrapolated and molded to form a basis for constructing intelligence systems at the local level. Importantly, Lowenthal indicates that there are many forms of intelligence that support a variety of needs. He also

[136] Mark Lowenthal, *Intelligence: From Secrets to Policy* (Washington, D.C.: CQ Press, 2006).

differentiates between "intelligence" and "information," a distinction that provides some insight into the limitations of the extent to which the fire community may participate in true *intelligence* versus the more achievable role of managing *information*. His chapter concerning "collection" broadens the understanding of the multiple methods available for gaining such information. The content and construct of the book, however, are defined by the context of the author' background – he being an intelligence official in the executive and legislative branches of government for over 30 years. The limits of the book are themselves indicative of the problem at hand: that is, it essentially ignores the direct role that may be played by local responders in a national intelligence structure. The author's perspective is almost exclusively nation-centric, with little direct information concerning the environment at the local level. Lowenthal contributes little to the understanding of how domestic and foreign intelligence may be merged, managed and controlled locally. He also neglects to provide information concerning the involvement of those outside of law enforcement in intelligence. In the final analysis "Intelligence" contributes to a general understanding of intelligence as a concept and an appreciation for the history and status of the national intelligence community. The emphasis on national and global intelligence reinforces the concept that to-date local activity has not been considered as contributory to the needs of the intelligence community. Importantly, the concept of the intelligence cycle is explored, a concept with applicability to the local response community.

"The Use and Limits of U.S. Intelligence"[137] is similarly focused on national intelligence concerns. While emphasizing the effects of intelligence on U.S. foreign policy, the authors provide insight that may be directly applied to locally gathered and disseminated intelligence systems. After identifying a number of reasons why the "United States slept"[138] prior to 9-11, they cite changes that need to be made for a more secure future. These include the strengthening of "all-source intelligence;" the need to recognize that "traditional notions of intelligence may need to be expanded to accommodate new tactics and requirements;" and "expanding the conceptions of the

[137] Frank Cilluffo, Ronald Marks and George Salmoiraghi, "The Use and Limits of US Intelligence," *Strategic Intelligence,* edited by Loch Johnson and James Wirtz (Los Angeles: Roxbury Publishing, 2004), 33-39.

[138] Ibid., 33.

strengths and limitations of various agencies that have not historically been part of the core activities of the [Intelligence Community]." Once again, these activities appear to be primarily aimed at federal agencies and assets; however, because of similarities in the ultimate objective of increasing awareness through information, they provide some justification for similar mechanisms at the local level. More directly to the point of incorporating local involvement, the authors cite the need to strengthen the methods and technology to share information with individuals who do not have clearances, and for officials to "develop a method whereby information flows up from the local levels to the federal level."[139]

The recognition by the federal government of the need to expand capabilities regarding the collection, sharing and dissemination of information has been identified in the publication of numerous documents within the climate of reform that developed in the aftermath of 9-11. *The National Strategy for Homeland Security* represents a strategy aimed at mobilizing and organizing the entire nation against terrorist attacks.[140] Three areas of the document, in particular, relate to intelligence and information systems. The critical mission area defined as "Intelligence and Warning" describes the need for a intelligence and warning system that is capable of detecting terrorist activity prior to an attack, and supports this description with a past example of failure (Pearl Harbor). It then describes the analysis functions required by current threats, the actions which may be taken following analysis, and enhancements in existing systems that represent major improvement initiatives. It is of note that the analysis, activity, and enhancement recommendations pertain exclusively to federal entities such as the FBI and the Office of Homeland Security, and remain silent on recommendations for the enhancement of local entities. A chart depicting the roles and responsibilities of Homeland Security Intelligence and Information Analysis fails to identify any local participants. A second area of the document, "Information Sharing and Systems," pertains to the technological means of sharing information across governmental lines, both horizontally and vertically. It establishes the need for the institution of such sharing systems but does not provide

[139] Cilluffo and Salmoiraghi, *Strategic Intelligence*, 38.

[140] Office of Homeland Security, *National Strategy for Homeland Security* (Washington, D.C.: U.S. Government Printing Office, 2002).

specific details as to the nature of such systems, and the participants. The third area of the document dealing with local involvement is entitled "Domestic Counterterrorism." A portion of this section applies directly to the need for improved intergovernmental law enforcement coordination, specifically through the mechanism of the Joint Terrorism Task Forces (JTTFs). The mechanism of information sharing has direct applicability to firefighters, as discussed in Chapter XVI.

Homeland Security Presidential Directives (HSPDs) 5 and 8 further contribute to our understanding of this subject matter. HSPD-8 is concerned with policies for the preparation of local, state and federal resources in both preventing and responding to threatened or actual terrorist attacks and natural disasters. It emphasizes an "all-hazards" approach but represents merely a roadmap to policy implementation. Details are left to those who implement these policies, and therefore this document provides incentive but little structure. HSPD-5 is concerned with the actual management of incidents and serves as a consequence management directive. It requires the implementation of a National Response Plan (NRP) and a National Incident Management System (NIMS). This form of coordination is indirectly and marginally related to the prevention-driven intelligence function but, as indicated previously, the reduction of the magnitude of the impact of an event is a form of prevention in and of itself.

The "National Commission on Terrorist Attacks Upon the United States" concluded its definitive study of the 9-11 attacks with several findings. Of importance is the conclusion that *unity of effort* in intelligence sharing is necessary for future challenges and that the resistance to the sharing of intelligence – both systemic and human - plays a key role in an inability to "connect the dots," and must be overcome. It explains that this objective must be based upon a realization that sharing outweighs the risk of inadvertent disclosure: "need-to-know" should be supplanted by "need-to-share."[141] The document also explores the need for the President to "safeguard the privacy of individuals about whom information is shared."[142] The Commission, therefore, identifies the need for sharing and lays the groundwork for doing so while protecting the civil rights of civilians, but does not identify *how* to accomplish these goals.

