Developing Activation Protocols for the New York City Fire Department's Incident Management Team

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CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

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Abstract

The Fire Department of New York City's Incident Management Team (FDNY IMT) is viewed nationally as a critical resource for all-risk-hazard large-scale disaster response within the United States. The FDNY IMT's reputation was built upon its successful management of such devastating events as Hurricane Katrina (2005) and Hurricane Gustov (2008) in New Orleans, Louisiana, and during a 500,000-acre East Zone Complex wildland fire near McCall, Idaho, in 2007. Despite those national achievements, the research problem exists that the FDNY has not established protocols for activating its IMT during large-scale emergencies within New York City. The omission of such protocols has resulted in poor multi-agency coordination and the delayed establishment of an effective emergency management organizational structure.

The purpose of this research was to produce IMT activation protocols for the FDNY by investigating the activation methods of other all-risk-hazard IMTs. Action research was employed to answer the following questions: (a) What general mechanisms are used nationally to activate IMTs? (b) What states have IMT activation protocols within the United States? (c) What are the IMT protocols for those states that have them? And (d) What specific activation mechanisms are used by other all-risk-hazard IMTs in the urban environment?

Focused problem and purpose statements, and relevant research questions were developed prior to the literature review. Extensive research gathered information from IMTs within the 50 U.S. states; Washington, D.C.; Puerto Rico; and Guam. Topic experts were also identified and interviewed. The results found that few U.S. IMTs have local activation protocols. The recommendations—based on the research—resulted in specific protocols for the FDNY IMT response to building collapses, explosions, hazardous materials, and airplane and railroad crashes; as well as the education of chief officers on the management benefits of the team.

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INTRODUCTION

In the words of Assistant Chief and Incident Commander Robert Sweeney, "the Fire Department of New York City (FDNY) Incident Management Team (IMT) has made substantial progress since its inception in 2003" (2008, p. 6 conclusion). Incident Management Teams are defined as "The Incident Commander and appropriate Command and General Staff personnel assigned to [manage] an incident" (National Wildfire Coordination Group [NWCG], 2007, p. 13). These Command and General Staff personnel are "trained and certified to national-level standards of which their performance will be measured" (Federal Emergency Management Agency (FEMA), 2003, chap. 1) for their respective positions. These staff members are supported by equally trained and certified support staff as required to manage the incident(s) to which they have been activated.

As is always the case in the emergency services, the FDNY must strive to continue the forward progression of its IMT to realize the team's full potential. To further increase its effectiveness and to utilize this team to the fullest extent possible, the team must be activated in a timely manner during large-scale incidents within the city. The research problem is that the FDNY has not established a protocol for activating its IMT during local large-scale emergencies. The omission of such a protocol has resulted in poor multi-agency coordination and the delayed establishment of an effective emergency management organizational structure (Sweeney, 2008, Introduction). This issue may significantly impact rescuer and public safety, as well as the responders' ability to mitigate, control, and begin recovery from large-scale incidents.

The purpose of this research is to produce IMT activation protocols for the FDNY by investigating the activation protocols of other all-risk-hazard federal/state/urban IMTs.

To that end, this paper will utilize action research to assist in answering the following

questions: (1) What general activation mechanisms are used nationally to mobilize IMTs? (2) What states have IMT activation protocols within the United States? (3) What are the IMT activation protocols for those states that have them? (4) What specific activation protocols are used by other all-risk-hazard IMTs?

BACKGROUND AND SIGNIFICANCE

According to the Fire Department, City of New York's (FDNY) Annual Report (Fire Department, City of New York, 2008a): The FDNY, now in its 144th year, presently consists of 14,814 Fire Officers, Firefighters, Emergency Medical Technicians, Paramedics, and Fire Marshals. These highly trained individuals are supported by 1,681 civilian support and trade personnel. Working together, the FDNY protects the lives and property of over 8 million residents and 4 million daily travelers who visit the city's 322 square miles for work, vacation, and entertainment (NYC & Company, 2008).

The mission of the FDNY is to: "Fight Fires, Save Lives and Minimize Property Damage, Provide Pre-Hospital Emergency Medical Services, Prepare for Terrorism, Investigate Cause and Origin of Fires, Enforce New York City (NYC) Public Safety Codes, Conduct Fire Safety Presentations and Events" (Fire Department, City of New York, 2008a, p.1).

From July 1, 2007, through June 31, 2008 (which is the FDNY's fiscal year 2007), the FDNY responded to 477,289 fires, including 27,208 structural fires. The FDNY also responded to 197,245 non-fire emergencies, and 1,205,739 medical emergencies (Fire Department, City of New York, 2008a). Of those responses, 36 resulted in multiple alarm fires and/or incidents that lasted over several days (Deputy Commissioner of FDNY Communications H. Dingman, personal communication, October 10, 2008). However, only two of those incidents resulted in the partial activation of the FDNY IMT. It is that fact that is the driving force behind this

research as stated in the introductory purpose statement, i.e., to develop local automatic FDNY IMT activation protocols.

A thorough exploration of the history of the research problem must be presented to understand the impetus that propelled the development of the FDNY IMT. That history is presented next.

On September 11, 2001, terrorists hijacked and crashed two occupied commercial airliners, one each into the two 110-story high-rise office buildings known as the World Trade Center Towers (WTC). The resulting fires and subsequent collapses of the two structures resulted in the deaths of 2,819 people (Center for Disease Control, 2002) including 343 members of the FDNY.

A post-incident critique of the unprecedented rescue and recovery efforts that followed that tragedy and how to increase the FDNY's preparedness was conducted by the management consulting firm of McKinsey & Company (McKinsey & Company, 2002, Sweeney, 2008, Maynes, 2006, 2008). Among the reports many recommendations, was for the FDNY to develop an IMT. One of the FDNY's deficiencies in handling the aftermath of these terrorist attacks as noted in the report was described by FDNY Deputy Chief and IMT Operations Section Chief Robert Maynes:

> [The] FDNY was confronted with an extremely complex incident that required continuous operations for nine months and resources from national, state, and local agencies. Prior to September 11, 2001, the FDNY did not recognize the need for IMTs and the majority of its members were trained only on basic incident command.…The FDNY had only limited experience with events requiring multiple operational periods and complex interagency response. (Maynes, 2006, p. 86)

The principles of the Incident Command System (ICS)—which is defined as "a standardized on-scene emergency management concept specifically designed to allow its user(s) to adopt an integrated organizational structure equal to the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries..." were established and required to be followed by "...all jurisdictional levels and across functional disciplines" (National Wildfire Coordination Group, 2007, p. ii). Under President George W. Bush's Homeland Security Presidential Directive 5 (HSPD 5) the Secretary of Homeland Security was ordered to develop and administer a National Incident Management System (NIMS) (Federal Emergency Management Agency, 2003).

This interoperability system, of which all emergency response personnel must comply, was established to improve, coordinate, and make consistent the "prevention, preparedness, response, recovery and mitigation capabilities, and coordination processes across the country" (Federal Emergency Management Agency, 2003, chap. 1, p.1).

The directive also provides for interoperability and compatibility among federal, state, and local levels (Federal Emergency Management Agency, 2003, chap. 1). The overall strength and efficiency of NIMS is based on the concept of ICS and relies on proven management disciplines, which are described by FEMA as: (a) common terminology and clear text—the use of plain English in radio transmissions (no numerical codes or agency-specific codes are to be used) (National Wildfire Coordination Group, 2007); (b) modular organization—the process can be expanded or retracted based on the size or complexity of the incident(s) encountered (Federal Emergency Management Agency, 2003, chap. 2); (c) management by objectives—a top-down activity of establishing objectives, selecting appropriate strategies to reach the objectives, and the tactical direction associated with the selected strategies; (d) reliance on an Incident Action Plan

(IAP)—a written plan to communicate the overall incident objectives, the agreed-upon strategy and tactics, and the supporting information for a specified and measurable time frame or operational period (National Wildfire Coordination Group, 2007); (e) manageable span of control—where each supervisor manages between three and seven people with five being optimum (Federal Emergency Management Agency, 2003, chap. 2); (f) pre designated support facilities close to the incident; (g) resource management and control—includes the ordering, tracking, and recovering personnel, supplies, and equipment (National Wildfire Coordination Group, 2007); (h) integrated communication networks; (i) transfer of command—that includes the orderly transfer of primary authority and must include a briefing capturing all the essential information for continuing safe and effective operations (Federal Emergency Management Agency, 2003, chap. 2); (j) chain of command and unity of command—the orderly line of authority where every individual reports to one supervisor (National Wildfire Coordination Group, 2007), clarifying reporting relationships within the ranks of the incident management organization and eliminate confusion caused by multiple, conflicting directives (Federal Emergency Management Agency, 2003, chap. 2); (k) unified command—allows multiple jurisdictions and/or agencies working together on an incident, either geographically or functional, to each assign an Incident Commander to the Unified Command; these commanders establish common objectives, and strategies and tactics for the incident, without losing or giving up agency authority, responsibility, or accountability (National Wildfire Coordination Group, 2007); (l) overall incident accountability—shared at all jurisdictional levels and includes responder check-in, direction, and coordination according to the incident action plan, unity of command, span of control, resource tracking and responder check-out, and detailed expense records; (m) deployment/demobilization; and (n) information and intelligence gathering—all shared openly between the involved jurisdictions and/or agencies

(Federal Emergency Management Agency, 2003, chap. 2).

The HSPD 5 was issued on February 28, 2003, and compliance was mandated by September 30, 2005, in order for jurisdictions to maintain federal grant funding (Federal Emergency Management Agency, 2003, chap. 1). However, in reality the ICS concepts contained in the NIMS directive had been used successfully for many years prior to the events of September 11, 2001.

Prior to the NIMS and the ICS, the wildfire community utilized a very similar organizational structure called the Large Fire Organization (LFO), which was patterned after the military command and control model and adopted by the wildland firefighting community in the 1950s and 1960s (T. Murphy, personal communication, October 15, 2008).
Although the LFO attempted to organize large fire resources—it fell far short of what was required during severe wildland firestorms in the 1970s and 1980s.

During the early 1970s the ICS concept was created "as a direct result of a series of catastrophic fires that culminated in the loss of millions of dollars in property and numerous deaths and injuries" (Sweeney, 2008, p. 1). Incident Management Teams were subsequently developed to answer problems encountered in attempting to manage these vast forest fires in California and elsewhere in the Western United States. They occurred in what is known today as the Urban Wildland Interface, where man-made structures intermingle with natural wildlands (forest areas where development is non existent or widely scattered), creating risk of structural involvement in wildland fire incidents and/or wildland involvement in structure fire incidents, each of which requires different equipment, training, strategies, and tactics to control (Wikimedia, 2008). These definitions seem to depend upon "firefighters being unable to prevent homes from burning, that is, one in which resources have become overwhelmed and economic

loss, property damage, or loss of life results" (Smalley, 2007, p. 39).

Sweeney (2008) states that "the concepts of the ICS and IMTs resulted from the obvious need for a new approach to the problem of managing the rapidly moving and disastrous wildfires" (p. 1). In the 1970s emergency managers faced a number of significant problems and needed to address them in order to be successful. The problems identified were: (a) too many people reporting to one supervisor, (b) different emergency response organizational structures, (c) lack of reliable incident information, (d) inadequate and incompatible communications, (e) lack of structure and coordinated planning between agencies, (f) unclear lines of authority, (g) terminology differences between agencies, and (h) unclear or unspecified incident objectives (Sweeney, 2008, p. 1). Designing a standardized emergency management system to address these issues took several years and extensive field testing to develop.

The ICS and IMTs were ultimately developed by an interagency task force comprised of local, state, and federal stakeholders. Through their hard work and diligence, the FIrefighting RESsources of Southern California Organized for Potential Emergencies [*sic*] (FIRESCOPE) was adopted (Office of Emergency Services [OES], FIRESCOPE, 1988).

The design of FIRESCOPE, as well as its initial development and testing, was actually begun in 1972 by a specially chartered research, development, and application program (RD&A) at the U.S. Forest Service's Pacific Southwest Forest & Range Experiment Station's Forest Lake Laboratory in Riverside, California (Chase, 1980). Funding for the five-year RD&A program was provided by a special appropriation from the U.S. Congress in response to concerns raised by the previously mentioned Southern California wildfires of 1970. Those fires burned more than a half million acres, destroyed 700 structures and took 16 lives in just 13 days (Spadafora, 2003; Chase, 1980). Problem analysis was carried out jointly by the Forest Service researchers and

personnel from the principal Southern California fire agencies who also provided support for the system's design (Chase, 1980).

In the early development stages of this living document, four basic rudimentary goals were recognized by the task force and had to be addressed: They were: (a) the system must be organizationally flexible to meet incident needs of any kind and size; (b) agencies must be able to use the system on a day-to-day basis for routine as well as major emergencies (this is a consideration that this research's problem statement addresses), (c) the system must be sufficiently standard to allow personnel from a variety of agencies and diverse geographical locations to rapidly meld into a common management structure, and (d) the system must be cost effective (Sweeney, 2008).

The first statewide implementation years for FIRESCOPE were 1977-1979, when agencies received formal training in its concept. After additional government grants were applied, the program continued to expand in both geography and scope. In 1982 all California partnering agencies were using the ICS plan and had established three fully trained IMTs (Office of Emergency Services, 1988). The plan was tested in 1982 in a statewide exercise. Unfortunately, "the termination of funding for FIRESCOPE also came [at the end] in [*sic*] 1982 with approximately 60% of the system completed" (Office of Emergency Services, 1988 p. 2).

The State of California and its emergency services rallied together to complete the project and it was passed on to other Western states. During the fire sieges of 1985, 1987, and 1988 FIRESCOPE had proven its value. In the peak fire season of 1988 over 25,000 personnel and specialized resources simultaneously battled both several urban interface wildland fires in Northern California and many fire complexes throughout the Western United States (a complex being defined as "two or more individual incidents located in the same general area which are

assigned to a single incident commander, unified command, or IMT" [National Wildfire Coordination Group, 2007]). In the year 2000 FIRESCOPE received a five-year budget as well as official adoption and sponsorship from the federal government. It also transitioned into an all-risk-hazard application and revised all of its training material and training classes (Office of Emergency Services, 1988).

FIRESCOPE formally introduced and developed the IMT concept of using qualified and trained personnel to support the command and control function of ICS (viz., operations, planning, logistics, finance, safety, and community issues) and has been adopted nationally as the benchmark for the U.S. Forest Service's wildland firefighting community.

The mission of FIRESCOPE is to "provide recommendations and technical assistance to the Office of Emergency Services; to maintain a decision process; and to continue the operation, development, and maintenance of the Incident Command System (ICS); the use of Incident Management Teams (IMTs); and Multi-Agency Coordination System (MACS)" (FIRESCOPE, 2004). MACS is a generalized term that describes the functions and activities of representatives of involved agencies and/or jurisdictions who come together to make decisions regarding the prioritizing of incidents, and the sharing and allocation of critical resources. The MACS organization is not a part of an on-scene ICS and is not involved in developing incident strategy or tactics (National Wildfire Coordination Group, 2007).

Under the National Incident Management System (NIMS) hierarchy of command structure MACS are superseded only by Area Commands, state-run emergency operation centers, and the Federal Emergency Management Agency (FEMA). Area Commands are regional organizations established to oversee the management of multiple incidents that are each being handled by an ICS organization, or to oversee management of a very large incident that

has multiple IMTs assigned to it (in contrast to Multi-Agency Coordination System (MACS), Area Commands *do* have the responsibility of establishing overall strategy and tactics). MACS are also responsible for allocating critical resources in the region based on needs priorities and ensure that the incidents are properly managed, objectives are met, and established strategies are followed (National Wildfire Coordination Group, 2007). FEMA is the federal agency responsible for the coordinated responses to disasters that occur in the United States and which overwhelm the resources of local and state authorities. FEMA's intervention can only be provided after the state governor declares a state of emergency and formally requests from the president that FEMA and the federal government respond (Federal Emergency Management Agency, 2008).

Today in the national ICS arena, the FDNY Incident Management Team (FDNY IMT) is viewed as a critical resource for urban response during times of simultaneous complex incidents by the U.S. Forest Service, the Department of Homeland Security, and the National Incident Management Organization (NIMO) (Maynes, 2008). NIMO is "an organization made up of two 7-member teams of highly skilled, and nationally proven IMT command and general staff leaders who work alongside IMTs during large-scale incidents, including terrorism, natural disasters, wildland fires, and events of national significance" (Maynes, 2008, p. 14). NIMO's goals are to expand the national response capacity and capability by allowing lesser trained, experienced, or lower designated level IMTs to work under their expertise (Maynes, 2006, 2008).

> NIMOs were developed due to some national experts' fear that the near future will include a hurricane with significant impact similar to Katrina's, with simultaneous complex national wildland fires. A prime example would be the disastrous fires that impacted Southern California during October 2007 [in the middle of the national hurricane season]. Simultaneous terrorist attacks could have the same impact…. In 2005 Katrina put

> significant pressure on the [national] first response system to support operations throughout the impacted Gulf States. At one time, 55 different IMTs were deployed in four states. Simultaneously and luckily, the national wildland fire season was unusually slow. The national system was not prepared in September 2005 to respond to both Katrina and an average wildland fire situation. (Maynes, 2008)

Another example would be the late summer of 2007, when in August the nation was in the midst of an exceptionally demanding wildfire season. On a single day the national response system was unable to fill almost 3,000 requests for individual ICS supervisory positions. This led to the opportunity for the FDNY IMT to garner experience as a team and pay back the national system by relieving pressure demands on it. The FDNY IMT was activated and responded to the East Zone Fire Complex in Idaho to work under a NIMO team on its first wildland fire deployment (Maynes, 2008).

The national stature that the FDNY IMT enjoys today was not always the case. In fact, there was a long period of time where the FDNY resisted acceptance of the IMT concept as many organizations still do today (Sweeney, 2008). The catalyst for the FDNY's change in accepting the ICS and the use of IMTs occurred on September 12, 2001.

Following the terrorist attacks at the WTC, the FDNY found itself in the middle of an extremely large, complex incident involving many different organizations from many different local, state, and federal jurisdictions. It was obvious that this disaster was going to require a long-term commitment and involve a multitude of interagency emergency operations. This is where the post-September 11, 2001 FDNY and IMT worlds collided.

> The sole commercial flights in the United States on September 12, [2001] were members of two Type-One IMTs [*sic*]—a California team and a Southwest team. The California team

> responded to the Pentagon rescue/recovery operation, the Southwest team to New York City. (Maynes, 2006 p. 86)

IMTs are designated and typed according to several factors. Type-One IMTs are available on a geographical or national rotation basis. The first team assigned to an incident is the closest geographical team available on rotation. If no geographical team is available then the team on the national rotation is deployed. Type-One IMTs are considered the most advanced and experienced of IMTs and respond to the more complex incidents where the resources of more than 600 people are assigned to operations (Maynes, 2006; U.S. Fire Administration, 2008b). They must be equipped to respond and arrive as a self-sustaining unit to an incident within 24 hours. Type-Two IMTs are, dependent on complexity, generally assigned to seasonal emergencies such as wildfires, hurricanes, and floods where the requirement of resources does not exceed 250 individuals assigned to operations. Type-Three IMTs are dependant on incident complexity, generally regional or local teams who can readily deploy and are trained in the ICS to manage smaller and limited-duration incidents (Maynes 2006, 2008; United States Fire Administration, 2008b). Type-Four and -Five IMTs are defined as being single and/or multi-agency teams of seven to ten ICS-trained personnel formed at the town, city, or county level. These teams typically manage small day-to-day incidents that are contained within one operational period but may require significant mutual aid resources. They may also initially manage larger and more complex incidents prior to the arrival of Type-Three, -Two or -One IMTs (United States Fire Administration, 2008). Mutual aid is defined as a "written agreement between agencies and/or jurisdictions in which they agree to assist one another upon request, by furnishing personnel or equipment" (National Wildfire Coordination Group, 2007, p. 19).

As previously mentioned, the FDNY originally resisted the help of the Southwest

Incident Management Team (IMT) following the events of September 11, 2001. However, after a couple of days and with the tactful persistence of the Southwest IMT's incident commander, his team was given a brief chance to explain what an IMT could do to assist in the FDNY's rescue and recovery effort. After a very short explanation on the concepts of the Incident Command System and IMTs (based on the National Incident Management System and FIRESCOPE) the FDNY could not help but give the Southwest IMT a chance. Subsequently, in just 48 hours the Southwest IMT had developed an Incident Action Plan (IAP), sectioned off the 16-acre World Trade Center site into manageable sectors, activated full logistics and planning sections, established a manageable span of control, and written operational objectives. The Southwest IMT assisted the FDNY primarily with logistics and planning while leaving the operations section up to the FDNY's expertise. The Southwest IMT had made a significant impact on the FDNY, forging a relationship that ultimately resulted in the creation of the FDNY IMT (Maynes, 2006).

The Southwest IMT supported the FDNY operations for 60 days, at which time another team—the Alaska Type-One IMT—arrived to relieve them.

As a result of the professionalism and talents of the Southwest and Alaska Type-One IMTs, the fact that terrorist events were now plausible scenarios for future type incidents within the United States, and the after action review of McKinsey & Company's "Increasing FDNY's Preparedness" (McKinsey, 2002, p. 103) convinced the FDNY to embark on forming its own IMT that would specialize in urban terrorism and disasters.

Commencing in February 2003 the FDNY began the process of developing the nation's first Type-Two All-Hazard IMT (Sweeney, 2008). The first step was to train selected members of the FDNY's command and general staff in the ICS (Maynes, 2006). The training was

performed by the same IMT professionals who arrived at the WTC in 2001 to assist the FDNY in its time of need (Sweeney, 2008). The FDNY participants embarked on a two-pronged mission: to build an IMT and to develop three complex disaster and terrorism simulations.

During the summer of 2003, 37 members received formal ICS and IMT training, and shadow-trained at large wildland fires in the Western United States (Maynes, 2006). Additional training and recruitment of new team members progressed throughout 2005 (Maynes, 2008). *Shadowing* as used above is defined by Spadafore (2004) as:

> The culmination of a Memorandum of Understanding (MOU), signed by the [U.S.] Secretary of Agriculture [USDA] Ann M. Veneman, and [FDNY] Fire Commissioner Nicholas Scoppetta, securing IMT training for FDNY personnel through the USDA's Forest Service branch. It was carried out with the Forest Service through the coordinated efforts of Deputy Commissioner for Intergovernmental Affairs Daniel Shacknai and Assistant Chiefs Thomas Galvin and Michael Weinlein. Shadow-training provided FDNY members with an understanding of how IMTs operate at large-scale events. (p. 14)

The NWCG further defines shadowing as a national mentoring program where trainees work alongside a certified counterpart in the same area of expertise. The trainee must perform specific tasks and functions according to established "Task Books" provided by the NWCG for its respective IMT positions (National Wildfire Coordination Group, 2007).

During the winter and spring of 2005 the FDNY assigned 10 IMT members to a national "S-240" Type-Two IMT command and general staff course at the North America Fire and Rescue Institute in Tucson, Arizona (Maynes, 2006). During the same time frame the FDNY successfully prepared and hosted the first of its complex simulation exercises—a terrorist bombing of a major transportation center (Maynes, 2006). By the end of summer 2005, 30

additional members were assigned to several Type-One and Type-Two wildland fires as trainees. After completion of the Task Books and demonstrated proficiency, these members received national certification in their given positions. By August 2005, 22 members were fully qualified, and an additional 31 members were in varying degrees of completing their task books (Maynes, 2006, Sweeney, 2008).

On September 5, 2005, the FDNY team faced its first challenge when it was deployed for six weeks to support the New Orleans Fire Department during the Hurricane Katrina relief efforts. The FDNY supplied a 28-member IMT with operational support of 600 FDNY firefighters. The success of that deployment "ignited a local and national effort to increase preparedness by establishing IMTs" (Maynes, 2008 p.14). The success in New Orleans also established the FDNY as an outstanding resource to increase national preparedness.

Other urban regions are closely watching the ever-expanding FDNY Incident Management Team (IMT) model. If they chose to follow that model and create other urban regional IMTs it would substantially increase the national capability to respond to simultaneous incidents that may be either man-made, naturally occurring, or both (Maynes, 2006). Currently, 17 Type-One IMTs and 40 Type-Two IMTs are on the national rotation. There are several other state and local IMTs that do not necessarily have the same standards, training or expertise as the national teams (Maynes, 2006).

Today, as per Maynes (2008), the FDNY has established two IMTs so that if one team is deployed outside the city another fully functional team would be available if a major incident were to occur within the city. This was a prerequisite for the mayor's office to approve the FDNY IMT program. Currently, the FDNY has 142 IMT certified members, 98 members qualified in at least one IMT position, and more than 150 other position qualifications underway.

Thirteen FDNY members serve on the rosters of national Type-One IMTs and an additional 30 members have been requested to roster on six different Type-One IMTs and four different Type-Two IMTs. "The FDNY IMT is qualified as a national Type-Two IMT, and the only New York State Type-One IMT…with the expectation that the team is capable of responding to the most complex Type-One urban events, particularly terrorism" (Maynes, 2008 p. 15). The FDNY also has 50 Battalion Chiefs certified as Type-Three Planning Chiefs (R. Sweeney, personal communication November 13, 2009).

The year 2007 posed several challenges for the FDNY IMT. Most notably were the three incidents in which they were deployed, including the Grand Central Steam Pipe Explosion (July 18), the Deutsche Bank Building Fire (August 18) in which two FDNY firefighters were killed and occurring on the eve of the team's next deployment—the East Zone Complex wildfire near McCall, Idaho (August 19). This was the team's first national deployment since Hurricane Katrina, and the first time to manage a wildfire (Sweeney, 2008). Sweeney (2008) also reflects on the deployments by adding:

> The Grand Central Steam Pipe Explosion resulted in a *short team* [italics added] for a few days developing IAPs….The Deutsche Bank Building fire resulted in deployment for six days using rotating personnel. August 20 [*sic*], was a historical day for the FDNY. The FDNY IMT was assigned to assist a NIMO team in running a wildfire in Idaho. (p. 4)

The "short team" (Sweeney, 2008) assigned to the Grand Central Steam Pipe Explosion consisted of only the planning section. It developed IAPs and operational objectives over several days. The IAPs and incident objectives used during the Deutsche Bank Building IMT activation were used by all responding agencies for several weeks. The Idaho wildfire known as the East Zone Complex ultimately became a 500,000-acre wildland fire near McCall, Idaho. That deployment, in meeting

with the national rotation schedule, lasted 14 days (Sweeney, 2008).

Although the three activations listed above resulted in a response of at least part of the FDNY IMT, only wildfire involved a full-team response and was part of the organized national response system. The two remaining incidents (the Grand Central Steam Pipe Explosion and the Deutsche Bank Building Fire) are the ones that directly relate back to the problem statement—the absence of local activation protocols for the FDNY IMT. In both emergencies the FDNY activated only part of the IMT as a result of the FDNY Chief of Department's size-up of the incidents and the perceived needs.

It is the consequence of the steam explosion (and two subsequent construction crane accidents) that has spawned the exigency for this research. The steam explosion occurred on July 18, 2007, in the middle of a busy Manhattan intersection during a weekday afternoon rush hour. At the height of the incident there was a high-pressure 150-foot geyser of scalding mud, rock and steam flying in all directions, crashing through many windows of nearby occupied high-rise office buildings and littering the streets with falling glass and debris. Two city transit buses holding approximately 90 passengers each were in close proximity to the escaping steam. There where numerous injured civilians on the surrounding streets and sidewalks, as well as two occupants trapped in a truck located in the crater left by the explosion (Boyce, 2008). It was fortunate that the explosion resulted in only one fatality. Once the scene was contained, with the dead and injured removed, and the steam leak shut down, the FDNY was left with a considerably large asbestos-covered area of dangerous buildings and scattered debris fields.

The firefighting units that had responded—especially on the first and second alarms (approximately 120 firefighters)—were now waiting for a plan to decontaminate the apparatus, personnel, and equipment; organize the complete searches of the above- and below-grade

subway areas; and continue the ongoing recovery operations. However—unlike the early establishment of operating sectors, the maintenance of a manageable span of control and the treacherous yet highly successful search and rescue operations at the height of the incident—it appeared to the rescuers that the decision-making process had come to an abrupt halt (numerous FDNY personal communications, July 18 through September, 2007).

In the after-action review it was discovered that a major obstacle encountered at this and similar incidents was dealing with agencies not familiar with ICS or IMTs (Sweeney, 2008) and the failure of outside agencies to have a representative report to the unified command and/or operations post (Boyce, 2008). This hampered the commencement of rehabilitation of emergency responders as well as recovery operations.

FDNY and other agency commanders were still on the scene and had successfully established a single jurisdiction/multi-agency event utilizing a unified command and operations post. This incident approach was in accordance with the NYC's Citywide Incident Management System (CIMS). "CIMS is the city's implementation of NIMS and is a requirement for future federal domestic preparedness funding for local governments." (Office of Emergency Management, City of New York, 2008, p.1).

CIMS was adopted by NYC on April 11, 2005, and signed into law by Mayor Bloomberg under an executive order (Office of Emergency Management, City of New York, 2008).

CIMS establishes roles and responsibilities, and designates authority for city, state, federal, and other government entities, and non-profit and private-sector organizations that perform and support emergency response (OEM, 2008). Key components of CIMS include (a) defining how citywide emergency or multiple large-scale incidents will be managed, (b) defining agency roles and responsibilities at emergency incidents, and (c) establishing the NIMS-ICS

standard as NYC's incident management system.

According to CIMS, tactical assignments are made according to individual agency "core competencies" (Office of Emergency Management, City of New York, 2008, p.1). Under CIMS the FDNY core competencies for this incident included (a) search and rescue, (b) pre-hospital emergency medical care, (c) structural evacuation, and (d) hazardous materials life safety operations and mass decontamination. (Fire Department, City of New York 2005, p. 4)

After arriving on the scene just over 24 hours following the initial steam explosion the author, as a commander of an engine company requiring asbestos exposure decontamination, found a chaotic scene. There were no instructions on where or to whom to check in. The company's only instructions were to respond to the decontamination area at a specific intersection one block from the explosion site. Once at that location there was no obviously visible command post, command presence, or decontamination area. A multitude of personnel as well as vehicles and equipment from various outside agencies were present. No separate tactical radio channel was identified and there was no IAP. In fact, it took almost one hour to determine just where and by whom the apparatus and equipment were to be decontaminated.

Many of the first responders reported that, during the later stages of the incident, there appeared to be long periods of inaction regarding the decision to perform decontamination of on-scene personal and equipment decontamination, which is one of the FDNY's core competencies, according to CIMS.

The magnitude of the explosion, sensitive location, ensuing publicity and extended operational periods provided a perfect opportunity to deploy the FDNY IMT at a local incident. The IMT as a standard basic practice would have established an IAP as well as a responder check-in area, communications plan, decontamination area or sector, and a demobilization area.

As presented earlier, one of the abilities that allows Incident Management Teams to operate successfully at complex operations for extended periods of time is that they must be given the opportunity to practice and maintain the skills required to operate as both individuals and as a cohesive team (Maynes, 2008) or suffer from degredation due to infrequent use (Arbuthnot, 2002).

Due to the FDNY IMT's deployment to the Idaho wildland fire on August 19, 2007, this author does not have first-hand knowledge of the Deutsche bank fire IMT deployment. Furthermore, because of legal constraints at the time of this research, details of the bank fire deployment and actions taken are not accessible to the researcher, except to say that the deployment consisted of the command and general staff and the planning section only.

During the same time period as the above incidents (July 1, 2007, through June 30, 2008—NYC's fiscal year 2007) the FDNY responded to 36 additional incidents that required a third-alarm response or greater, and a commitment of more than one 24-hour period (each alarm has a response assignment of approximately 60 firefighters and their related equipment).

In addition, two major crane collapses occurred. The first, on March 15, 2008 resulted in the deaths of seven people, critically injured an eighth, and completely demolished a four-story building, and severely damaged six others. The second crane collapse, on May 30, 2008, killed two people, critically injured a third and severely damaged a high-rise apartment building. Furthermore, between June 30, 2008, and October 13, 2008, the FDNY responded to an additional 30 incidents greater than a third alarm and/or incidents that required multi-day commitments of its resources (H. Dingman, personal communications, October 13, 2008). Only one of those additional incidents garnered the response of the full FDNY IMT, and that was an EMAC response to the Hurricane Gustav rescue and recovery efforts in Baton Rouge, Louisiana

on August 31, 2008 (FDNY, 2008b).

The number of major incidents presented above (66 local and two national) relative to the number of FDNY IMT activations (four) between July 1, 2007, and December 2008 appears to be disproportionate and may prove to be lost opportunities to assemble and allow the FDNY IMTs to practice their IMT position skills (Maynes, 2008).

Referring to the construction crane collapse of March 15, 2008, the complexity of the incident once again required geographical sectoring (to maintain a manageable span of control) and multiple operational periods. The extensive coordination of multi-agencies and resources lasted for six days. Throughout the incident there were no clearly defined lines of authority. The lack of structure and coordination included communications and conflicting agency objectives. For example, the FDNY was concerned about scene safety, victim recovery operations, and debris removal. The New York City Police Department (NYPD) was concerned about evidence collection and preservation, taking part in the recovery operations, and maintaining an agency presence.