[141] *9/11 Commission Report*, 417.

[142] Ibid., 394.

Further support for the argument that the intelligence community requires assistance is observed in positions taken by authors Isaacson and O'Connell.[143] Citing the dangers posed by the "new threat" exemplified in Osama Bin Laden, particularly in light of the development of the intelligence community, the authors indicate that only some of the required analytical capabilities reside within the intelligence community today. They observe that much of this capability resides elsewhere within the government. They explain the reasons for secrecy within the intelligence community as being justifiable and necessary in the context of past threats, but indicate that this is an outdated and useless concept today. Perhaps most germane to the subject at hand, they identify the most difficult aspect in attempts to facilitate intelligence sharing: not the re-organization of the intelligence community, but the generation of better intelligence to share. The fire community represents a new and untested mechanism for harvesting better intelligence.

As observed above, the direction provided by literature that derives from within the intelligence community on the issue of local collaboration mechanisms is applicable but generally broad and conceptual in scope. The literature that derives within the law enforcement community, however, tends to be more focused and specific, and therefore more actionable.

In "Intelligence-Led Policing: The New Intelligence Architecture" the BJA examines how law enforcement agencies can improve their intelligence operations in a dual-mode fashion: to simultaneously support both homeland security and traditional crime prevention.[144] Serving as a "how-to" guide for establishing and maintaining an intelligence capacity within a police agency, the emphasis is placed not on stand-alone intelligence capability, but rather on capability that is integral with the day-to-day functioning of a police agency. A history of intelligence is provided, wherein it is established that field operations have generally collected *information* as opposed to *intelligence*. Information is collectible. Intelligence is defined as the sum of

[143] Jeffery Isaacson and Kevin O'Connell, "Beyond Sharing Intelligence, We Must Generate Knowledge," *Rand Review*, Summer 2002, available at http://www.rand.org/publications/randreview/issues/rr.08.02/intelligence.html, last accessed May 25, 2006.

[144] U.S. Department of Justice Office of Justice Programs, Bureau of Justice Assistance, *Intelligence Led Policing: The New Intelligence Architecture* (Washington, D.C.: September 2005).

"information plus analysis," and is not considered "collectible."[145] The intelligence function is described as serving a variety of needs, including decision making, planning, and strategic targeting. The elements of the intelligence cycle are observed and described from a local perspective. Within this description "collection" is proffered as the most labor intensive aspect of the intelligence process – again, with direct applicability to firefighters. Civil rights abuses of the past are discussed, as well as the resultant need for information collection to be related to a standard of relevance – i.e., it must be relevant to criminal activity in order to be collectible. It is recognized that this constraint does not encumber the firefighting community (see Chapter XII). Importantly, the relationship between "intelligence-led policing" and fusion centers is explored, and the authors indicate that police work and counterterrorism operations are interrelated: "good policing is good terrorism prevention."[146] A parallel statement may be made in the post-9/11 world: "good firefighting is good terrorism prevention." This thesis argues that this concept has not been realized. A further concept, that of "problem-oriented policing" and its relationship to intelligence, is explored, with emphasis on the need for intelligence at the "beat level." The authors cite four levels of intelligence capability that apply to police agencies across the United States – levels of capability that are dependant upon the size and resources available to the agencies. (Note that a similar "incremental" construct in counter-terrorism capability may be fashioned within the firefighting community, based upon its similarly variable nature. Volunteer departments comprise 71.2% of the firefighting community, combined departments comprise 22%, and fully paid departments comprise 6.8%.[147] Each level possesses different levels of resource availability). Steps aimed at establishing an intelligence function within a police organization are then described and examples of successful intelligence operations are provided. This work as a whole represents a useful local perspective with concepts that are derived locally, in the virtual absence of larger intelligence community concerns. While it can serve as a blueprint for the construction of an intelligence capability within

[145] U.S. Department of Justice Office of Justice Programs, Bureau of Justice Assistance, *Intelligence Led Policing: The New Intelligence Architecture* (Washington, D.C.: September 2005), 3.

[146] U.S. Department of Justice Office of Justice Programs, *Intelligence Led Policing: The New Intelligence Architecture*, 9.

[147] Figures obtained from US Fire Administration, *"Fire Statistics-Fire Departments,"* available at http://www.usfa.dhs.gov/statistics/departments/index.shtm, last accessed March 7, 2007.

an organization, and information is provided for the horizontal sharing of information among agencies, no methodology for tying into the intelligence community is provided. The work is therefore helpful as a guide to what may be needed internally in an agency, and may be paralleled by firefighting entities in their pursuit to accomplish a similar goal. It is not helpful when referring to the "big picture" of intelligence collaboration with the larger tiered intelligence community.

In *Mutual Aid: Multijurisdictional Partnerships for Meeting Regional Threats*[148] BJA recognizes that a more collaborative approach between various players in counterterrorism is needed to meet future challenges. Mutual aid is cited as a proven tool not only for response, but as a tool that may also be utilized for prevention. The publication acknowledges the existence of mistrust between organizations as a significant impediment to mutual aid and a reason for establishing cooperative agreements. The steps required in instituting an agreement are outlined in a step-by-step fashion. Although the information in this publication is not specific to intelligence sharing, it is a guideline that possesses features that are directly applicable to the creation of a collaborative intelligence system. Similar lessons may be learned from "Engaging the Private Sector to Promote Homeland Security: Law Enforcement – Private Security Partnerships."[149] This work provides a greater degree of information regarding the barriers to information sharing between law enforcement and a related community and the specific means to overcome these barriers. It provides guidelines for collaboration and provides successful working examples of partnerships throughout the country.