At this crane collapse, unlike the steam explosion in July 2007, under CIMS the FDNY was the primary single-command agency with a unified operations section. According to the CIMS protocol, the FDNY is designated as the primary responsible agency for (a) fires, (b) structural collapses, (c) entrapments and impalements, (d) elevator emergencies, and (e) confined space and high angle rescues (Hodgens, 2008). Although the FDNY was legally the lead agency on this incident (according to CIMS), other agencies—particularly the NYPD attempted to circumvent the established command structure and CIMS. The NYPD does not subscribe to the ICS or IMT concepts of emergency management. Similarly, the fact that other agencies are not familiar with the concepts of ICS, IMTs, or unified command presented a major obstacle as well

(Boyce, 2008; Hodgens, 2008; Maynes, 2006; and Sweeney, 2008). Once again due to the FDNY's non-usage of the IMT internal confusion occurred during the extended operations, such as firefighting units having no designated staging or check-in location; there were multiple command posts for separate agencies; and operations were being conducted on the same primary tactical radio frequency as the surrounding department units (rather than a second tactical channel for the incident). There were also no briefings held for incoming units, no IAP, and limited work-to-rest ratios.

As an example of the problems encountered by not utilizing the FDNY IMT, three days into the crane collapse the author of this research was working in a fire company that responded to an oil burner fire on the same block as the crane collapse. Because all units were still operating on the same radio frequency, a situation arose when water was ordered to quench the fire at the same time the water supply was requested to be shut down at the crane collapse site just down the block. The situation was overcome but not without delay and confusion.

Had the FDNY IMT been deployed at this event, it may have become an occasion to showcase to other agencies the values of such an emergency management system just as the Southwest IMT displayed to the FDNY after the WTC attacks. (G. Esposito, personal communications, May 21, 2008).

In an address to the FDNY IMT at its 2008 annual team meeting, Chief of Department Salvatore J. Cassano explained that he had not activated the IMT to the March 15, 2008, crane collapse due to his belief that the incident was not going to last as long as it did (S. Cassano, personal communication, April 20, 2008).

At the second crane collapse, on May 30, 2008, the FDNY IMT planning section was activated along with the department's new state-of-the-art planning vehicle. Due to the limited

area affected by this particular crane collapse the partial activation of the planning section to produce IAPs and support the regularly assigned shift operations personnel with maps and a visible command center proved to be very effective and utilized a "short team" (Hodgens, 2008; Sweeney, 2008). However, once again there was no staging area, check-in area, unit briefings, or visibly designated command post. All of these items would be addressed upon deployment of the IMT.

The above scenarios magnify the purpose of this research—to produce local activation protocols for the FDNY IMT. So that the response is not subjective, it is imperative to devise specific triggering mechanisms that notify, and when necessary, activate the team or required parts thereof.

The third-year course of the National Fire Academy's Executive Fire Officer Program (EFOP) is Executive Analysis of Fire Service Operations in Emergency Management (EAFSOEM). This course deals, in part, with the ability of fire departments to respond appropriately to large-scale, long-duration incidents and to function within the ICS. Under the ICS those departments must be able to fill the necessary command and general staff positions with appropriately trained and certified members.

The research presented here is directly related to the EAFSOEM curriculum as described in the course purpose—viz., to "improve the knowledge, skills, and attitudes (KSAs) required of fire service leaders when applied to large-scale multi-agency emergency incidents in their communities" (National Fire Academy (NFA), 2007, p. SM 1-4). To meet the objectives of the EAFSOEM Unit 1, where "the students will be able to analyze their department's level of preparedness" (NFA, 2007, p. SM 1-1), this research project will establish a detailed summary and analysis of the FDNY's IMT preparedness through the use of their IMT training and

deployment histories.

Additionally, to meet Unit 4's terminal objective, which states that students will be able to "assess risks within their own communities and assess their department's resource capabilities in relation to those risks" (NFA, 2007, p. SM 4-1), this research will examine the need for local activation and deployment of the FDNY IMT as a measure of employing adequate multi-agency coordination, an effective emergency management structure (as mentioned in the research problem statement) and the opportunity for the FDNY IMTs to practice their skills and remain proficient in their respective expertise.

Addressing the IMT activation protocol void will also meet the USFA's objective of "saving lives and reduce economic loss due to fire and related emergencies through training…and coordination with other federal agencies and fire protection and emergency services personnel" (NFA, 2007, *Forward*, p. iii). As pointed out by planning chief Esposito (personal communication May 21, 2008) local IMT deployments will provide the FDNY an opportunity to consistently demonstrate to other responding agencies how well the ICS and IMT concepts work during large-scale incidents within the city and throughout New York State (as the Southwest IMT demonstrated to the FDNY in 2001).

The EAFSOEM course summary states: "Only through continued training can we improve our ability to respond before, during, and after a large-scale incident occurs in our communities" (NFA, 2007, p. SM 1-6). Maynes (2008) reiterates that sentiment, writing: "In order to maintain its skill sets, the FDNY IMT needs opportunity to operate as a team at a complex operation for extended periods at least annually" (p. 15). Hence, the purpose of this research—to produce FDNY IMT activation protocols for local large-scale incidents.

This research will demonstrate that the FDNY IMT has been successful in national

emergency situations—including terrorism, wildfires and hurricanes. However, the FDNY must strive to improve its IMT's abilities and presence in the local arena. The significance of that improvement will assist in truly establishing the FDNY as the premier all-risk hazard IMT.

LITERATURE REVIEW

In attempting to resolve the problems associated with not having local activation protocols for the FDNY's IMT (viz., poor multi-agency coordination, ineffective emergency management structure, and responsible accountability) and to ultimately produce such procedures, it is necessary to examine the scope of this issue on a broad scale. The focus of this literature review will first investigate the problem on a national level and then narrow the focus to the more regional, state, and local levels.

The concepts of ICS—based on NIMS—as presented in the background and significance section are well documented throughout fire service literature. However, this researcher found that very little has been documented on IMTs and even less on their activation mechanisms.

This literature review is organized around the project's research questions: general activation protocols on the national level (question 1), activation protocols at the state level for those states that have them (questions 2 and 3), and specific protocols for other all-risk hazard IMTs (question 4).

In summarizing the final report of the October 2007 Southern California wildfires and comparing those findings with the previously detailed fire siege of 2003, Holt (2008) describes "dramatic differences between the two conflagrations and even between the fires that were burning simultaneously during 2007" (p. 26). At the height of the 2007 blazes "flames were advancing at an acre per second amid 80 mph wind gusts" (p.28). Twenty three large wildfires in seven counties burned a total of 518,021 acres. A "Large Fire" is defined as one: "burning more

than 300 acres…with a size and intensity such that its behavior is determined by interaction between its own convection [rising heat] column and weather conditions above the surface" (National Wildfire Coordination Group, 2008). Over 20,000 firefighters responded, and the suppression cost totaled approximately $100 million. There were 2,180 homes and 927 other buildings destroyed, half a million residents evacuated and seven civilian fatalities (Holt, 2008). In contrast, the *California Firestorm 2003* (as the media portrayed it) saw over 12,000 firefighters battling 13 wildfires in five counties that burned 745,190 acres, 3,641 homes, and 1,184 other buildings; cost over $120 million; and killed one firefighter and 22 civilians (Holt, 2008).

Referring to the 2007 wildfire final report, Holt (2008) points out that it includes "the reflections of a broad sampling of representatives from as many agencies and organizations as possible who were working at a variety of roles, in several functions, on different fires….and collects the themes that rose as common concerns" (p.29). Holt (2008) adds that the respondents were integral in the initial response to the fires and describes their success based on one or all of the three following factors: (a) pre planned evacuations and triggering points, (b) pre-staged resources and fire-management personnel, and (c) implementation of unified command with fire officials, law enforcement and other stakeholders, including utility and water authorities (pp. 29, 31).

Each of the above factors directly relates to this research in that they include pre designated triggering mechanisms (protocols) as in (a); on-call emergency management personnel for large-scale incidents as in (b); and multi-agency unified command with common purpose and goals as in (c). Holt (2008) further explains how on each fire, where unified command involved law enforcement and other stakeholders, neighborhood evacuations were successfully conducted.

IMT pre staging was employed in at least one California county based on predicted weather

patterns and funding from the state. Within six hours of ordering the IMT, the team was in place and setting up its incident command post (Holt, 2008). When the predicted "weather event" occurred, the resources including the IMT were in place and ready to respond (Holt, 2008).

The proof of the effectiveness of unified command during the 2007 Southern California wildfires can be seen in the cooperation of agencies where their individual responsibilities were not lost or given up, and where each worked as integral producers to develop an organizational incident action plan as defined by the NWCG (2007).

As an example, Holt (2008) demonstrates that one county, operating under unified command for just 24 hours prior to the fire entering the county, had developed a pre approved evacuation plan for its communities. The sheriff's office identified that it would need at least five hours to effectively evacuate a particular canyon neighborhood. The timing of that information allowed fire authorities to plan their fire operations accordingly and, with specified fire-line triggering points, coordinated the evacuation in a timely fashion.

Concluding her article, Holt (2008) points to the following factors as contributing to the successful control of the 2007 Southern California wildfires: Preplanned triggering points for evacuations and resource mobilization; pre-staging of IMTs, personnel, and equipment; and the coordinated application of unified command—where all stakeholders are represented and actively participate—in establishing common objectives and strategies without losing their individual authority, responsibilities, or accountability (NWCG, 2007).

The efficiency of unified command was predicated on the training, acceptance, and use of the ICS, NIMS, and IMT concepts by the involved agencies (Holt, 2008). In areas where there was an absence of ICS/NIMS/IMT understanding it resulted in poor multi-agency coordination (Holt, 2008; Maynes, 2008; Sweeney, 2008) and directly relates to the problem statement of this

research, viz., the use of IMTs and unified command.

To uncover the value of IMTs, particularly in the all-hazard category, this literature review further discovered that the FDNY IMT was developed to provide a high standard of efficiency and safety in the management of any large-scale FDNY operation (Spadafora, 2003) and to manage large, complex incidents more effectively (Federal Emergency Management Agency, 2007). Following the devastating attacks of September 11, 2001, the FDNY leadership began considering the establishment of an IMT that could rapidly respond to the next major incident in New York City (Federal Emergency Management Agency, 2007). As of 2007 the FDNY IMT program has enough trained personnel for two qualified Type-Two all-hazard teams. The FDNY can now deploy a team of 56 members outside NYC during a major incident and still have a full second team ready for a major incident within the city (Federal Emergency Management Agency, 2007; Maynes, 2008).

On the national level the all-hazard IMT (AHIMT) approach can be traced back to August 2003 when the United States Fire Administration (USFA) convened a focus group of stakeholders and experts from across the country to determine the best way of developing a national system of all-hazard Type-Three IMTs (United States Fire Administration, 2008a).

The USFA was tasked with establishing a standard national training mechanism for IMTs in the all-hazard environment. The focus group agreed to adopt the National Wildfire Coordination Group (NWCG)-ICS model and typing of IMTs (United States Fire Administration, 2008a).

The USFA developed the AHIMT Technical Assistance Program (AHIMT-TAP) as the approved national training curriculum. USFA's goal in 2003 was to establish 106 nationally trained Type-Three IMTs by 2008 (United States Fire Administration, 2008b). As of December

2008 there are 14 state Type-Three IMTs and 17 regional Type-Three IMTs, falling considerably short of the USFA goal (United States Fire Administration, 2008b). However, these team statistics do not reflect the creation of FEMA's 28 national Urban Search and Rescue Teams (USAR) or teams like the FDNY IMT that have exceeded the Type-Three designation to become national Type-Two or Type-One IMTs (Federal Emergency Management Agency, 2008a).

Another goal established by the AHIMT-TAP is the national timeline from notification to response and operations of IMTs (United States Fire Administration, 2008). This timeline reflects the typical response of the different types of IMTs and may include the team's initial reconnaissance group, the obtaining of a Delegation of Authority, and team briefings on expectations and goals (United States Fire Administration, 2008). Delegation of Authority is defined by the National Wildfire Coordination Group (2007) as:

> A statement provided to the [IMT] Incident Commander by the Agency Executive delegating authority and assigning responsibility. The Delegation of Authority can include objectives, priorities, expectations, constraints, and other considerations or guidelines as needed. Many agencies require written Delegation of Authority to be given to Incident Commanders prior to their assuming command on larger incidents. (p. 5)

The United States Fire Administration's timeline (see Appendix A) is as follows: Type-Four or -Five IMTs usually respond within hours of the incident occurring due to their close proximity. Ideally, the FDNY IMT should be able to assume operational and logistical management within six hours of the beginning of the incident response (Federal Emergency Management Agency, 2007). Type-Three IMTs are usually expected on-scene within 12 hours if the incident is within their regional or state jurisdiction (United States Fire Administration, 2008), and Type-Two or -One IMTs are typically on-scene within 24-48 hours. The NWCG national standard for a Type-

Two or -One team is a two-hour mobilization time (to notify and activate team members) and a 24-hour on-scene time including travel (R. Anderson, personal communication, November 17, 2008). Additionally, the actual reporting time for an IMT is requested by the agency in charge of the incident and then negotiated with the incoming IMT Incident Commander when they accept the assignment and sign a Delegation of Authority.

Due to the many variables of travel and response, both the United States Fire Administration and National Wildfire Coordination Group response time frames are estimates and cannot be held to a rigid standard (R. Anderson, personal communication, November 17, 2008). This information will directly correlate to the recommendations section of this research, viz., to establish time-sensitive pre designated activation protocols for the FDNY IMT.

As shown in Appendix B, the United States Fire Administration AHIMT-TAP also designates the requirements and prerequisites for IMTs based on NIMS (United States Fire Administration, 2008a). Those requirements include ICS 100, 200 Web-based or classroom completion; ICS 300, 400 (or NFA Command and General Staff Functions for local IMTs [NFA course 0337]); All-Hazard IMT TAP (or NFA course 0305); customized simulation exercises (50 hours minimum), or national S-240 course (ICS position-specific development); and field mentoring/task book completion (United States Fire Administration, 2008a).

Starting in 2003, the FDNY began the arduous process of developing the nation's first AHIMT, working towards completing all of the above training for its command and general staff. Subsequently, the FDNY proceeded to train an entire IMT (Maynes, 2006, 2008). The FDNY IMT developed and hosted its first complex multi-operational simulation exercise in spring 2005 to meet part of the above requirements (Maynes, 2006).

On the morning of September 4, 2005, the FDNY received an EMAC request for 300 chiefs,

fire officers, and firefighters to support the New Orleans Fire Department (NOFD) in the rescue and recovery effort following the devastating effects of Hurricane Katrina (Maynes, 2006). As defined in the background and significance section, EMAC is the procedure a state uses to request assistance from other states (Maynes, 2006). EMAC was established and signed into law by Congress in 1996, all 50 states, the District of Columbia, Puerto Rico, Guam and the U.S. Virgin Islands have enacted legislation to become part of EMAC (National Emergency Management Agency, 2007). "Through EMAC, a disaster-impacted state can request and receive assistance from other member states quickly and efficiently, resolving two key issues up front: liability and reimbursement" (National Emergency Management Agency, 2007, p. 2). The terms of that state-to-state agreement constitute a legally binding agreement that makes affected states responsible for reimbursement to the state(s) that supplied aid. States that respond to another state's request can rest assured that sending assistance will not be a financial or legal burden and that responding personnel are protected under workers' compensation and liability provisions. The EMAC legislation solves the problems of liability and responsibilities of cost and allows for credentials to be honored across state lines (National Emergency Management Agency, 2007, p. 1).

New Orleans was the inaugural activation of the FDNY IMT. It should also be noted that the NOFD EMAC request specifically asked for the FDNY IMT as an all-risk-qualified team to assist in handling the many varieties of hazards faced in the city of New Orleans (Maynes, 2006).

The NOFD EMAC request also called for a Type-One IMT. Unfortunately, what arrived was a seven-member crew from Virginia who were neither trained nor credentialed, let alone a Type-One IMT (R. Anderson personal communication, October 7, 2008). This pitfall of the EMAC system will be further explored in the results section of this research.

Although development of the FDNY AHIMT was begun in 2003, this literature review

discovered that the FDNY team was not actually the first. In his applied research project submitted to the NFA, Hawkins (1991) details how a wildland IMT was requested and deployed by the Oakland, California, 36 hours following the 1989 Loma Prieta Earthquake. The National Wildfire Coordination Group IMT that responded managed rescue and recovery operations at the 1.25-mile collapse of the Interstate 880 freeway where 58 vehicles were entombed, killing 42 people and injuring 342 others. That NWCG team demonstrated that the IMT concept could bring needed leadership and management skills to a large-scale, non-wildfire, multi-agency, multi-jurisdictional incident.

Miller (1995) expands on this incident's IMT deployment as also giving support to the concept that ICS was indeed applicable as an all-risk system and that "the pre designated IMT was a significant improvement to managing the...incident" (p. 14).

In his research, Davis (2005, p. 6) poses the question, "of what value can an IMT be to the average [New York] fire department?" Davis found that the question may be difficult to answer considering that most incident commanders do not get the opportunities to fully or even partially implement ICS, let alone an IMT, on a regular basis. Reiterating that point, Linstrom (2004) states that:

> Fully implementing the ICS with planning, logistics and finance section chiefs, and a liaison officer, as well as developing and executing an incident action plan, is something most fire officers have never seen and would be hard-pressed to replicate on a real emergency. (p. 26)

That sentiment may be true for some fire and rescue departments due to the infrequency of larger type incidents. However, the FDNY with its abundance of personnel, equipment, and resources, along with the unprecedented historical frequency of large-scale incidents does indeed have the

opportunity to utilize ICS and activate its own IMTs on a more regular basis than most other agencies (Maynes, 2008).

Additionally, in his results section Davis (2005) reports that although a majority of fire departments in New York State believe that IMTs would prove valuable, they do not see the need to form such teams within their individual departments or in some cases even with surrounding departments. This may be difficult to believe in this day and age where the value of the ICS has been well documented—and indeed developed—to work for any agency or situation effectively, whether the incident is of large-scale or a more routine nature (Hawkins & McClees, 1988). Furthermore, the NIMS document states that ICS "is used to organize both near-term and long-term field-level operations for a broad spectrum of emergencies, from small to complex incidents, both natural and manmade" (Federal Emergency Management Agency, 2003, p. 7).

Davis (2005) also found that the majority of fire departments he surveyed believe that their chief and company officers are more than capable of handling most incidents their department may encounter. As pointed out by Linstrom (2004), that attitude may be due to the fact that most fire departments may never have been confronted with an incident that overwhelmed their regular response or management capabilities. Sweeney (2008), Maynes (2006, 2008), and the Federal Emergency Management Agency (2007) all describe how even the FDNY—the biggest and busiest fire and rescue agency in the world—with its large amount of resources and outstanding ability to handle urban incidents, was overwhelmed following the September 11, 2001, WTC attacks. The FDNY was confronted with an extremely complex incident requiring multi-agency response over many operational periods (Maynes, 2006, 2008; Sweeney, 2008). The limited experience of most departments in logistics, planning, finance, public information, and liaisoning with outside agencies (Linstrom, 2004), as well as their

reluctance to work with or organize their own IMTs may prove unfortuitous should a major incident occur within their jurisdiction (Davis, 2005; Gates, 2002).

In today's world, smaller departments are also being challenged by large-scale incidents that can easily overwhelm their resources, such as the East Coldenham, New York, school collapse (Nov. 17, 1989), the Columbine High School massacre in Littleton, Colorado (April 20, 1999), the Nickel Mines school shootings in Lancaster, Pennsylvania (October 3, 2006), the Midwestern U.S. floods of 2008; and the Pine Barrens wildfires of 1995 in Suffolk County, New York, the last two of which overwhelmed multiple communities simultaneously (S. Marsar, personal communication, January, 13, 2009).

Another possible reason for not adopting or activating the IMT concept in their jurisdiction may be that the fire chiefs are worried about losing command and control to the IMTs that may be called into their districts. Miller (1999) suggests that, as part of the fire service tradition, command was usually passed up the chain of command regardless of expertise and related strictly to rank. However, Maynes (2006) notes that there is no rank in ICS and the positions are filled by the most highly trained, experienced, and credentialed persons. Therefore, in the IMT world "it is common for leaders to have people working for them who have higher rank, position, or pay rate in their [everyday] agency assignment" (Maynes, 2006, p. 85).

This literature review discovered that fire departments and commanders need to be educated to the fact that IMTs do not come in and take over an incident, but rather they act as an added resource (Spokane County, 2005). As documented throughout this research, "IMTs have been designated to assist local emergency services and support unusually large, complex or long-term emergency incidents, when requested" (Metro Chiefs, 2004, p. 1).

In the Washington State Fire Services Resource Mobilization Plan (Washington State

Fire Marshal's Office, 2005), the purpose section begins with the following:

> The purpose of the plan is to provide a process to quickly notify, assemble, and deploy fire service personnel and equipment to any local fire jurisdiction in the state that has expended or will expend all available local and mutual aid resources in attempting to manage fires, disasters or events that jeopardize the ability of a jurisdiction and/or region to provide for the protection of life and property. The plan is "all risk," i.e., it is to be used to provide fire service resources in Washington State for fires, disasters, or other [planned] events where they are needed to protect life and property. (p. 5)

This literature review found similar wording in plans from the following states: Colorado, Delaware, Florida, Idaho, Illinois, Iowa, Maine, Pennsylvania, and Wisconsin; two regional plans: Pacific Northwest and Southwest; and two local plans: Spokane County, Washington and Oxford County, Maine. They will be discussed in the results section.

In fact, the role of an IMT's incident commander (IC) is primarily to be responsible and to direct and coordinate activities of the IMT as a support staff for the hosting agency's IC. (Spokane County, 2005). As such, the responding IMT will coordinate with the hosting IC to order and fill additional ICS positions and equipment needs (Spokane County, 2005). In Washington State "mobilization is not a replacement for mutual aid….as mutual aid is an essential element of local fire protection" (Washington State Fire Marshal's Office, 2005, p. 9).

The initial IC or the agency in charge of a particular incident determines if it is of a scale and scope that would benefit from the deployment of an IMT (Federal Emergency Management Agency, 2007a). Then, dependent upon the availability of a local, regional, or state IMT, the IC must make that request through the proper channels. Conversely, jurisdictions can make a commitment to develop their own IMTs. But first, they must evaluate their community response

capabilities and be willing to recognize the probability, potential scope, and scale of possible incidents *before* they occur. This can be accomplished by conducting hazard analysis and vulnerability assessments (National Fire Academy, 2007, Chap 4). The type of team to establish (USFA, 2008a) must be decided, and the funding resources that will be required to commit to an IMT must also be assessed (Federal Emergency Management Agency, 2007a).

Following the NIMS that "provides for the organized decentralization of oversight for functional and/or geographical areas, while maintaining the integrity of the accountability and decision-making process" (Gates, 2002, p.10), community analysis and preplanning does not have to include giving up authority or autonomy (Federal Emergency Management Agency, 2003).

The hesitancy of commanders to activate IMTs may "result in the inability of organizations to rapidly bring a cohesive, coordinated management strategy to any large-scale incident early on or to support a complex, long-term operation effectively" (Gates, 2002, p. 6). Hawkins (1991) of the California Division of Forestry recognizes this critical factor when he states:

> Most current day fire officers lack the experience in managing large-scale incidents, particularly incidents other than fires. Since the fire service today is largely all-risk or full-service, meaning that departments respond to all kinds of incidents, it is impossible for every fire officer to develop across-the-board command experience. (pp.14-15)

Davis (2005) says, "If expertise is what is needed as an incident escalates then pre designated IMTs or the ability to activate them may be the answer to this dilemma" (p. 7). Linstrom (2004) adds that "the new paradigm for local fire departments is that they won't handle major non-fire emergencies completely within their own department or within their city and county resource pool as often as they used to" (p. 26).

Even the FDNY recognized this as an issue following the terrorist attacks in 2001 and has now formulated mutual aid agreements with surrounding jurisdictions and neighboring states (Wutz, 2008). These mutual aid agreements were accomplished under the New York State General Municipal Law Section 209e, which designates New York City as its own region within New York State (Wutz, 2008). The Chief of the FDNY serves as the Regional Fire Administrator (RFA) (Wutz, 2008). All other regions in the state are designated at the county level with the county fire coordinator designated as the RFA. Each RFA is required to establish fire mobilization and mutual aid zones. The law also tasks the State Fire Administrator to prepare a statewide mobilization and mutual aid plan. The state plan ultimately encompasses the individual regional plans (Wutz, 2008; J. Callahan, personal communication October 27, 2008).

The coordination of multiple self-dispatching agencies into NYC on and after September 11, 2001, was a driving force behind the FDNY mutual aid agreements as well as the establishment and activation of IMTs to perform this coordination function according to the ICS and NIMS.

After several injuries were sustained by volunteer firefighters (including off-duty FDNY members) working at the WTC during the first three days following September 11, 2001, the Southwest IMT developed and implemented a written IAP (Maynes, 2008). The IAP stopped the use of any volunteer as well as off-duty FDNY firefighters unless they were working under a USAR, IMT, or a requested mutual aid resource. This strategy was in accordance with the IAP's approved plan for obtaining staffing, equipment, and resources (Maynes, 2008; Sweeney, 2008).

The IAP developed by the Southwest IMT also effectively utilized the available FDNY resources by implementing a rotation of on-duty personnel to staff the rescue and recovery efforts (Maynes, 2008). Accordingly, the purpose of this research is to produce mobilization

protocols so that in the future the FDNY IMT can be utilized to address such scenarios and move more rapidly towards developing and implementing on-scene organization.

According to the U.S. Department of Homeland Security (2004), "The greatest asset provided by the federal government to the FDNY [after September 11, 2001] was the support of the Southwest IMT" (p. 66). Part of that support included logistical functions to provide staffing and equipment needs that would facilitate the FDNY operations section of the ICS.

With an IMT in place during large-scale incidents, every emergency responder knows who is involved in the response and management of the incident, where they are located and what their objectives are. This information is needed to make risk management decisions and, if safety issues arise, locate affected responders so their needs can be immediately addressed (McDonald & McLaughlin, 2008).

Emphasizing the need for incident command, safety, accountability, and responsibility, Hawkins and McClees (1988) state that:

> Other local government agencies should at least be familiar with the incident command system used by the fire department, but it would be even better if other emergency response agencies (police, public works, utility, and others) adopted a common system. (p. 336)

Sweeney (2008 [see Appendix A]) agrees by stressing that consistently, during both planned and unplanned events, "a major obstacle encountered was dealing with agencies not familiar with incident Management Teams" (p. 4). According to Davis (2005), "few if any city agencies other than the emergency services have been educated in ICS, which drastically limits the ability to make the smooth transition to an outside IMT when the need arises" (p. 5). If agencies other than fire departments were familiar with ICS and IMTs perhaps they would understand that "NIMS

provides for organized decentralization of oversight for functional and/or geographic areas, while maintaining the integrity of the accountability and decision-making process" (Gates, 2002, p. 10). Even the AHIMT-TAP program training manual teaches that "assigning law enforcement personnel in deputy positions for the Operations and Planning sections will strengthen the strategic planning and operations of the incident by the IMT" (Federal Emergency Management Agency, 2007b, p.19). A prerequisite to that strengthening must then rely on the assumption that agencies outside the fire service are trained, familiar, and exposed to the ICS and IMT process.

Borden (1989) cites several incidents where managing both emergency and non-emergency large-scale events requires the inclusion of IMTs. He describes how the pooling of both management labor and equipment resources ensures that adequate resources are on-scene in areas that would not otherwise be able to sustain the prolonged operation. Borden (1989) also highlights that earthquakes, floods, hurricanes, wildfires, snow/ice storms, and planned events such as the Olympic Games, the Super Bowl, presidential debates, etc. often occur across local jurisdictions and boundaries. When these events occur or are being planned for, problems of multi-jurisdictional authority and responsibility can become tremendous issues. The unified command utilizing an IMT model structure can alleviate many of those responsibility and authority issues (Borden, 1989).

The fire service in general is not immune to being ill-versed in the ICS and IMT functions. Gates (2002) noted "when it is initially apparent that the incident may escalate, the IC should anticipate the need for staff support and request more resources including the activation of an IMT" (pp. 10-11). Whether the IC or unified command includes fire department representatives or not, having the training and understanding of the ICS and IMT capabilities and when they should be activated would most likely prove beneficial for large-scale planned and

unplanned events (Borden, 1989).

For an IC that does not have a working knowledge of the ICS/IMT structure, or does not call for resources to provide such a structure, the adoption of local pre designated IMT activation protocols may alleviate possible liability in cases where the IC does not recognize the scope of the incident. If, through acts of omission or commission, the IC fails to provide adequate resources early enough to contain the incident—such as activating an IMT (something the initial IC may be reluctant to do until the incident is well beyond his or her organization's capabilities)—pre designated triggering mechanisms may save him or her from scrutiny (Miller, 1995). Establishing pre designated triggering mechanisms is the ultimate purpose of this research.

Having to make those decisions (calling in an IMT or utilizing the ICS) may be, at times, delayed or ignored by the tendency of the operations section chief (or the IC at a smaller incident) to become committed to a plan because of the close personal involvement and necessarily focused view. This can lead to entrenchment in the incident's early stages (McDonald & McLaughlin, 2008).

The IC or Unified Command must use benchmarks (or triggering points, as will be produced by this research) to determine if the incident objectives are being met (McDonald & McLaughlin, 2008). McDonald and McLaughlin (2008) further express that:

> It is important to "reinforce success" and, if the Operations Section Chief (and others) might be committed to an initial plan that is chronologically unsuccessful, the plan should be changed by the Incident Commander or Unified Command to a more successful strategy. (p.10)

McDonald and McLaughlin (2008) endeavor to demonstrate, an activated IMT may provide the

IC or Unified Command with a more successful strategy by looking at the bigger picture and by making more appropriate recommendations, including a measurable timeline for success. IMTs also employ incident complexity analysis (National Interagency Fire Center, 2006; National Wildfire Coordination Group, 2006) to plan ahead and evaluate the response to the incident.

Gates (2002) mentions that many cities throughout the nation utilize on-duty command staff for initial incident management; they often tend to augment those on-scene managers by additional staff and off-duty command officers as needed. This build-up of resources is not predetermined, highly subjective, and relies on the availability of the off-duty members to fill ICS roles as needed. Often this scenario leads to a struggle and the problem of playing *catch-up* to the incident (McDonald & McLaughlin, 2008).

Unique to the FDNY is the amount of on-duty command staff, chief officers and available resources. The FDNY's ability to quickly expand the emergency management capabilities and response is extremely advantageous. However, for large-scale incidents, it is still very subjective. As described in the earlier large-scale emergency incidents faced by the FDNY in 2007 and 2008, subjective response has often proved to be a hindrance during these large-scale events (Hodgens, 2008).

In reviewing literature on the New York Grand Central Steam Pipe Explosion, which occurred on July 18, 2007, Boyce (2008) under "Lessons learned/reinforced" clearly notes that:

> (a) ICS is built from the bottom up and sectors must be designated early on, and all companies must report in to the command post; (b) manageable span of control—3:1 to 7:1 is the range of subordinates to superior ratios, with 5:1 as the ideal ratio; (c) modular organization where complex incidents call for larger organizational structure; (d) written IAPs developed at the scene of complex incidents are required; (e) resource management

> and accountability is performed initially by the IC and then delegated to the Resource Unit Leader. This is extremely important for safety reasons. The FDNY is particularly vulnerable at large incidents that occur during the hour preceding the scheduled change of tours; and (f) designated facilities such as command post(s), operations post, staging area, recuperation and care, decontamination and safe refuge areas will exist. Seek them out early and employ them. (p. 3)

Additional literature review of the two 2008 construction crane collapses to which the FDNY responded, revealed similar concerns. Namely, under "Lessons learned/reinforced," Hodgens (2008) makes the following points:

> (a) Establish a command post and a staging area at the beginning of operation to help maintain control, (b) establish a command radio channel and sectoring the operation to limit the span of control and make the incident more manageable, (c) the Medical Branch Director must make and maintain contact with the Operations Chief throughout the operation to ensure accurate victim count is maintained, (d) activate a Logistics officer to assist in obtaining supplies whenever necessary, (e) utilize a Liaison officer whenever interaction with other agencies or private contractors is necessary, (f) consider establishing an interoperability channel with other responding agencies….(g) request the response/activation of the planning vehicle, Command Tactical Unit, and Fire Department Operations Center to produce IAPs early, (h) acquire reliable, accurate maps that illustrate the footprints of all surrounding properties and utility routes to assist the IC….(i) gain control of scene access at the beginning of the incident, (j) establish a communications plan early….and (k) track operating units within each sector. (pp.7, 8)

All of the above observations and recommendations are basic functions of the FDNY IMT and

illustrate how important and beneficial activation of the team would have been for such incidents.

Hawkins (1991) points out that pre designated IMTs are far superior to *pick up* response teams that tend to get thrown together at the time of major incidents, and that the reason for IMT superiority is "team dynamics and synergy" (p. 24). Arbuthnot (2002), Hawkins (1991), and Maynes (2008) each point to the proven ability of IMTs that meet regularly, train collectively, and operate together during long-duration and complex incidents, that learn how to best interact as an effective group and to become problem solvers.