The Bureau of Justice Assistance (BJA) has orchestrated the development of several other publications designed to enhance local intelligence operations by encouraging interaction between law enforcement and the community at all levels. These publications have been developed by a consortium of police agencies that are sensitive to the needs of the local law enforcement community relative to terrorism prevention and response. This community represents the most sensitive of the local participants to

[148] U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Assistance, *Mutual Aid: Multijurisdictional Partnerships for Meeting Regional Threats*, (Washington, D.C.: September 2005).

[149] U.S. Department of Justice Office of Justice Programs, Bureau of Justice Assistance, *Engaging the Private Sector to Promote Homeland Security: Law Enforcement-Private Security Partnerships* (Washington, D.C.: September 2005).

intelligence needs and provides information that is primarily lateral in nature; i.e., designed for horizontal collaboration. The various publications are also current, published in 2004 and 2005, and serve to provide information that may serve as an example of how a fire intelligence system may best be established. Pertinent to the issue at hand are sections that serve as "how-to" guides for establishing the basic structure of information systems that operate in conjunction with day-to-day operations; sections that offer "levels" of information sharing related to the needs of particular law enforcement agencies; lessons to be learned from mutual aid agreements with other agencies; and lessons learned from the engagement of the private sector.

Perhaps the most specific, pertinent and applicable document regarding the construction of information and intelligence sharing mechanisms is that entitled *Fusion Center Guidelines: Law Enforcement Intelligence Component.*[150] This document, published in July 2005, is the product of a collaborative effort by the U.S. Department of Justice (DOJ) and DHS, supported by various law enforcement experts and practitioners from local, state, tribal and federal agencies. A focus group largely derived from a cross-section of local, state and federal law-enforcement agencies was established to develop and recommend guidelines for the creation of fusion centers. The document provides specific guidance to those responsible for law enforcement intelligence functions who intend to establish a collaborative working environment. It recognizes the need for horizontal and vertical collaboration, defines the concept of "fusion" and the entity of the "fusion center," and provides guidelines intended to serve as a blueprint for consistent and functional state-based fusion center structures. It also introduces the concept of fusion as one directly supportive of prevention, response, and consequence management, and describes the efficiencies inherent in the fusion center concept. The document is comprehensive and represents a valuable resource for those tasked with forming, or improving, law enforcement fusion centers within their state or locality. The guidelines are similar to a "performance specification" intended to provide for a measure of consistency between the various fusion centers, while recognizing the need for flexibility in the individual fusion center structures with regard to the unique needs and

[150] U. S. Department of Justice and U.S. Department of Homeland Security, *Fusion Center Guidelines: Law Enforcement Intelligence Component* (Washington, D.C.: GPO, July 25, 2005).

characteristics of those involved. A resource CD accompanies the document and is referenced throughout; it provides direct access to a large number of directly applicable standards, reports and website information, resulting in a voluminous amount of highly useful material. The document itself falls short, however, of providing guidance that specifically permits incorporation of the fire community into the fusion process. This appears to be the result of the heavily weighted law enforcement component of the developmental focus group, which naturally emphasizes law enforcement concerns and needs. The document explains that further guidelines, presently under development, are specifically intended to provide similar guidance to *public safety* and *private sector* participants in fusion centers. No time frame is provided for the publication of these guidelines. As represented in Chapter III, they will likely have more direct applicability to firefighters.

The fusion center concept is further explored in various academically derived thesis papers, including "State and Local Intelligence Fusion Centers: An Evaluative Approach in Modeling a State Fusion Center."[151] This work provides a closer look at the specific rationale for, and variable structures of, fusion centers in today's environment. It provides an evaluation of three fusion centers that have been chosen for analysis based upon their apparent functionality (these are located in Arizona, Georgia, and Los Angeles). Specific questions are asked regarding each fusion center in order to provide a comparative analysis of how each operates and to provide a list of recommendations for the creation of an "optimal" center. The result of this analysis is a practical set of guidelines for the establishment of a local fusion center, from the perspective of a participant/stakeholder within the center. These guidelines include the incorporation of the fire community into the fusion center as most visibly illustrated in the description of the Los Angeles TEW (Terrorist Early Warning) Center.

A further study of interoperability as observed in the Los Angeles Terrorism Early Warning (LA TEW) fusion center is provided in *Terrorism Early Warning and Co-*

[151] William Forsyth, "State and Local Intelligence Fusion Centers: An Evaluative Approach in Modeling a State Fusion Center" (Master's Thesis, Naval Postgraduate School, Monterey, CA, September 2005).

Production of Counterterrorism Intelligence.[152] In this work we find an introduction to the concept of "co-production of intelligence," as implemented at the LA TEW, in the interest of a number of agencies across a wide geographic area. A general description of the TEW organization is provided, as are a few concepts that may be implemented through a TEW in order to enhance productivity. We also see the introduction of the important concept of the Terrorism Liaison Officer (TLO), an entity that effectively represents the needs of the various participants in the fusion center and allows the center to become operational. This unique collaborative mechanism provides a workable system for the incorporation of representatives of the fire community.