While Miller (1995) uses the assumption that "a well-trained team could be more capable of identifying and achieving incident objectives during large-scale, all-risk incidents" (p. 12), Arbuthnot (2002) likewise suggests that the lack of response and experience of IMTs may result in the degradation of learned competencies as well as the incident. Arbuthnot (2002) further explains that "even though IMT training may be regular, those competencies may never have been adequately developed or may have suffered due to infrequent application" (p. 117).

Expanding the literature review to outside the emergency services, it was found that IMTs have been used successfully, albeit infrequently, in the industrial setting. In the *Journal of Contingencies and Crisis Management,* Crichton, Lauche, & Flin (2005) analyze the successful command skills of an IMT in the *Thunder Horse Riser Incident Case Study.* The authors state that in the oil and gas exploration and production industry, major incidents are rare. Therefore, members of industrial IMTs must rely on training exercises and discipline-specific expertise to effectively manage large-scale incidents when they do occur.

On May 21, 2003, a deep-sea drilling team working for the British Petroleum Company (BP) was drilling for oil and gas off the Gulf of Mexico. At 3:59 a.m. the 6,000-foot drilling riser suddenly failed at approximately 3,200 feet sub-sea level and fell to the sea floor. Had the riser

damaged the well-head equipment on the sea floor it could have resulted in the leakage of up to 100,000 barrels of oil per day from the subsurface reservoir into the Gulf. Following the initial notification from the operations manager, an IMT was assembled at the BP office in Houston, Texas (Crichton et al., 2005). The IMT immediately began to assess the situation and take steps to give instructions to the oil drilling rig. Assessing the damage and possible leakage was a top priority along with planning for a long-term response and recovery effort. Fortunately, there were no injuries and no oil leak occurred. However, those facts were not known at the time of the initial response. The responding IMT was faced with a challenging situation that had never been experienced, particularly at such sea depths (Crichton et al., 2005).

Although the IMT was assisted by several sub-teams, it was faced with responding to all potential threats to people, wildlife, and the environment; to securing the remaining sections of the damaged riser; and to recover the scattered pieces of the broken riser from the sea bed. The recovery operations would include the eventual reattaching of the piping to the equipment on the sea floor. After 68 days and a cost of $100,000 *per day* the well was reestablished and drilling resumed (Crichton et al., 2005).

The literature review revealed that industrial IMTs are usually made up of individuals on a rotating basis. Unlike the emergency service and military teams, industrial IMT members may only work together when responding to critical events. Another marked difference in industrial IMTs is that the teams often require specialization, and the pooling of different expertise. Key players on the team may be geographically separate, leading to high demands on communication and coordination (Crichton et al., 2005).

Crichton (et al., 2005) state, industrial IMTs parallel emergency services IMTs in that members must exhibit a high level of teamwork skills and decision making. They must operate in

"complex, dynamic environments, with the possibility of high information overload, time pressure, consequences of error, multiple players, high psychological demands, and stressful [physical] conditions" (Crichton et al., 2005, p. 117).

Contrasting the U.S. ICS/IMT and United Kingdom (U.K.) IMT systems, Crichton et al. (2005) tells us that in the U.K., incident command structure consists of three parts: (a) Strategic—involves multiple agencies; a longer-looking view of the incident; anticipates and projects developments; and plans for recovery, (b) Tactical—usually a co-coordinated role to determine the tactics to be used; operates on the basis of information received, and (c) Operational—referring to the direct supervision at the task level; usually involves immediate decision making and dynamic risk assessment (see Appendix C). The U.S. ICS/IMT structure on the other hand, is divided into two main categories known as (a) the Command Staff—made up of the IC, Public Information Officer, Safety Officer, and Liaison Officer, and (b) the General Staff—the group of personnel Chiefs who report directly to the IC and manage the four major sections of ICS, viz., Operations, Planning, Logistics, and Finance/Administration (NWCG, 2007) (see Appendix D).

In the Thunder Horse Drilling Riser Incident Case Study, (Crichton et al., 2005), the authors identify five "main skill categories" (p. 119) as being key components to this particular incident's success: situation awareness, decision making, teamwork, leadership, and communications. Curiously, to avoid chaos in the early stages of the incident, the incident manager (the U.S. equivalent of the IC) decided to establish a core team of members consisting of "a drill operator's personnel, a contractors' representative, and a documentation specialist" (p. 121). If those core team members were added to the three-part U.K. incident command structure components (Strategic, Tactical, and Operational), an organizational chart of the U.K. system

practically mirrors the U.S. ICS command and general staff structure (see Appendixes C and D for comparison).

According to Crichton et al. (2005), the establishment of these core team members not only set a clear direction for the IMT and sub-teams but also provided administrative direction. The case study further reveals that previous incidents in the UK have identified teamwork errors as being the result of roles not being clearly defined, tasks falling through the cracks, lack of explicit communications, and miscommunications (Crichton et al.).

These same issues have been explicitly identified by this research as elements of the problem statement, i.e., poor multi-agency coordination and the delayed establishment of an effective emergency management organizational structure in the absence of an IMT.

Although facts were scarce in the early stages of this incident, the incident control room (the U.K. version of the Incident Command Post) established reliable communications with the deep-sea drilling rig and to other remote members of the IMT (Crichton et al., 2005). Establishing an effective communication flow was described by one of the IMT members as being "critical to protect communications, and get [*sic*] the right information to the right people at the right time, and [to be] consistent [with] information" (Crichton et al., p. 122). Dealing with unknowns could destabilize any progress made, so efforts had to be made to anticipate what could happen (Crichton et al., 2005).

To reflect on the importance of the above stated incident communications, the FDNY has invested millions of dollars to increase communications between its on-scene ICs and top FDNY commanders. In September 2006 the FDNY unveiled the Fire Department Operations Center (FDOC). This $17 million, state-of-the-art command center is located in fire headquarters and serves as a "ground control" center in the event of large-scale incidents. Staff Chiefs will be able

to make assessments based on information that flows wirelessly from the on-scene command post as well as additional information from such sources as the media and police helicopter video feeds (Fire Department, City of New York, 2006). The center is also linked electronically to other city agencies. The FDOC is capable of being utilized as a multi-agency Emergency Operations Center (EOC), an Incident Command Post, and/or a Joint Information Center (JIC) as required under NIMS (Federal Emergency Management Agency, 2003).

The FDNY's FDOC is also used as a two-way media center from which the media can receive up-to-the-minute information from the department as quickly as the department and public receive video images and reports from them. The FDOC as a media resource center has had a tremendous positive impact on the availability of information to commanders at the FDOC, the IC on the scene, and to the public through the media (Scopetta, 2006).

A more recent addition to the FDNY arsenal was placed into service in September 2008. The newly developed Command Tactical Unit (CTU) is part of Fire Commissioner Nicholas Scopetta and Chief of Department Salvatore Cassano's initiative to increase communications between the IC and members operating in the FDOC. "Since September 11, 2001, increasing situational awareness has been a priority for the department" (Fire Department, City of New York, 2008b, p.1).

The CTU is a $210,000 response vehicle that allows documents, visual video images, and other information to be sent wirelessly back and forth between police and news helicopters, on-scene digital video cameras, television news programs, the incident command post and the FDOC. The CTU can also receive documents from the FDOC such as building floor plans, street maps with building footprints, locations of utility lines and water mains, and address specific building code violations and construction information. Images and documents received by the

CTU can then be sent directly to the IC through tablet computers at the on-scene command post board (FDNY, 2008c).

Another critical communication concern noted by Crichton et al. (2005) as being crucial to the U.K. IMT drilling incident (and directly related to this research's problem statement) is the ability to perform shift handovers to incoming team members so they may gain an adequate and appropriate assessment of the situation.

Under the U.S. ICS, IMTs must use specific forms (ICS 201-209, 211, 213, 214, etc.) to document every aspect of the incident. These forms may then be transferred (or collated into an IAP or transition report) to the next operational team. The absence of such organization—especially in multi-agency, multi-operational period incidents—may lead to ineffective operational management, on-scene confusion, health and safety mishaps, and possible escalation of the incident due to inaction or duplicative effort.

Crichton et al. (2005) identify *key learnings* (lessons learned) that are relevant to members of IMTs in both the industrial setting and emergency services. These lessons are specifically relevant to this research and will be examined further in the discussion and recommendations sections. Those key points include: (a) early activation, deployment, and building of an IMT; (b) supplementary training in expertise-specific command, leadership, and teamwork performance; (c) individual feedback from IMT members after training exercises or incident deployments; (d) ICs must be trained so as to acquire a working repertoire of management styles along with the awareness that different styles must be employed under different situations; (e) reviews of actual incidents must be undertaken, shared, and reviewed, and must include all participants/agencies to learn from past experiences; (f) IMT members must be trained to expect and cope with increasingly complex environments by becoming more

adaptive, flexible, and versatile in their decision making; (g) adhere to a flexible incident management system that specifies roles and responsibilities, accountabilities, and expectations of the IMTs members and supporting agencies; (h) training exercises must be held routinely; (i) train IMT members to "what if" scenarios so they may consider how they would manage the recovery stage of incidents rather than merely identify what events could occur; and (j) train IMTs to transition between the reactive response phase and the proactive recovery phase rather than to focus almost exclusively on the response phase (Crichton et al., 2005, pp.126-127).

In summary, the literature review establishes common threads to support the research problem. Namely, that the lack of IMT activation can (and has) resulted in poor multi-agency coordination and a delay in organizing effective emergency management structure during large-scale emergencies. Additionally, the collaborative opinions of other published works strengthen the purpose of this research, which is to produce triggering activation mechanisms and protocols for the FDNY IMT. Conflicting opinions found in the literature review are also presented as credible evidence that the intent of this research is justified, necessary, and relevant.

Supporting literary views include Holt (2008), who examines and contrasts the Southern California wildfires of 2003 and 2007. She points out that pre-staged resources (including IMTs) and the successful implementation and universal acceptance of unified command led to the successes in the later fires and produced *lessons learned* from the previous fires. Furthermore, Holt (2008), Maynes, (2008), and Sweeney, (2008) all contend that the absence of unified command results in poor multi-agency coordination. They also agree that the efficient use of unified command was predicated on training, acceptance, and implementation of the ICS, NIMS, and IMT concepts by the involved agencies (Holt, 2008). In areas where an absence of the above

concepts prevailed, there was a direct consequence of poor multi-agency coordination (Maynes, 2008; Sweeney, 2008).

Hawkins and McCleese (1998) further affirm that other government agencies outside the emergency services should at least be familiar with the ICS and IMT system used by fire departments and would be better off if they adopted such a common management system. Sweeney (2008) agrees by pointing out the need for consistency in emergency management during both planned and unplanned events. The above opinions directly relate to the recommendations section of this research—to adopt standard activation protocols for the FDNY IMT.

Spadafora (2003), FEMA (2007), and Maynes, (2008) all consistently tout the value of AHIMTs as an additional resource to be called upon by ICs and municipalities. Hawkins (1991) and Miller (1995) detail how the first AHIMT used as a pre designated management tool during the I-880 freeway collapse of 1989 significantly improved the operations of that incident. The use of that pre designated IMT pertains directly to the research questions of this project.

As exemplified in the Washington State Fire Services Resource Mobilization Plan's purpose statement (2005), the establishment of decisive pre-incident IMT activation protocols is mandatory as a plan to quickly notify, assemble and deploy IMTs. As noted in Appendix E as an incident progresses the early recognition of a local or state IMT must be recognized and mobilized as early as possible (as noted by the blue dashed line).

Directly relating the literature review to this research purpose statement and recommendations section, Federal Emergency Management Agency (2007b) specifies that the host IC or agency decides if an IMT would benefit the incident. However, Hawkins (1991) points out that most fire officers lack the experience to make such a determination. McDonald

and McLaughlin (1988) note that the IC or agency may simply be too involved with the incident to make such a determination. Gates (2002) corroborates on the hesitancy of IC to implement activation of IMTs, based perhaps on the IC's lack of experience. Being an IC based on rank rather than experience is reiterated by Miller (1999), who suggests that fire service tradition dictates that command is usually passed up the chain of command regardless of experience or expertise.

In that vein, Maynes (2006) notes that in the ICS structure there is no rank, and positions are filled only by the most highly trained, experienced, and credentialed person. Davis (2005) cites the ability to activate IMTs as an available means to obtain necessary management experience on escalating incidents. McDonald and McLaughlin (2008) reiterate that the use of benchmarks (or triggering mechanisms) will assist the IC in knowing if the incident objectives are being met. Those mechanisms also relieve the IC or other designated individual of the responsibility to activate IMT assistance. Miller (1995) offers that pre designated triggering mechanisms for IMTs may also relieve the IC and/or agency from legal liability and scrutiny during and after large-scale events that may quickly escalate beyond their agency's control. Another observation by Hawkins (2004) that was found to be relevant to this research is that most departments won't handle large-scale emergencies on their own and that IMT activation and implementation would ease the coordination of such multi-agency activities.

Conflicting opinions on this research topic include the original reluctance of the FDNY to adopt ICS and IMTs into its operational protocols (Davis, 2005; Maynes, 2006, 2008). Davis (2005) continues to explain that his research found most fire departments and fire officers (in New York State) exemplifying their *can do* attitude, and like the majority of emergency responders believe that they can handle almost any incident that might come their way. Linstrom

(2004) further explains that this belief may be due to those departments never having been challenged by an overwhelming incident or event.

The Federal Emergency Management Agency (2007), Maynes (2006, 2008), and Sweeney (2008) all concur that even the FDNY with all of its expertise and experience was overwhelmed on September 11, 2001. Davis (2005), Gates (2002), and Linstrom (2004) detail the reluctance of fire departments to work with or form IMTs. They also point out that the decision to not engage nor organize IMTs may prove critically counter-productive should a large-scale incident occur in their jurisdiction. Borden (1989) highlights both planned and unplanned events often occur across local jurisdictions and boundaries. He further states that problems of authority and responsibility become tremendous issues that can be alleviated by an IMT structure.

Gates (2002) reiterates that the IC must anticipate and recognize when an incident necessitates the calling of an IMT. As previously outlined, many ICs may be reluctant to do that.

According to Miller's research (1999), the reluctance of ICs to call on or even form IMTs stems from their worries about IMTs taking over incident control and the mind-set that their department or jurisdiction can handle any event. Even Maynes (2006) found it necessary to demonstrate what should be a universal understanding—that the lack of rank in ICS leaves the local IC in charge—until (or unless) a Delegation of Authority is signed and agreed upon.

The Spokane County Emergency Response Plan (2005) describes IMTs as an "added resource, not a take-over group" (p. 13), which arrives to direct and coordinate activities, but does not replace the need and first priority use of mutual aid. The Metro Chiefs (2004) reiterate that IMTs are formed to assist local responders.

The credibility of supporting and conflicting literary views influenced the author of this

research project by substantiating the need to adopt concrete IMT activation protocols within the FDNY. Specifically, those literary influences included: Hogens (2008), who underscored the importance of IMT organizational skills that would benefit large-scale incidents; Hawkins (1991) describing the integral IMT dynamic approaches and team synergy; Maynes (2008) showing the IMT effectiveness working as a group to solve problems; and Miller (1995) finding that IMTs have proven to be more capable of achieving incident objectives on large-scale, long-duration incidents through structured and proven approaches. Outside the emergency services, Crichton et al. (2005) reported that early activation of the IMT was the single most important step in bringing the Thunder Horse drilling accident to a successful conclusion.

The purpose and recommendations of this research will attempt to alleviate the subjective activation of the FDNY IMT. The adoption of automatic triggering protocols would remove the decision-making burden from the IC and the agency (FDNY) during large-scale incidents and events. The literature reviews presented here will prove to be invaluable assets in answering the research questions for this project.

PROCEDURES

The procedures employed in the preparation of this Applied Research Project (ARP) consisted of first developing a focused problem, research purpose, and relevant research questions. A literature review was conducted in addition to topic-specific questionnaires and personal interviews. Policies, procedures, and guidelines from outside agencies were used for comparison with the FDNY. The action research method has been utilized to achieve the goal of the purpose statement, i.e., to produce local IMT activation protocols for the FDNY.

The first step of this ARP commenced on June 9, 2008, when the author attended the EFOP's EAFSOEM. On June 19, 2008, just prior to completing the course, the author contacted

the assigned evaluator by e-mail. The author introduced himself, and notified the evaluator of his intention to submit the research proposal. The first proposal was submitted to the evaluator on July 7, 2008. The evaluator notified the author that she was attending the NFA and would have limited availability over the following two weeks. Guided by the evaluator's feedback, the problem and purpose statements, and research questions were redefined and revised.

Between July 16 and August 16, 2008, the author made limited progress with the project due to preparation for a promotional exam on August 16, 2008. From August 18, through September 21, 2008, the author worked with the evaluator via several e-mails to sculpt and fine-tune the research proposal.

On September 22, 2008, at the request of the author and with the permission of the evaluator, a phone conference was held, which proved extremely valuable in setting the goals and expectations of both parties.

It should be noted that the author believes this phone conversation assisted in clarifying the project for the evaluator as well as the author. The personal interaction and communication of that relatively short phone conversation achieved what several e-mails could not. It provided a human element to the research and established a professional relationship and mutual respect between evaluator and author. The telephone discussion provided a valuable step towards getting the project underway and provided a springboard for the research.

Concurrently with narrowing the focus of the ARP proposal (July through September, 2008) the author began the next two steps of his research: to construct a *road map to success* (Appendix F), and to identify the research organizations and individuals to contact for statistical analyses, guidelines, procedures, and protocols. The road map was devised to help develop an organized approach to the research. In addition, a completion check-off sheet was produced,

listing each required ARP section and proofreading confirmation. An approximate target date for each ARP section was also included (Appendix G).

At this time the author decided to complete the required ARP sections in sequential order (with the exception of the abstract). Following the road map, a master source list (Appendix H) and master reference list were established on September 24, 2008 (the master reference list later became the attached master source list). Throughout the remainder of July, August, September and October 2008 the author set out to find past ARPs and trade publications related to this subject to be used in the literature review. A handwritten spreadsheet was developed to track and cross-reference important excerpts and to compare and contrast article information and references found throughout the literature review.

An extensive effort was undertaken to identify individuals to be contacted and interviewed for the project (September/October 2008). It was the intention of the author to include resources outside the emergency services and FDNY. However, due to the nature of the project's problem and purpose, outside resources were found to be limited. The rationale behind limiting the contacts to questionnaires and interviews was due to the focused group of experts available within the concise area of expertise.

Before contacting the designated potential sources on the rosters, two questionnaires were developed in late September, early October, 2008—one for FDNY personnel (Appendix I) and one for outside organization personnel (Appendix J). Each questionnaire was accompanied by a cover letter (Appendix K). When necessary, the questionnaires were slightly modified for use during personal interviews. The majority of interviews and correspondence for this research were made via e-mail which proved to be an invaluable tool for making these contacts. E-mail allowed for information to be immediately requested and received, saving a tremendous amount of time

and effort in obtaining information and was extremely useful in each section of the project.

The personal contacts offered new information not found in the literature review. The contacts were initiated in early October 2008 with the FDNY IMT Command Staff—specifically, Chief of Department Salvatore Cassano, who was asked to answer the research questions in addition to the following: (a) if he thought developing automatic activation protocols for the FDNY IMT was a good idea, (b) in hindsight, have there been any incidents where he could have deployed the IMT to better manage the incident, and (c) who is presently responsible for activating the FDNY IMT.

Further FDNY contacts were made utilizing the FDNY IMT Organizational Chart (Appendix L). Assistant Chiefs Edward Kilduff and Robert Sweeney (the FDNY IMT ICs) were asked to answer the research questions as well as to give their input in recommending activation protocols. Deputy Assistant Chiefs James Manahan (FDNY Chief of Strategic Planning/IMT Planning Section Chief), Ronald Spadafora (FDNY IMT Deputy IC/Safety Officer), Deputy Chief Robert Maynes (FDNY IMT Operations Section Chief/Training Coordinator), and Battalion Chiefs James Kane (FDNY Finance Section Chief) and George Maier (FDNY Planning Section Chief) were also asked to address the research problem statement and research questions. Henry Dingham (FDNY Deputy Commissioner of Communications) was also contacted by telephone to provide FDNY response information used in the background and significance section of this project.

Battalion Chief Maier (a national AHIMT instructor for FEMA) was instrumental in providing contact information for non-FDNY members. Those particular contacts proved beneficial to this research due to their experience and expertise in AHIMTs and wildland IMTs. Those outside contacts included: Robert Anderson (Fire Chief, Spokane County, Washington;

National Area Command IC; Deputy Chair, Department of Homeland Security–NIMS and IMT work group; Washington State Representative to the Pacific Northwest Wildfire Coordination Group), George Custer (IC-national Type-One IMT; Operations Section Chief–Atlanta NIMO, and Daniel Oltrogge (IC-Southwest Area IMT). The expertise and wealth of information provided by each of these IMT professionals was invaluable, and this research would not have been successful without their input.

Other non-FDNY contacts interviewed by the author included: James Callahan (Director of OEM, Nassau County, New York), Yolanda Daeninck (Director of Investigation-McKinsey & Company, New York), Bill Cambell (Program Manager-New York State Emergency Management Organization), Charles Hamilton (Security and Safety Director-Brookhaven National Labs, Brookhaven, New York), and Thomas Wutz (Chief of Fire Services-New York State Office of Fire Prevention and Control, Albany, New York).

The non-FDNY contacts provided factual and statistical information that was not readily retrievable from documented or published sources. All of the above internal and external FDNY communications were conducted by either e-mail, telephone, or personal interview. The telephone interviews were scheduled for approximately 15 minutes although the majority lasted in excess of 30 minutes. Most of the e-mail correspondences it took up to three messages between the researcher and the interviewee to clarify and follow up on information provided.

The final roster of professional resources outside the FDNY proved to be beneficial because they provided referrals to other important research connections that contributed to this research, such as: Jim Smalley (NFPA), Daniel Johnson (Deputy State Fire Marshal and Mobilization Coordinator, Washington), Patrick Cooney (California Office of Emergency Services), Nancy Orr (Oregon State Fire Marshal), Timothy Murphy (Northern Rockies Area

Command), and Thomas Faggione (New York State Emergency Management Office).

The next phase of the ARP (September/October 2008) was the initial contacting of the individuals and agencies identified on the master source list (Appendix G). In cases where emergency service agencies, national, state, and local government institutions were contacted, every attempt was made to go directly to the individual(s) most responsible for the related information. It is worth noting here that every person contacted for this project proved to be exceptionally helpful and accommodating to the research requests.

To provide additional original research, the author contacted Federal Emergency Management Agency (FEMA) headquarters in Washington D.C. via telephone on October 21, 2008, to request a contact list of the Office of Emergency Management (OEM) for each U.S. state. The intent of this request was to contact the Managing Director of each OEM and to request information on how their state would activate or obtain IMTs in case of large-scale emergencies. The author was directed to the FEMA website, where he found detailed information that listed the office name (not all states use the term OEM), address, phone number, and in most cases an e-mail address (Federal Emergency Management Agency, 2008d). Unfortunately, it was shortly discovered that some of the websites are general websites and did not garner a response when the initial request for information was sent out (between October 20, and November 8, 2008).

The FEMA (2008c) list (Appendix M) contained the 50 states, the District of Columbia, Puerto Rico, and Guam, each of which was contacted and utilized in this research to answer the research questions. In addition, the list included four American Indian reservations, the Northern Mariana Islands, the Republic of the Marshall Islands, the Federated States of Micronesia, the Republic of Palau, and the U.S. Virgin Islands. However, the author chose to exclude these

particular resources as they proved to be problematic to contact (incorrect e-mail addresses and lack of telephone voice-mail) and in some cases difficult to correspond with (due to language barriers).

The inclusion of the above jurisdictions/agencies on the FEMA list subsequently caused this researcher to question why they appeared alongside the 50 U.S. states. Internet research led the author to conclude that each of the jurisdictions/agencies on the list enacted legislation to become members of EMAC (Federal Emergency Management Agency, 2008b; National Emergency Management Agency, 2007).

If a respective state had such protocols in place, a hard copy of that protocol was then requested to assist in answering the research questions, particularly: (a) What general activation mechanisms are used nationally to activate IMTs, (b) what U.S. states have IMT activation protocols, and (c) what are the specific IMT activation protocols for those states that have them.

The following series of procedures were completed in sequential order. However, some of these steps were accomplished concurrently with one step inclusive of the preceding step(s).

The first step in utilizing the FEMA list (2008b) commenced on October 22, 2008 and included contacting each individual website in an attempt to extract the name and e-mail information of the respective agency's director/manager, or their assistant. The intent was to then send an e-mail with an introduction about the author, an explanation of the research topic, and a general question regarding their respective state's IMT activation protocols (see Appendix I).

The second step—implemented on October 23-24, 2008—was to telephone each agency that did not have an e-mail address and those that only listed generic e-mail addresses to obtain the agency director/manager/assistant's contact information. The third step was to send out the e-mail research request as described above (Appendixes J and K). The fourth step (October 30-

November 4, 2008) included calling any state that did not respond to the initial e-mailed research request. Again, an attempt to speak directly with the director/manager or their assistant was made to explain the need for the research information and to acquire an e-mail address so a written request could be forwarded.

The fifth step (November 4-15, 2008) was to collect and read through the information provided from the contacted agencies and to extrapolate any and all relevant information for the respective sections of this ARP. The results section of this research will detail the information discovered.

The written element of this research project was initiated on October 6, 2008, and continued throughout the fact-finding phases and literature review. It concluded with a final draft ready for proofreading in early December 2008 and culminated with the ARP being delivered to the NFA before its due date.

An extensive literature review was conducted for this research. The first step began during the EAFSOEM class at the NFA in June, 2008, when the Learning Resource Center (LRC) was utilized to obtain pertinent material, such as past ARPs, fire service journals, and resources from outside the fire and emergency services. In some instances it became necessary to contact the authors for clarification or additional information (especially for ARPs where only the abstracts were provided). That communication initiative in and of itself required tedious accessing of several layers of connection points including the author's affiliated agency or publisher, individual work location, and personal contact information.

Due to the nature of the information requested and the sensitivity to homeland security issues on the part of many emergency service agencies, some of these contact initiatives proved challenging to complete when the author was asked to prove what the requested material was to

be used for and the research affiliation to the NFA.

The extension of the literature review outside the fire service turned out to be advantageous to the researcher. The outside perspective, directly relating to the research problem and purpose statements, validated the research and will be embellished upon in the results and discussion sections.

Limitations of this ARP included the lack of published works on IMTs, particularly AHIMTs and the even less available information on their activations. This research project and the resulting recommendations appear to be on the cutting edge of AHIMT activation protocols and, therefore, comparative research was mostly unavailable.

In fact, while this research project was being conducted, the first-ever AHIMT conference was held in Dekalb, Illinois (October 15-16, 2008). It was the only national forum held for AHIMTs and the only attempt to share "best practices" to date (R. Anderson, personal communication, October 7, 2008; G. Maier, personal communication, October 12, 2008).

A secondary limitation was the large topic area and the necessity to concentrate on the less broad perspective. Keeping the problem and purpose statements of the research in focus was a key to overcoming this potential limitation.

Tertiary limitations included the time constraints on completing the ARP (six months) which negated the complete follow-up of the U.S. state protocols. And, due to scheduling conflicts and logistical issues, more face-to-face interviews could not be conducted.

The final stages of completing this ARP (October through December 2008) included the compilation of materials, the organizing of the processes involved, and writing the report. The formatting, typing, and proofreading of the paper, and ultimately the submission to the National Emergency Training Center were accomplished prior to the submission date.

RESULTS

As Tarp offers in the introduction of FEMA's AHIMT-TAP Team Manual: "There will be times when you will be blazing new trails in emergency management both for you and your team. There is also the chance it will be a new trail for your agency as a whole" (Federal Emergency Management Agency, 2007c, p. HO 2-3).

It is hoped that the original research contained in this project will, like the FDNY AHIMT, blaze new trails as a model for more and more national IMTs. The results of this research were compiled and ultimately became the foundation for the recommendations section. These results directly influenced the author and will assist in reaching the projects purpose, viz., developing sound activation protocols at the local level for the FDNY IMT.

Research Questions

1. What general mechanisms are used nationally to activate IMTs?

This research revealed that—at the national level—IMTs are deployed in one of two ways. In the wildfire community the traditional method is that a state would request a Type-One or Type-Two IMT through the NWCG. The NWCG in turn deploys the team that is on the local rotation or, if there is no local team available, the team that is on the national rotation schedule (R. Anderson, personal communication, October 7, 2008). The NWCG together with its logistical subdivision—the National Interagency Fire Center (NIFC)—the only federal agency that provides logistical support to the U.S. wildland firefighting community—is a complete dispatch, coordination, and logistical support organization. Once dispatched by the NWCG, the IMT arrives within 24 to 48 hours after being requested as an independently self-sustained and fully supported package. Since September 11, 2001, the NWCG has expanded the IMT roles to include all-hazard incidents (with addition of the FDNY IMT) in conjunction with its wildfire

capabilities (National Wildfire Coordination Group, 2007). In August 2003, to support the NWGC AHIMT role the USFA was tasked with developing, supporting, and implementing the organized training of AHIMTs at the state, tribal, and regional levels (United States Fire Administration, 2007).

The second method for activating a national IMT is through the Emergency Management Assistance Compact (EMAC), a state-to-state mutual aid agreement that was established into law by Congress in 1996 (Public Law 104-321). All 50 states, the District of Columbia, Puerto Rico, Guam, and the U.S. Virgin Islands have enacted legislation to become members of EMAC (National Emergency Management Association, 2007).

As per the National Emergency Management Association (NEMA) : "EMAC is the first national disaster relief compact since the Civil Defense and Disaster Compact of 1950 to be ratified by Congress" (National Emergency Management Association, 2008, p. 1). According to the NEMA (2008):

> The strength of EMAC and the quality that distinguishes it from other plans and compacts lies in its governance structure, its relationship with federal organizations, states, counties, territories, and regions, and the ability to move just about any resource one state has to assist another state, including medical resources. (p. 1)

B. Anderson (personal communication, October 7, 2008) explains that EMAC is:

> …basically state to state resource sharing via the Internet. If one state needs something they type a request into the EMAC system, which is then sent nationally to the other states via an EMAC request. The agencies who think they can provide the requested assistance respond with a proposal (basically a bid to provide an IMT for X-dollars) and the requesting agency then decides which bid to accept or negotiate further. At that point

they come to agreement and an order is placed and a contract for the services is signed. The apparent challenge of the EMAC process is that it is slow and cumbersome (R. Anderson, personal communication, October 7, 2008). In addition, the requester may not be experienced enough to know what they need or what additional support they will be required to provide in regard to the order. The same situation may occur with the agency who submits a proposal to fill the order. For example, when the first wave of FDNY resources were ready to be deployed to New Orleans in 2005 for the Hurricane Katrina relief operations, the EMAC request order was for a Type-One IMT in addition to the FDNY Type-Two IMT and FDNY firefighting resources. As Anderson states; "Seven well-intentioned fellows from Virginia showed up to fill the order, none of which were Type-One qualified" (R. Anderson, personal communication, October 7, 2008).

This research reveals that another apparent issue with Emergency Management Assistance Compact (EMAC) is that it is not a dispatch nor coordination support system, as opposed to the National Wildfire Coordination Group (NWCG) and National Interagency Fire Center (NIFC) whose Type-One or -Two IMTs arrive at an incident fully self-sufficient. When an IMT (or AHIMT) is requested through EMAC they may have a difficult time with communications, fuel, feeding, and housing of responders if they did not bring the total support package with them (B. Anderson, personal communication, October 7, 2008). It can be readily understood that these resources may not be available locally in the immediate disaster area or region. Without such support the responders may become victims of the incident. When the FDNY was deployed to New Orleans in 2005 the network support was provided by the federal IMTs through the NWCG and NIFC (Butler et al., 2006). The NWCG/NIFC IMTs supplied some of the necessary support to the FDNY due to the lack of planning and foresight by the city

of New Orleans and state of Louisiana (R. Anderson, personal communications, October 7, 2008).

Another difference the literature review uncovered concerning the EMAC vs. NWCG IMT requests is that under EMAC a request for a specific team may be granted (National Emergency Management Association, 2007), e.g., in September 2008 the city of New Orleans specifically requested the response of the FDNY IMT for Hurricane Gustav (E. Kilduff, personal communication October 17, 2008). This is in contrast to requesting an IMT through the NWCG where the requester gets whichever team is on the national rotation schedule.

Although a specific team may not be requested through the NWCG, the NWCG teams are all certified and federally qualified. They each arrive as a fully staffed, self-sufficient, and fully supported unit (through NIFC). The self-sufficiency of the NWCG IMTs relieves the requesting agency from the responsibility for all of the related logistical support that the team may require in addition to the IMT request (T. Murphy, personal communication, September 25, 2008).