The Markle Commission was established following 9-11-01 in order to determine measures to assist the nation in developing its information collection and analysis capabilities. Among its findings were that the real frontlines of terrorism are collocated with the local official, outside of Washington, D.C., and that the number of emergency responders–cited at approximately 2 million–represents a primary and significant asset in Homeland Security. It further concludes that this local resource has not been developed and that DHS should become the base for "building up a national community of intelligence contributors and analysts."[153] The information is logically presented and provides a perspective from outside the law enforcement and intelligence communities – the authors are largely drawn from the business and academic communities. The information, however, is dated–the publication occurred in October 2002–and requires adjustment based upon changes in information systems that may have been implemented since publication.

Certain literature is specific to the capabilities of the local law enforcement communities to contribute to domestic intelligence and security. Lessons may be learned for the relatively uninformed, but similarly positioned, fire communities. Among this literature is *Defending the Homeland: Domestic Intelligence, Law Enforcement, and Security* by Nathan White. White determines that intelligence is the key to winning the

[152] John Sullivan, "Terrorism Early Warning and Co-Production of Counterterrorism Intelligence" (paper presented at 20th Anniversary International Conference, Canadian Association for Security and Intelligence Studies, Montreal, Quebec, Canada, October 21, 2005).

[153] Markle Foundation Task Force. *Protecting America's Freedom in the Information Age*, available at http://www.markletaskforce.org/documents/Markle_report_Part1.pdf, last accessed May 20, 2006, 11.

shadow war of asymmetry, and that the police departments represent the ideal mechanism for gathering and exploiting intelligence. He makes a strong argument that the more than 600,000 law enforcement officers in the U.S. are uniquely positioned to serve as the "eyes and ears" of the intelligence agencies given their nexus to the community. Real-life examples in the successful observation, detection, and interdiction of potential terrorist events by street-level officers are provided. He further reinforces the need for proactive, and not reactive, police agencies and recommends enhanced training in the recognition of terrorist indicators. Lastly, White outlines the concerns of law enforcement collectors relative to civil liberties. All of these have applicability to the fire service, by comparison and association.

Literature that is more closely related to information within the fire service as opposed to intelligence is found within a thesis entitled "Terrorism Awareness and Education as a Prevention Strategy for First Responders" by Captain Alicia Welch of the Los Angeles Fire Department.[154] Welch takes a broad organizational approach as she identifies cultural and institutional impediments to a more fully informed fire service. An analysis of the functionality of the Los Angeles Fire Department, and specifically the LA Terrorism Early Warning Center (LA TEW), provide awareness of "best practices" as well as gaps in capabilities. Welch uses community policing, Community Emergency Response Teams (CERT), Drug Abuse Resistance Education (DARE), the State of Washington Homeland Security Plan and the New Jersey Office of Counterterrorism as models for change. A past nationwide policy initiative known as "America Burning" is utilized as proof that broad-based changes in culture and policy are possible. It is noted, however, that due to its stated intentions (the reduction of fire deaths, injuries and costs) the precepts of the "America Burning" model do not represent as large a cultural shift for the fire serviced as is likely to be required for terrorism. Furthermore, Welch neglects to recognize that the successful implementation of the "America Burning" initiative was, to a large degree, accomplished not by responders but by administrators and non-response fire prevention personnel. Lastly, within the thesis the interpretation of the *National Strategy for Homeland Security* and guidelines of the Office of Domestic Preparedness as

[154] Alicia Welch, "Terrorism Awareness and Education as a Prevention Strategy for First Responders" (Master's Thesis, Naval Postgraduate School, Monterey, CA, March 2006).

they pertain to the fire service is accomplished in an overly fire-centric and specific manner. These documents are intended to provide general guidelines that are aimed at jurisdictions rather than fire departments. Their accuracy and usefulness relative to the fire service are therefore questionable.

XVI. THE FINAL ANALYSIS: CONCEPTS DETERMINED TO BE VALUABLE IN THE PURSUIT OF SOLUTIONS TO IMPROVE INFORMATION MANAGEMENT IN THE FDNY

This thesis has provided a multitude of examples, observations, case studies, comparative analyses, and survey results that point to the need for a drastic improvement in the capability of the New York City Fire Department to manage information, and to keep its personnel informed regarding issues related to terrorism. It seems clear that the gathering, use and sharing of information has been relatively incidental, fractured, and absent of a dedicated effort to address information as an independent and significant factor in terrorism preparedness. It is also clear that information of importance resides both within and outside the FDNY. Information of value must be identified so as to support both the long term "general" awareness of the department, and short term critical response demands. The FDNY has not optimized its ability to exploit either type of information. The criticality and vulnerability of the agency requires that a dedicated and organized effort be made toward the securing, processing and dissemination of terrorist related information to field units. A degree of cooperation must also be developed across the different bureaus and departments within the FDNY to ensure the uniformity, quality and consistency of information.

In this pursuit a well directed, focused, and adequately staffed terrorist unit must be established: a true "terrorism liaison" unit. The composition of this proposed unit is illustrated in Figure 16. As opposed to the well-intentioned, but relatively static and disassociated administratively dictated initiatives undertaken by the FDNY since 9-11, this unit should directly support those with the most to lose–field level responders–while simultaneously incorporating mechanisms to collect, process, store and disseminate critical information (including intelligence). It should be staffed with individuals who have been carefully selected based upon actual skill sets and experience, rather than rank or undefined criteria. It should also possess the ability to identify target hazard locations and to work with other agencies to develop "case files," including vulnerability assessments, for those locations deemed most likely to be the scene of a catastrophic terrorist event (i.e., the World Trade Center). Lastly, it must manage to form a

mechanism of terrorism information diffusion within the department that is consistent and uniform, recognizable to operations level personnel, and contributory to the support of functions such as training and the development of policies and procedures. This diffusion is graphically depicted as a yellow swathe in Figure 16.

A. KEY OBJECTIVES AND CONCEPTS

Eight key objectives of a Terrorism Liaison Unit intended to truly serve the best interests of the fire department and operations-level personnel may be extracted from the specific needs identified within this thesis:

- The identification, targeting and procurement of critical information that resides within the reach of the department. For example: the FDNY Bureau of Fire Prevention may provide *existing* information on specific building weaknesses relative to fire protection. The FDNY Bureau of Personnel may provide *existing* information on the capabilities of new hires. The NY City Building Department can provide information on structural weaknesses at target hazard locations. But such provision will not happen on its own; the information must be actively sought. Several personnel within the Terrorism Liaison Unit should be tasked solely with proactively exploiting all available existing resources.
- The communication of information needs to and from law enforcement entities and the establishment of a system that permits the reliable and efficient exchange of such information. This will not require full-time dedicated personnel but rather a structure of information exchange utilizing those who comprise the terrorism unit and their contacts in law enforcement. Operations personnel should be placed within the JTTF to enhance this capability. This structure should be known, and thereby accessible, to personnel "in the field."
- The continued and enhanced encouragement of field units to actively observe, identify and report terrorist indicators to a central location within the department, and the establishment of a network within the ranks of the department for transmission of such information. This will also not require a tremendous amount of dedicated manpower but rather a focused effort to construct an information transmission system and advertise it to the "troops." The network will be passive until activated. Personnel within the Terrorism Liaison Unit may construct this network in addition to other duties.
- The consolidation, exploitation, processing and "narrowing" of the intelligence and information obtained in the above referenced manners for the use of the FDNY and others; also, the ability to cultivate other sources

of available information. In short, this constitutes the capability to develop *fire intelligence.* This process is depicted in Figure 16. This specialized pursuit will require full time high quality and trained personnel. Products of this effort will be made functional to operations and supervisory personnel by inclusion in easily digested published orders and directives. The analysis component of the Terrorism Liaison Unit will support both the operational and psychological needs of the fire department and must keep the response units informed as to the extent and nature of its activities.

- The capability to deliver fire intelligence to the command staff at headquarters, to the commanders at an incident scene, and to the law enforcement community on short notice and as needed. Currently the fire department is investing heavily in technological solutions for such issues as evidenced by the *FDNY 2007-2008 Strategic Plan*.[155] Two factors must be considered in the effort to further improve information sharing: that technology is a mere tool to assist in the development and implementation of "people-based" solutions, and that the critical component in the development of solutions is the structures that permit people to communicate efficiently and reliably. This objective will likely necessitate the revamping of the existing outdated CIDS system so as to incorporate greater capacity for "known" (pre-derived) information in a more structured format, specific to terrorist threats. Such a system must also support the rapid input of developing intelligence for the use of commanders on-scene.

- The capability to rapidly procure and disseminate critical information concerning terrorist attacks that occur in other locations to operations-level personnel so as to *immediately* enhance the awareness and safety of firefighting units. The department has decidedly failed in this seemingly simple endeavor. This is a critical objective to accomplish that can utilize either existing technologies or rapidly developing systems of information transfer. Written publications distributed 6 days after a significant attack on foreign soil is insufficient considering the global potentiality of the "new terrorism."

- Focused effort to eliminate the disjointedness that characterizes the FDNY regarding the development of policies and procedures. The right hand must know what the left is doing. The Terrorism Liaison Unit can serve as the mechanism by which terrorism related information is maintained consistent and uniform across the department. All such information would necessarily pass through this unit. The historical absence of participation of important elements within the department in the development of such publications as the *Strategic Plans* and haz-mat/wmd guidelines must be eliminated through a "hub" that connects the divergent spokes. This

[155] FDNY, *FDNY 2007-2008 Strategic Plan*, 7, 14-15, 28-29.

provision will serve a secondary purpose of providing reasonable test (study) material for future officers and thereby increase the quality of FDNY leadership.

- The establishment of a systemic mechanism to identify and utilize personnel within the department who possess extraordinary capabilities and qualifications. A licensed structural engineer should not spend 20 years in a Fire Department without being provided the opportunity to share his or her ancillary experience and knowledge in the pursuit of safety and efficiency. This holds particular value in a city that possesses the most numerous and diverse structures in the world, and which has suffered tremendous losses from structural failure due to terrorist acts as well as during routine firefighting response. True awareness of professional standards that exist outside the narrow confines of the FDNY must be realized, and established standards must be understood and complied with. Furthermore, personnel who are not truly qualified should not be permitted to occupy positions that demand a minimum standard or qualification. The absence of such a program runs counter to the pursuit of true professionalism and introduces a wide variety of potential problems, including legal challenges in the event of preventable catastrophe. The world will never know the true consequences of an absence of optimized resource allocation and training, particularly that which characterized the FDNY prior to 9-11.

- The critical need to raise the awareness of individuals at the operational level regarding terrorist threats, indicators, and the necessity for constant readiness. Assuming that firefighters will maintain an offensive posture during periods of non-emergency activity is unreasonable. The mobility and access afforded to firefighters on a daily basis will be valuable only if they are incorporated into the "program" of counter-terrorism. A workforce that feels it is being ignored is less likely to be self-motivated. A workforce that is untrained will not be effective. Therefore both motivation and training must be included in terrorism-based initiatives. A standing army of over 11,000 highly motivated personnel should not remain permanently encamped between battles without sharpening its swords and oiling its cannons. Constant reminders to do so will inevitably produce heightened effectiveness. These provisions will assist in the development of a system of active "collectors," in support of the activity that represents the first step in the development of fire intelligence (see Figure 16).