As seen in New Orleans following Hurricane Katrina, the inexperience and/or omission of the requesting agency, jurisdiction, or IC (or on the part of the agency filling the request) could lead to severe support complications that could render the response of the IMT ineffective (R. Anderson, personal communication, October 7, 2008). Therefore, an important part of an AHIMT EMAC request/proposal/agreement needs to specifically address the incident logistics (food/housing/fuel/generators/communications/etc.) and finance support (the purchasing of goods and services) for the IMT (B. Cambell, personal communication, October 21, 2008).

2. What states have IMT activation protocols within the U.S.?

This question proved to be very difficult to answer with an accurate, conclusive result.

The research determined that nationally, 14 agencies (out of 31 that responded to this research) have written IMT activation protocols in place and shared them with the researcher. Of the 14 protocols submitted, 10 are state-level, two are regional-level, and two are local-level.

Although a limited sampling, the research may be representative of the larger perspective. In attempting to provide a wider overview, assist in answering this research question, and clarify the literature review, the State Offices and Agencies of Emergency Management list (Federal Emergency Management Agency, 2008c) provides a national state-by-state listing of emergency management offices. The investigation conducted to answer this particular research question was performed by contacting the emergency management office/agency of each U.S. state, Washington D.C., Puerto Rico, and Guam. Many of the state contacts found on the FEMA agencies list resulted in additional referrals to local, county, and/or municipality IMTs.

Of the 53 jurisdictions where information was requested, 31 replied and 22 did not (see Appendix M). Of the 31 that did reply, 24 utilize IMTs, three had state IMTs that deploy nationally, and two have teams that deploy internationally (Fairfax County, Virginia, and the Miami/Metro-Dade, Florida, Fire and Rescue Departments). These IMTs are in addition to the 17 Type-One and 40 Type-Two NWCG-credentialed teams. Nine other states have statewide teams, three have local teams, seven use the NWGC exclusively, and four have no IMTs. Three additional states that replied are in the process of forming IMTs and/or have protocols in some degree of development.

Fourteen of the 31 national agencies that replied to this research submitted written activation protocols. The literature review and questionnaire results provide a direct correlation to the problem and purpose statements of this research. They showcase the need for AHIMT activation protocols and illustrate the possible negative effects in their absence. Another

conclusion to the research for this question is the existence of a much broader problem, i.e., the number of states and IMTs that have written activation protocols may be in the minority.

The research conducted for this question contains some apparent discrepancies. The accuracy of the above synopsis may appear suspect, because several state, regional, and local IMTs concurrently participate in local, national, and/or international deployment, response, and availability. Still others did not reply to the research request.

The research for this question may further bring to light that many AHIMTs are relying on the EMAC or NWCG systems to activate and support them in lieu of adopting their own protocols. Interestingly, it should be noted that only one jurisdiction responding to the research request mentioned being an EMAC member or referred to it in its correspondence or submitted protocols.

In an example of the potential consequences of IMT reliance on EMAC or NWCG for logistical needs, rather than being self-supporting, Maynes (2006) under lessons learned and reinforced, points out the following conclusions regarding the NOFD's EMAC request and the FDNY IMT's response to Hurricane Katrina in 2005: (a) Attempts to augment the IMT with additional personnel were hampered by the cumbersome EMAC ordering system within New Orleans and Louisiana; (b) if EMAC were tied into the FEMA response network many of the challenges would have been reduced; (c) federal emergency support personnel (NWCG/NIFC/NIMO/etc.) should be assigned on EMAC deployments; (d) interagency cooperation at the state and federal level must be improved by training, interagency drills, and seminars; and (e) EMAC deployment orders must be specific and include such items as mission statements, ordering numbers (for reimbursements), and a delegation of authority for the incoming IMT.

All of these concerns are inherently addressed through the NWCG system but, according to the results of this research, have not been addressed by the EMAC.

3. What are the IMT activation protocols for those states that have them?

In the previously presented state-by-state comparison of AHIMTs, two states acknowledged having international teams, three have national teams, nine have statewide teams and three have local teams. However, only 10 of the states that have IMTs and who responded to this research have written response protocols.

All 10 describe their IMTs as being all-hazard. Each of those protocols also affirms that their activation plan is meant to be implemented for emergency incidents as well as planned events. In conclusion, the answer to this research question found that all of the state plans submitted require a state disaster declaration prior to the activation of an IMT for emergencies. Planned events can also utilize the IMTs and that usage must be coordinated with the local jurisdiction(s) involved with the event as well as state officials.

In the wildland community, states activate IMTs based on Incident Complexity Analysis (types One through Five). That analysis considers the amount of acres burned, the number of firefighting personnel being utilized, the number of structures threatened, and the potential for loss of life and/or property (National Interagency Fire Center, 2006; National Wildfire Coordination Group, 2006).

The submitted state activation protocols all share common components, viz., each plan specifies the inclusion and encompassing of NIMS and the ICS as integral elements. They also include legal responsibility for activation and deployment of the team, viz., acquiring specific order needs and order number with the original resource request, an expected mission statement, response time frames, and a delegation of authority (covering financial and fiscal responsibilities,

insurance coverage, limitations, and expectations). Additionally, each plan contains: qualification and training standards, the team's self-sufficiency (for up to 72 hours), transportation/travel procedures, staffing levels including organizational charts and NIMS titles, and documentation systems and procedures.

Where the state IMT plans differ are: some require disaster declarations prior to deployment/activation, documentation procedures (some use the national ICS forms, some do not), work-to-rest ratios, and maximum team deployment time frames.

The majority of the teams have developed some sort of tiered response system consisting of an official notification contact, an assessment and/or a reconnaissance team activation prior to full or partial team deployment. Yet other state IMTs rely on complexity analysis to decide the level of management team to be requested (Washington State Fire Marshal's Office, 2005).

With the all-hazard IMT approach most states rely on local authorities to determine the need for an AHIMT and require a request from the locality.

Due to the time constraints, this research is unable to compare the number of AHIMTs that have written protocols with the number of incidents that each particular jurisdiction/agency manages in a given year. Therefore, it is difficult to grasp whether those teams adequately fill the annual national (or local) IMT need. It is also difficult to accurately measure if IMTs are being successfully activated and deployed (with or without written protocols).

According to Maynes (2008), the 2005 hurricane season put "significant pressure" (p. 15) on the IMT response system to support the operations throughout the U.S. Gulf Coast region. He notes that at one time 55 different IMTs were deployed in four of the impacted states. Luckily, the coinciding wildfire season was unusually slow. At that time the national IMT response system was not prepared to respond to both Katrina and an *average* simultaneous wildland fire

season (Maynes, 2008).

To understand the significant necessity for AHIMTs and the importance of them having activation protocols, one only has to look at the big picture. According to FEMA (2008c), since 1953 (when records first started being kept) the number of declared national disasters has steadily increased and shows no sign of abating. For the year 2008 FEMA had declared 75 national disasters, nearly a sixfold increase over the 13 disasters in 1953. The national yearly average of disaster declarations is 32 for a total of 1,808 declarations since 1953 (FEMA, 2008c).

In outlining the top five states for total disasters declared (since 1953), Texas is No. 1 with 83 and New York is No. 5 with 56. No.s 2 through 4 are: California (73), Florida (61), and Oklahoma (59). Of these top five states, two exclusively utilize the NWCG IMT network (California and Texas), two have enacted their own statewide Type-Three IMTs (Florida and New York), while the remaining state (Oklahoma) only employs regional and local IMTs. However, it should be acknowledged that Oklahoma did utilize the FEMA USAR teams in addition to regional IMTs during the terrorist bombing and recovery efforts at the Alfred P. Murrah Federal Building in 1995 (Federal Emergency Management Agency, 2008d; J. Chalmers, personal communication, December 2, 2008).

For this research each of the top five disaster declaration states were contacted from the Federal Emergency Management Agency list (2008d), and each is among the group of 35 that responded to the research request. Of the five, only New York and Oklahoma are without a formal IMT activation protocol and thereby rely on local or regional plans. At present, after 11 years in the making, New York's statewide activation plan is only in its infancy stage (B. Cambell, personal communication, October 21, 2008) and Oklahoma has no such plan in the works (J. Chalmers, personal communication, December 2, 2008).

Cambell (B. Cambell, personal communication, October 21, 2008) asserts that although New York State does not have a formal protocol, the state does have "great capability, but not capacity." When asked to expand on that thought, Cambell explained that New York has highly trained emergency management personnel in both the career and volunteer sectors within each region of the state and that those personnel possess an abundance of equipment and resources that are of superior quality and quantity. He continued that by virtue of the availability and proximity of the FDNY IMTs in addition to the written mutual aid protocols at the regional and local levels, New York is in a better position than other similarly sized states.

What New York State is missing, according to Cambell, is the capacity to consistently form, train and activate IMTs within each region of the state. As an example, he cited that New York currently has only two Type-Three IMTs and two Type-Four or -Five teams in the organizational process. Asserting that funding and available staffing have been major issues in building New York IMTs, he adds that political ambivalence has also been a contributory stumbling block (B. Cambell, personal communication, October 21, 2008).

Countering those assertions, Wutz (2008) contends that the success of the New York State Fire Mobilization Plan (which relies on and organizes mutual aid throughout the state) and the almost daily occurrence of mutual aid throughout New York may be the real reason for the slow growth of a New York IMT systems. Wutz (2008) points to the state's largest fire activation, which mobilized over 120 fire departments from seven counties over a seven-day period for a tire fire in the Green County village of Catskill in 1987. The largest non-fire activation of the state plan occurred in January 1998 for an ice storm affecting the seven northernmost counties for 21 days. That response included over 540 departments from 46 counties and the FDNY who assisted local departments to provide fire protection, evacuation,

sheltering, and even delivery of welfare checks (Wutz, 2008). The state mutual aid plan includes utilization of NIMS and ICS as well as the inclusion of national ICS forms. The New York plan provides for an IC from the local agencies involved (Wutz, 2008).

4. What specific activation mechanisms are used by other all-risk hazard IMTs?

Of the local AHIMT activation plans submitted, they are each similar to their state counterparts described in the previous question. Each of the local protocols included many commonalities e.g., mission statements, staffing requirements, organizational structures, and documentation procedures. However, unlike the state-level protocols, the local protocols tend to have more-specific operational guidelines and/or procedures. They tend to include predefined "dispatch checkpoints" (Hicks, 2006, abstract, p.2) or "trip wires" (Spokane County, 2005, p. 1) for team activations.

Differences found in the local protocols included: after-action review procedures, varying degrees of required training and application processes for team membership, and the reliance on the Authority Having Jurisdiction (AHJ) to supply necessary equipment and logistical support.

The research found that the majority of local AHIMTs do not have activation policies in place. Of the those that did, each activate the IMTs based on the size of the incident or the incident's potential for destroying life or property. None of the local teams mentioned utilizing the concept of incident complexity analysis (National Interagency Fire Center, 2006; National Wildfire Coordination Group, 2006).

The local teams that submitted AHIMT plans based their plans on the fire service practice of numbering alarms for expanding incidents. The submitted plans utilizing fire department terms notified their IMT staff upon second- or third-alarm transmissions. Two of those plans also use a "step up" or tiered system consisting of different stages of IMT response. By incorporating steps

such as notification stage, assemble stage, activation stage, and deployment stage, the command staff of the IMT can make a decision on what parts of the team should be activated.

The personal communications conducted for this research, as outlined under procedures, were instrumental in answering the research questions as well as detailing the research problem and purpose statements. The first personal contacts were with the FDNY IMT Command Staff—specifically, Chief of Department Salvatore Cassano, who was asked during a personal interview to answer the four research questions in addition to the following: (a) If he thought developing automatic activation protocols for the FDNY IMT was a good idea? He thought it was a worthwhile endeavor. (b) In hindsight have there been any incidents where he could have deployed the IMT to better manage the incident? He stated that since the first construction crane collapse of 2008 he has only seen one incident where the IMT was even briefly considered, viz., a large abandoned warehouse complex fire where the FDNY was almost solely involved and was handled by the command staff. And (c) who is presently responsible for activating the FDNY IMT? Chief Cassano said the Chief of Department, Chief of Operations, or their designee are able to activate or give permission for the team to deploy. He added that for out-of-state deployments, the Mayor and Fire Commissioner must also be consulted. After briefly discussing each question, Chief Cassano was asked for his opinions and input on the proposed research protocols for activating the FDNY IMT. After briefly discussing the researcher's ideas the interview was concluded.

Assistant Chiefs Edward Kilduff and Robert Sweeney (the FDNY IMT ICs, personal communications,) provided input on the research questions posed to them. The inquiries focused on the NWCG and national responses. In follow-up e-mails, they were asked to give input on the recommendations being offered in this research on FDNY IMT activation protocols. They each

provided additional recommendations that had not been previously considered by this researcher.

Assistant Chief Kilduff noted that most large-scale or complex incidents in New York City quickly become unified command. He added that while our IMT may serve the fire department operation, there is a resistance to turn an operation over to a fire department-based IMT. At that point, most of these incidents become a planning event for the FDNY IMT (E. Kilduff, personal communications, December 13, 2008).

Deputy Assistant Chiefs James Manahan (FDNY Chief of Strategic Planning/IMT Planning Section Chief), Ronald Spadafora (FDNY IMT Deputy IC/Safety Officer), Deputy Chief Robert Maynes (FDNY IMT Operations Section Chief/Training Coordinator),and Battalion Chiefs James Kane (FDNY Finance Section Chief) and George Maier (FDNY Planning Section Chief) were also asked to address the research problem statement and research questions. The value of those e-mail communications was paramount in developing the recommendations of this research, although little new information was garnered regarding the original research questions.

Henry Dingham (FDNY Deputy Commissioner of Communications) was also contacted by telephone and asked to provide FDNY response information used in the background and significance section of this project. He furnished detailed information on the number of major emergencies the FDNY has responded to since 2004.

Due to their experience and expertise in AHIMTs and wildland IMTs, non-FDNY e-mail contacts were made with Robert Anderson (Fire Chief Spokane, County, Washington.; National Area Command IC; Deputy Chair, Department of Homeland Security-NIMS and IMT work group; Washington State Representative to the Pacific Northwest Wildfire Coordination Group). He proved to be extremely knowledgeable and answered each research question in detail. These

e-mail communications also shed light on the EMAC request procedures and provided a stepping stone for that focused research to be conducted. Prior to that communication this author did not know of the EMAC system.

George Custer (IC-national Type-One IMT; Operations Section Chief-Atlanta NIMO and Daniel Oltrogge (IC-Southwest Area IMT) provided detailed information on the NWCG, NIFC, and national IMT responses, and specifically on the national IMT responses to the WTC in 2001 and Hurricane Katrina in 2005. The expertise and wealth of information provided by each of these IMT professionals in answering the four research questions was invaluable, and this research would not have been successful without their input. They provided detailed information on the NWCG, NIFC, and EMAC.

Additional non-FDNY personal communications included James Callahan (Director of OEM, Nassau County, New York). In a personal interview of approximately 45 minutes, he provided information on Nassau County, and New York State IMT planning and utilization revolving around the four research questions. Yolanda Daeninck (Director of Investigation-McKinsey & Company, New York) was contacted by phone regarding the McKinsey & Company report on increasing FDNY preparedness (2002). This short telephone interview was made to verify publishing information on the report. Except for access to a copy of the report, this interview was for citation and background purposes only.

Bill Cambell (Program Manager-New York State Emergency Management Organization) was contacted by telephone (personal communication) regarding research questions three and four. That telephone interview disclosed the fact that New York does not have an IMT activation protocol but that one has been "in the works" for 11 years. This interview and follow-up e-mails confirmed the issues of why New York does not have such a plan and resulted in the

acknowledgement of Mr. Cambell's opinion as to how well prepared New York's emergency services and management appear to be.

Charles Hamilton (Security and Safety Director-Brookhaven National Labs, Brookhaven, New York) was contacted by telephone (personal communication) regarding Suffolk County, New York's plan and to answer research questions two, three, and four. This interview provided an invitation to meet with the state and county wildland experts at the Long Island, New York, symposium held on October 27-31, 2008. Although these additional interviews were impressive and a terrific learning experience for the researcher, they produced minimal information for this project.

Thomas Wutz (personal communication) (Chief of Fire Services-New York State Office of Fire Prevention and Control, Albany) proved to be a beneficial contact for this research as he provided the bulk of the information on New York State regarding research questions two and three (state IMT activations). Mr. Wutz also furnished detailed information on the state mutual aid plan, which allowed contrast to the interview with Mr. Cambell. This telephone interview also amassed information to answer research questions two and three—that New York State does not have an IMT activation plan—and research question four—that no AHIMTs located within the state have activation protocols.

In summarizing the results section of this research, it was an unexpected finding that there are so few AHIMTs at the state and local levels that have activation or response protocols in place. The lack of such protocols has been concisely proven in the previous research sections.