- The ability to "operationalize" fire intelligence. A response component within the Terrorism Liaison Unit is considered critical for effective and timely information transfer. The ACTIC model may be utilized as a model for this mechanism, whereby trained and well equipped personnel with "reach-back" capability can respond to the scene of an incident to support informational needs. Personnel will be carefully selected based upon qualifications. Efforts by such personnel should include active

participation in the development of vulnerability assessments and the capability to respond in a timely fashion. Terrorism Liaison Unit personnel must be capable of access to decision makers within the FDNY on an "as needed" basis as well as scheduled periodic access through meetings. They should also be drawn from the responder community and have a distinct structure for the dissemination of information to field units during periods of "non-emergency" (see below).

- The ability to "diffuse" fire intelligence. The Terrorism Liaison Unit must possess the ability to diffuse and disseminate important information to the various consumers of information on a day-to-day basis, to bolster their awareness and knowledge. This can be accomplished by Terrorism Liaison Officers (see Figure 16), either through person-to-person contact at fire stations or through the production of informational bulletins. The domain of these individuals is depicted in yellow in Figure 16.

An illustration of the recommended system of information management and its relationship to existing information systems is illustrated in Figure 16.

B. SUMMARY AND CONCLUSION

A plethora of evidence and unfortunate experience indicates that the FDNY has not identified information management as an independent and critical need. Concepts of deficiency and key objectives have been identified and elucidated within this thesis. Adequate sources of funding must be obtained, capacity must be increased, and creative solutions must be developed to satisfy these informational needs. The next attack is coming. Distraction with the significant day-to-day demands of the department must not detract from the need to better prepare for this event in a holistic and rational manner.

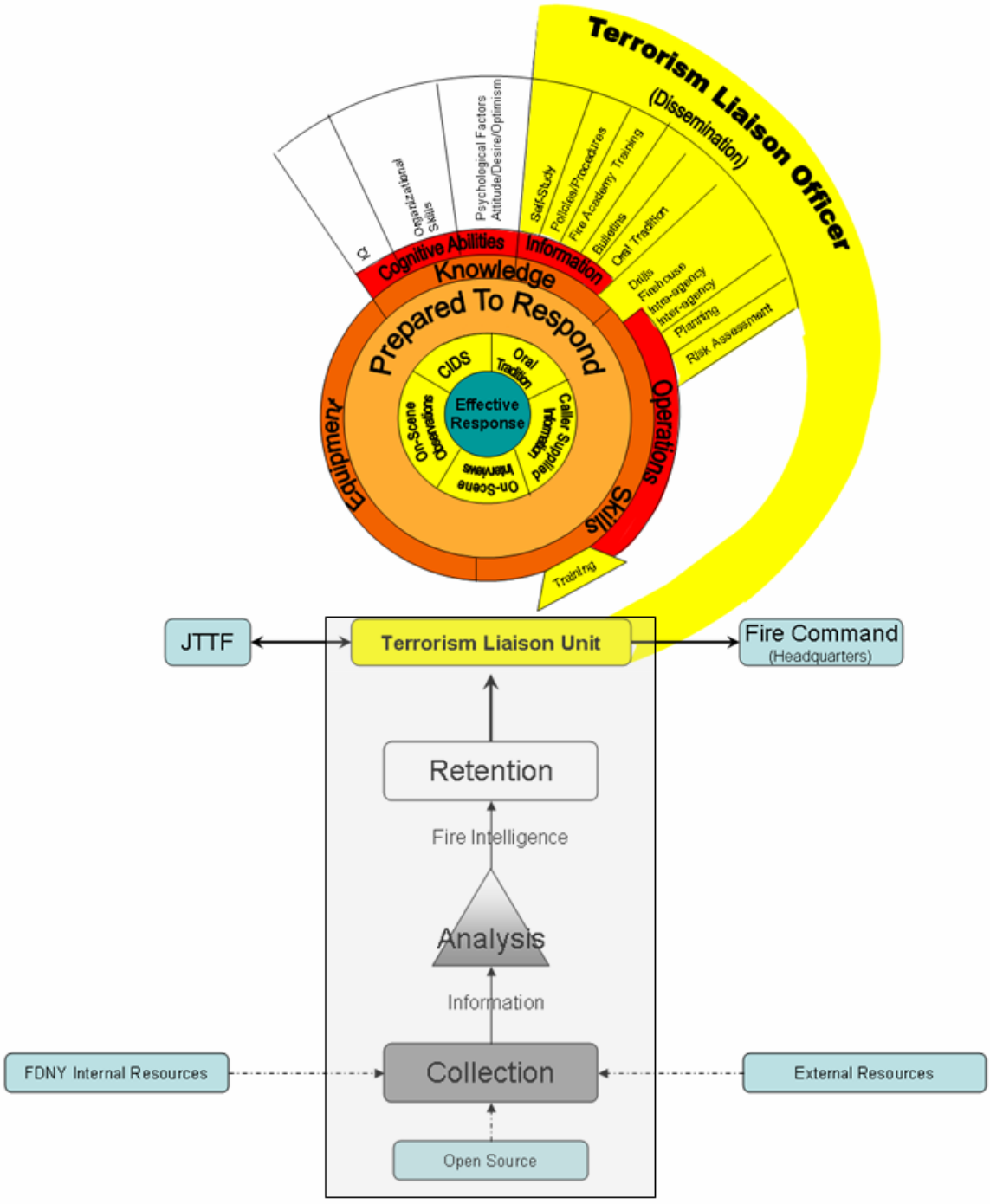

Figure 16. Proposed System of Information Management for FDNY

APPENDIX. INFORMATION SURVEY OF FDNY MEMBERS

Zoomerang Survey Results

Terrorism Information within the FDNY
Response Status: Completes
Filter: No filter applied
Mar 22, 2007 12:44 PM PST

1. [Rank] First I need to know a little bit about you. What is your current job title, job capacity or function within the Department?		
Firefighter	348	65%
1st Line Spvsr(Lt./Capt.)	153	28%
Battalion Chief/Deputy Chief (Field Operations)	27	5%
Battalion Chief/Deputy Chief (Management)	7	1%
Staff Chief (Headquarters or Equivalent)	3	1%
Total	538	100%

2. [Time in Position] How many years have you held THIS POSITION within the Department?		
Less than 2	117	22%
2 through 5	171	32%
5 through 10	135	25%
10 through 15	56	10%
> 15	60	11%
Total	539	100%

3. [Time on Job] How many years have you been employed by the Fire Department?		
< 2	45	8%
2 thru 5	97	18%
5 thru 10	131	24%
10 thru 15	95	18%
> 15	170	32%
Total	538	100%

4. [Level of Education] What is your highest level of education?		
High School	27	5%
Some College or trade school	276	51%
4 Year College Degree	209	39%
Masters Degree	18	3%
Advanced Degree above Masters	6	1%
Total	536	100%

5. [Number Supervised] How many individuals do you supervise on a typical shift of duty?		
0	322	60%
1 to 10	175	33%
11 to 30	13	2%
31 to 60	19	4%
Greater than 60	8	1%
Total	537	100%

6. [Special Training] Please indicate the level of Haz Mat/WMD training you have received (note: "Operations Level" is the baseline training for Firefighters that is provided in proby school).		
Operations Level	239	44%
CPC	77	14%
Technician 1	84	16%
Technician 2	91	17%
Specialist	32	6%
Don't Know	16	3%
Total	539	100%

7. [Haz Mat Responses] How many responses do you as an individual have per year that primarily involve hazardous materials releases? (i.e., accidentally released chemicals, biologicals, radiological, etc..., as well as terrorist agents).		
0	85	16%
1 to 10	302	56%
11 to 30	68	13%
31 to 50	22	4%
over 50	61	11%
Total	538	100%

8. [Information] Here's a list of various types of information related to response. On a scale of 1 to 3, please indicate the importance of each category of information to you as a responder on a typical day responding from the firehouse.

Top number is the count of respondents selecting the option. Bottom % is percent of the total respondents selecting the option.	**very important**	**somewhat imp.**	**not important**
Building construction characteristics (material,layout, etc...)	502 93%	32 6%	4 1%
Age of structure	338 63%	192 36%	7 1%
Occupancy (i.e., what does the building house?)	496 92%	36 7%	5 1%
Security measures that may be present	207 39%	283 53%	44 8%
Number and location of potential victims	493 92%	34 6%	8 1%
Immediate threats received regarding the response cite	440 83%	77 14%	15 3%
History of the occupancy regarding past threats	319 60%	187 35%	24 5%
History/beliefs of an individual or group that may intentionally cause	329 62%	159 30%	42 8%
Danger of harm posed by intentionally harmful agents	433 81%	80 15%	21 4%
The likelihood of harmful agent release at a response site	415 78%	96 18%	23 4%

9. [Information Support] Here is the same list as provided above. On a scale of 1 to 3 please rate how well the Department has kept you informed regarding each category.

Top number is the count of respondents selecting the option. Bottom % is percent of the total respondents selecting the option.	very well informed	somewhat well informed	not well informed at all
Building construction characteristics (material,layout, etc...)	135 25%	310 58%	92 17%
Age of structure	64 12%	267 50%	207 38%
Occupancy (i.e., what does the building house?)	117 22%	318 59%	103 19%
Security measures that may be present	22 4%	192 36%	322 60%
Number and location of potential victims	48 9%	268 50%	218 41%
Immediate threats received regarding the response cite	31 6%	163 30%	341 64%
History of the occupancy regarding past threats	9 2%	118 22%	410 76%
History/beliefs of an individual or group that may intentionally cause	16 3%	91 17%	427 80%
Danger of harm posed by intentionally harmful agents	38 7%	230 43%	267 50%
The likelihood of harmful agent release at a response site	23 4%	183 35%	324 61%

10. [Adequacy of Terror Information] Of the information that you receive from your agency regarding TERRORIST RELATED subject matter, please indicate on a scale of 1 to 3 the following indicators of the quality of that information.

Top number is the count of respondents selecting the option. Bottom % is percent of the total respondents selecting the option.	very good	just ok	not good at all
Accuracy	37 7%	306 57%	194 36%
Timeliness	19 4%	195 36%	322 60%
Comprehensiveness	24 4%	246 46%	267 50%
Relevance	40 7%	298 56%	198 37%
Usefulness	46 9%	286 53%	203 38%

11. [Adequacy of Fire Information] Of the information that you receive from your agency regarding FIRE RELATED subject matter, please indicate on a scale of 1 to 3 the quality of that information.

Top number is the count of respondents selecting the option. Bottom % is percent of the total respondents selecting the option.	very good	just ok	not good at all
Accuracy	286 53%	240 45%	11 2%
Timeliness	183 34%	314 59%	39 7%
Comprehensiveness	220 41%	287 54%	28 5%
Relevance	279 52%	238 44%	18 3%
Usefulness	280 53%	233 44%	17 3%

12. [Information Provided] Does your agency receive information on a regular basis in a formal fashion from other agencies concerned with terrorism, such as the Police Dept and the FBI? (Formal basis refers to an organized structure for the transfer of information).		
Yes	50	9%
No	152	28%
Not Sure	335	62%
Total	537	100%

13. [Define Intelligence] Without referring to resource material please select from the following list. Check off the 5 terms that are commonly cited as part of the process known as the "intelligence cycle".		
I do not know enough to answer this question without guessing (therefore I won't guess)	302	56%
Collection	218	41%
Information	165	31%
Amplification	5	1%
Dissemination	154	29%
Vetting	21	4%
Validation	172	32%
Processing	114	21%
Analysis	212	39%
Collusion	24	4%
Attribution	17	3%
Feedback	102	19%

14. [Agency influence] Have you been encouraged by your agency to observe, identify or report indications of terrorist related activity that may be present during your normal day-to-day duties?		
Yes	386	72%
No	151	28%
Total	537	100%

15. [Knowledge of Info Group] Is there an individual or group within your agency specifically responsible for obtaining terrorist related information helpful to response and distributing it to the workforce?		
Yes	89	17%
No	81	15%
Don't Know	366	68%
Total	536	100%

16. [CIDS] Have you ever contributed in any fashion to the collection or submission of CIDS (Computer Information Dispatch System) information?		
Yes	471	88%
No	64	12%
I don't know what CIDS is	0	0%
Total	535	100%

17. [CIDS Adequacy] Do you consider the CIDS program adequate for supporting terrorist-related responses?		
Yes	110	21%
No	338	63%
Not Sure	88	16%
I don't know what CIDS is	0	0%
Total	536	100%

18. [Database of Resources] Do you possess special certifiable skills or capabilities that may be useful in advanced rescue/firefighting activity (i.e., crane operators license, professional engineers license, dive master, rigger, welder, tractor trailer operator, loadmaster, etc...)?		
Yes	162	30%
No	375	70%
Total	537	100%

19. [Job Knowledge of Resources] Is your agency aware of your special skills or capabilities?		
Yes	65	12%
No	100	19%
Don't know	42	8%
Not Applicable (no special skills)	330	61%
Total	537	100%

20. [Value of Sources of Info] Please RANK the following sources of information relative to the value that each has had on your level of awareness for responding safely and efficiently to potential terrorist events. Each source of information should be given one number. The source with the most value should be given number 1, the least valuable source should be given number 6.

Top number is the count of respondents selecting the option. Bottom % is percent of the total respondents selecting the option.	1	2	3	4	5	6
Televised News (CNN, FOX, NBC, etc...)	127 33%	45 12%	32 8%	55 14%	48 12%	80 21%
Televised Documentaries	37 10%	61 16%	61 16%	72 19%	78 21%	71 19%
Published Department Policies and Procedures	33 9%	74 19%	103 27%	86 22%	55 14%	32 8%
Newspaper/Magazine Articles	31 7%	72 16%	98 22%	96 21%	89 20%	63 14%
Fire Department classroom sessions (Fire Academy, Ft. Totten)	92 20%	113 25%	91 20%	63 14%	59 13%	42 9%
Drills held in Firehouse Quarters	104 20%	117 23%	97 19%	64 12%	64 12%	69 13%

21. [Current Federal Resource Awareness] Which of the following are examples of dedicated local emergency response assets that are federally funded and which respond nationally?		
DART (Disaster Assistance Response Team)	290	57%
USAR (Urban Search and Rescue Team)	310	60%
IMT (Incident Management Team)	172	34%
NIMS (National Incident Management System)	164	32%
CERT (Civilian Emergency Response Team)	86	17%

22. [Fire versus Terror prep] If the sum total of information that you receive from the Fire Dept. for responding to and fighting FIRES is rated as an arbitrary "4" in terms of value, what number would you assign to the total information you are provided by the Department relative to responding to TERRORISM (on a value scale of 1 through 7). Note: 1 is low value. 7 is high value).		
1	133	25%
2	200	37%
3	63	12%
4 (Level of information provided for firefighting)	60	11%
5	28	5%
6	35	6%
7	22	4%

23. [On Job for 9-11] Were you employed by the New York City Fire Department prior to, and during, 9-11?		
Yes	371	69%
No	167	31%
Total	538	100%

The remaining questions are only for those who answered "yes" to the previous question. All others are asked to go to the very end of the questionnaire to the "comments" section. Thanks!

24. [Influence of 9-11] Has your ability to receive terrorism related information from your agency that increases safety and efficiency in response improved since 9-11-01?		
Yes	160	42%
No	162	43%
Not Sure	59	15%
Total	381	100%

25. [9-11 Enhancement of Target Hazard Info] Since 9-11 has your awareness of the construction characteristics of any target hazard locations in NY City improved relative to your awareness before 9-11? (A target hazard is a location that may attract terrorist attack due to its specific occupancy, stature, symbolic or economic significance, etc...).		
Yes	197	52%
No	160	42%
Not sure	24	6%
Total	381	100%

26. [WTC Egress] Prior to 9-11 were you familiar with the characteristics of the means of egress that existed in the Twin Towers (number, size, location)?		
Yes	44	12%
No	290	77%
Vaguely	45	12%
Total	379	100%

27. [WTC Floors] Prior to 9-11 were you familiar with the type of construction that comprised the floors within the Twin Towers?		
Yes	54	14%
No	292	77%
Vaguely	33	9%
Total	379	100%

28. [1st Battalion] Prior to 9-11 were you ever assigned to the First Battalion?		
Yes	22	6%
No	348	94%
Total	370	100%

[Comments] For anybody who wishes to provide additional information regarding firefighter information, awareness and safety: please type in the space below any specific experiences you have had regarding successes or failures with information flow, observations of terrorist activity, or any suggestions that you may have to improve our awareness level for terrorism and firefighting. Thanks very much to all of you for your help with this survey, and stay safe!

29. Comments:
112 Responses

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