DISCUSSION

It is this author's personal experience with the Grand Central Steam Pipe Explosion, which occurred in New York City on July 18, 2007, and two subsequent construction crane

accidents, which occurred on March 15, 2008, and May 30, 2008, that provided the catalyst for this research. As fate would have it, the author was on duty for all three incidents.

As a logistics unit leader for the FDNY IMT this author was introduced and completely enthralled by the organization and professionalism of the wildland IMT community. It was the exposure to NWCG training and subsequent IMT deployments that allowed this author to work side-by-side with these individuals. That opportunity magnified the chaotic nature of each of the above New York City incidents and how the FDNY could have managed them better, specifically by activating its IMT.

Regarding the Grand Central Steam Pipe Explosion, it was the author's observation and assumption—due to the lack of multi-agency coordination and the poor control of the incident site and on-going operations—that the FDNY IMT was not in place or utilized during that incident. In fact, until reading Sweeney's report (2008) the author was unaware that the IMT had been utilized.

In his report Sweeney (2008) describes the FDNY IMT response as that of a "short team being deployed for a few days, with the introduction of the IMT planning vehicle, which was used as a work area and visible presence of the team being there" (p. 4). Although it was impressive that the vehicle, while not fully functional at the time, was capable of producing IAPs within the first 24 hours of its arrival, today the fully functional planning vehicle can be utilized to its greatest capabilities while providing the extremely important IMT presence as described by Sweeney. However, it is this researcher's opinion that the activation of the IMT (as opposed to a "short team") would have proven much more beneficial for the overall safety and management of the steam explosion (and the subsequent construction crane incidents). It would have succeeded in creating an even larger presence with the opportunity to showcase the FDNY IMT's abilities.

In reviewing the lessons learned from Boyce (2008) and Hodgens (2008) regarding the steam pipe explosion and crane collapse incidents, almost all of the lessons cited can be directly addressed by employing the FDNY IMT, viz., (a) ICS built from the bottom up; (b) manageable span of control; (c) on-scene accountability; (d) modular organization; (e) the use of IAPs; (f) the integration of unified command; (g) sectoring of the incident site; (h) early and visible establishment of the command posts and staging areas; (i) the activation and utilization of a Logistics Officer, Liaison Officer, Resource Officer and Planning Officer; (j) the use of command and interoperability radio channels; and (k) the reliable reconnaissance and mapping of the incident area.

Many of these same issues were detailed by Holt (2008) in the 2007 Southern California wildfires final report. As presented in the literature review, those recurring issues proved to be valuable lessons learned from the wildfire disasters of 2003 and 2005 (Holt, 2008). If the FDNY does not learn from the "lessons learned" described by Boyce (2008) and Hodgens (2008) and fully utilize the IMT, which they have organized to manage those very same issues, they are bound experience repeated occurrences during future large-scale incidents.

Davis (2005, p. 6) asks "What value can an IMT be to the average fire department?" He found the answer difficult to determine because most Chiefs and ICs do not have the opportunities to fully implement ICS, let alone an IMT, on a regular basis. Linstrom (2004) concurs, adding that most fire departments have never been confronted with an incident that overwhelmed their response or management capabilities. Linstrom (2004) continues that:

> Fully implementing the ICS with planning, logistics and finance section chiefs and a liaison officer, as well as developing and executing an incident action plan, is something most fire officers have never seen and would be hard-pressed to replicate on a real

emergency. (p.26)

Well, that is not the case with the FDNY, which has plenty of opportunities (if at least annually) to activate both the ICS and its IMT. Taking advantage of those incidents by activating the IMT will keep the team sharp, as brought to light by Maynes (2008) and Arbuthnot (2002). The FDNY is the process of training every Battalion Chief to be utilized in the Planning Section on major incidents (50 have been credentialed to date).

The author's interpretation of the above research results are that more frequent FDNY IMT activations locally will expose not only members of the department to real-life ICS and IMT experiences, but will also reintroduce the ICS and IMT concepts to other city agencies on a more regular basis. It will eventually become an expected routine for them. Short of that, the FDNY IMT will be forced to deploy on wildfires or other national all-hazard large-scale events to keep their skills sharp (Maynes, 2008) while never being fully utilized in their own "back yard." Additionally, the author has discovered through this research that AHIMT protocols where they exist have not improved a great deal since the USFA's implementation of AHIMT-TAP.

As evidenced in the earlier writings of Borden (1989), the pooling of management labor and equipment resources to sustain prolonged operations is critical for both planned and unplanned events. Borden also brings to light the issues of multi-jurisdictional authority and responsibilities. Additionally, Chase (1980) points to the need for a system to be developed to allow organizational flexibility to meet incidents of any type or size; Davis (2005) describes the belief that chiefs and company officers can handle any incident that may come their way; Gates (2002) details the reluctance of responders to organize and/or utilize IMTs within the emergency services; Hawkins (1991) states that once on-scene, IMTs bring needed leadership and

management skills to large-scale, non-wildfire, multi-agency, multi-jurisdictional incidents; Hawkins and McCleese (1988) conclude that other agencies should at least be familiar with the ICS and adopt it as a common system; Hicks (2006) declares that because emergency agencies are now all-risk responders, utilizing IMTs would enhance emergency management delivery; Linstrom (2004) recounts "the new paradigm for local fire departments is that they won't be handling major non-fire emergencies on their own" (p. 48). Miller (1995) expounds on the tradition of fire-scene command being passed up the chain of command regardless of expertise and related strictly to rank (as opposed to ICS's experience vs. lack of rank) and the necessity to development pre designated triggering mechanisms that may save the Incident Commander from scrutiny.

An unexpected result of this research is that the lack of IMT activation protocols does not appear to be overly devastating to the emergency services. However, that lack may certainly make those services, their IMTs, and outside agencies work a lot harder.

A secondary unexpected result of this research is the author's question of why there exists a duplicative national ordering system of IMTs (EMAC vs. NWCG). At a time of financial uncertainty such duplicative efforts appear to be redundant and costly to the public. The federally funded NWCG seems to be better equipped and experienced to respond in a timelier manner.

It appears to this researcher, based on the research results, that the NWCG, being a dispatch and logistical support entity (B. Anderson, personal communication, October 7, 2008; NWCG, 2007), is a superior system. NWCG teams are all certified to a national level, federally qualified and arrive as a fully staffed, self-sufficient, and fully supported unit (through NIFC).

The EMAC system appears to be slow and cumbersome. The requester and the jurisdiction providing the assistance must negotiate the cost prior to an agreement being reached.

At the same time several jurisdictions could get into a bidding war to provide the requested resources (B. Anderson, personal communication, October 7, 2008). However, a more serious concern regarding the EMAC system is that the requester may not be experienced enough to know what to ask for, or what additional needs or support may be required. Therefore, an important part of an EMAC IMT, as discovered in this research, is that the request proposal must be specific to address incident needs as well as the necessary logistical support for the responding IMT.

Based on the literature review and research, the author sees only one advantage that EMAC has over the NWCG system, viz., under EMAC a specific IMT can be requested by name (NEMA, 2008), where under the NWCG the IMT on rotation will be the team that responds (NWCG, 2008a).

For the FDNY, the research suggests that not having pre designated activation mechanisms for its IMT has proven to be detrimental to the agency, its members, the IMT itself, and the city as a whole. Not utilizing the FDNY IMT at large-scale multi-agency incidents and events distracts from establishing the importance of ICS within the City of New York. It also does not allow the FDNY IMT the opportunity to demonstrate the functionality of this management system to other organizations.

It is apparent that the FDNY would be one of the first AHIMTs in the nation to establish such activation protocols on a local level and, if successful, would probably be looked to as the model for other AHIMTs and agencies to follow.

RECOMMENDATIONS

After significant research and analysis, the author has developed specific recommendations to assist in solving the problem and purpose statements of this project. These

recommendations represent positive additions and potential improvements to the already successful FDNY operational guidelines and IMT.

Based on this research the next course of action for the FDNY should be to adopt and implement clearly defined activation protocols for its IMT during local large-scale emergencies. The key component of these recommendations is the automatic objective (rather than subjective) notification/activation of the FDNY IMT.

The research has shown that other AHIMTs are activated at differing levels for unplanned emergency incidents, such as hurricanes, floods, wildland fires, ice/snow storms, etc.; as well as planned events, such as the Times Square New Year's Eve Celebration, parades, political conventions, and other large public gatherings. The utilization of *short teams* has proven successful for intermediate-sized incidents where not all the IMT positions and/or functions are required but some formal pre designation is desirable (Gates, 2002). In the FDNY the IMT activation (or partial activation) for planned events is organized through Deputy Assistant Chief James Manahan and the Office of Strategic Planning.

For unplanned emergency events the following recommendations are submitted:

1. Add an educational component to the Battalion Chief and Deputy Chief command course to include a description of the FDNY IMT and how its activation can be utilized as a tool to assist in managing large-scale, multi-agency/multi-jurisdictional incidents.

This positive training aspect will conform to NIMS and New York City's CIMS to help ensure that the initial IC, the City of New York, or the agency in charge of incident command will, at the early stages of an incident, be able to determine if the incident is of the scale and scope that would benefit from the deployment of the FDNY IMT.

2. In addition to the automatic pre-designated activation mechanisms recommended

below and the current practice of the Chief of Department and the Chief of Operations activating the IMT, allow the on-duty City-Wide Command Chief (CWCC) the ability to activate the team.

This recommendation should allow a senior and experienced chief officer who is on duty 24 hours a day to activate the team upon recognition of its advantage prior to an automatic triggering event.

3. Add IMT activation to the existing Chief Officer Operational Checklists found in the FDNY All Unit Circular (AUC) #337 (FDNY, 2005).

This addition should assist in prompting the first arriving Deputy Chief and the CWCC to at least consider activating the IMT prior to assuming the IC position at large-scale, multi-agency and/or high-profile incidents to assist in managing a particular emergency (See Appendix N).

The Fire Department, City of New York's AUCs (2005) are a collection of procedural material to assist in day-to-day emergency operations of the FDNY. AUC 337 is a collection of 10 checklists designed to assist chief officers in managing major incidents. Those checklists include: (a) Aircraft Emergencies, (b) Building Collapse, (c) Chemical Incident, (d) Confined Space, (e) Explosion, (f) Haz-Mat Incident, (g) High Angle Emergencies, (h) Radiological Incident, (i) NYC Metropolitan Transportation Liaison, and (j) Mayday Emergencies.

4. Adopt a three-tiered IMT response consisting of the following phases:

Alert-Phase One: Notification to IMT Command staff to evaluate the incident and determine the potential for positive utilization of an IMT response.

Activation-Phase Two: Initial meeting of the command and general staff (possibly by mobile phone, BlackBerry and/or Internet), to discuss a full or partial IMT response. IMT members may be notified of possible deployment and for availability status confirmation.

Deployment-Phase Three: The notification and deployment of the required IMT or

specific IMT positions. This activation should include the response of the Planning vehicle, the Logistics Support vehicle, and the Mobile Command Post vehicle as currently found in the FDNY response matrix.

Note: These activation phases can be called for in order or by going to a higher phase initially, which would encompass the phase(s) that precede it.

5. Adopt the following triggering mechanisms, as outlined in the FDNY Communications Manual, Chapter 8 (FDNY, 2008d), to act as pre determined notification for Phase One, Two, or Three IMT activations:

10-60 (Phase Three): Major Emergency Response such as structural collapse, airplane crash, train derailment, or other similar emergency with the potential for multiple casualties.

10-66 (Phase Two): Missing, lost, trapped, or seriously injured member requiring extrication.

10-80 codes 2, 3, and 4 (Phase Two or Phase Three): Hazardous Materials Incident involving a spill or release that requires specialized training, knowledge, equipment, and expertise to mitigate, and where four or fewer civilians or responders require decontamination (Code 2); where five or more civilians or responders require decontamination (Code 3); or where mass decontamination of a large number of victims is necessary as quickly as possible (Code 4).

Third Alarms and above (except for relief purposes)—(Phase One): A fire or emergency requiring the commitment of approximately 180 firefighters and their related equipment to bring under control.

Additional IMT responses as determined by the Chief of Department, Chief of Operations and/or Citywide Command Chief: e.g., (a) complex operations utilizing Unified Command for more than one operational period (approximately 16 hours), (b) high-profile

operations that will extend past one operational period, (c) fire department operations that will extend beyond a 24-hour period.

6. Adopt a monthly availability e-mail access point for IMT members/trainees.

IMT members/trainees will record their status prior to the first day of each month. That status will include:

Available: Immediately available for either national deployment, local deployment or both.

Unavailable: Not available for national deployment or local deployment.

*Notified**: Informed of current assignment or potential assignment situation.

*Responding**: Member has been notified, mobilized, and is en route.

* These statuses will be recorded by the IMT activation coordinator.

This team status report will save last-minute status inquiries, and more quickly activate the IMT for local incidents. Members will be required to update their availability during the month if it changes. For those members without e-mail access, a phone notification to the activation coordinator prior to the first day of each month will be required.

Following the framework of the NWCG and national AHIMT model, the *Planning P* (Appendix O), shall be utilized to manage the IMT once the team has been activated. A team meeting lead by the IC will be held prior to the assumption of command. As is currently accepted practice, the IMT shall assemble at a location away from the current command post.

The IMT-IC, Operations, and Planning section chiefs shall focus on stabilizing the incident within the first few hours and develop an IAP, utilizing the following incident briefing forms as provided by the National Wildfire Coordination Group (2006): (ICS-201), Incident Objectives Form (ICS-202), and Organization Assignment List (ICS-203). Additional forms for

the IAP, including Division Assignment List (ICS-204), Communications Plan (ICS-205), Medical Plan (ICS-206), and the Operational Planning Worksheet (ICS-215G), shall be developed by the planning section as the incident progresses, but prior to the second operational period. All unit leaders will be required to complete Unit Logs (ICS-214s) for each operational period. Whenever practicable, up to a two-hour incident shadowing and tour of the incident scene for the command and general staff should take place prior to transition of command from the initial IC.

A recommendation for future researchers of this topic would be to begin the process by contacting AHIMTs across the nation early on in the research. The finite time restraints of NFA ARPs may hinder follow-up and the acquisition of more detailed data as it did during this project.

Future researchers attempting to adopt similar recommendations for their agencies may find it more appropriate to first adopt general IMT activation protocols. Those general protocols may include: training and basic team position requirements; individual and team availability status; notification procedures (including local and regional responses); command and general staff reconnaissance; transportation plan; the establishment of an equipment cache; travel coordination; as well as the development and utilization of IC and Unit Leader check-off lists.

The recommendations included in this research project are designed to enhance the already successful FDNY IMT and provide for the establishment of pre determined IMT activation protocols within the FDNY and the City of New York. The integration of these recommendations directly address the research problem statement, viz., bring about positive multi-agency coordination and cooperation, and establish an effective emergency management organizational structure early on during large-scale incidents.

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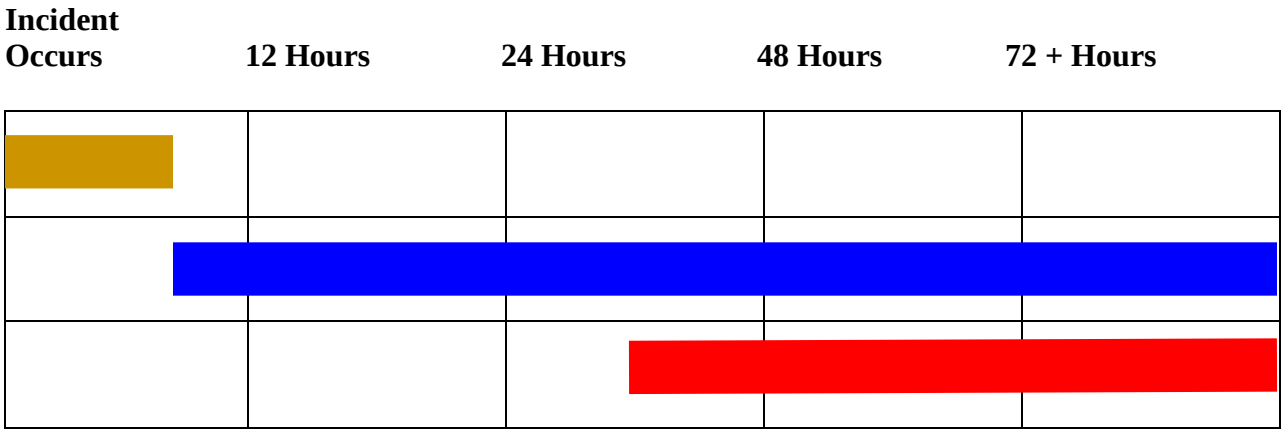
APPENDIX A

USFA IMT Timeline for Response And Operations (USFA, 2008)

A timeline showing the typical time frames for response and operations of the different types of IMTs based on the USFA AHIMT Technical Assistance Program.



Legend:

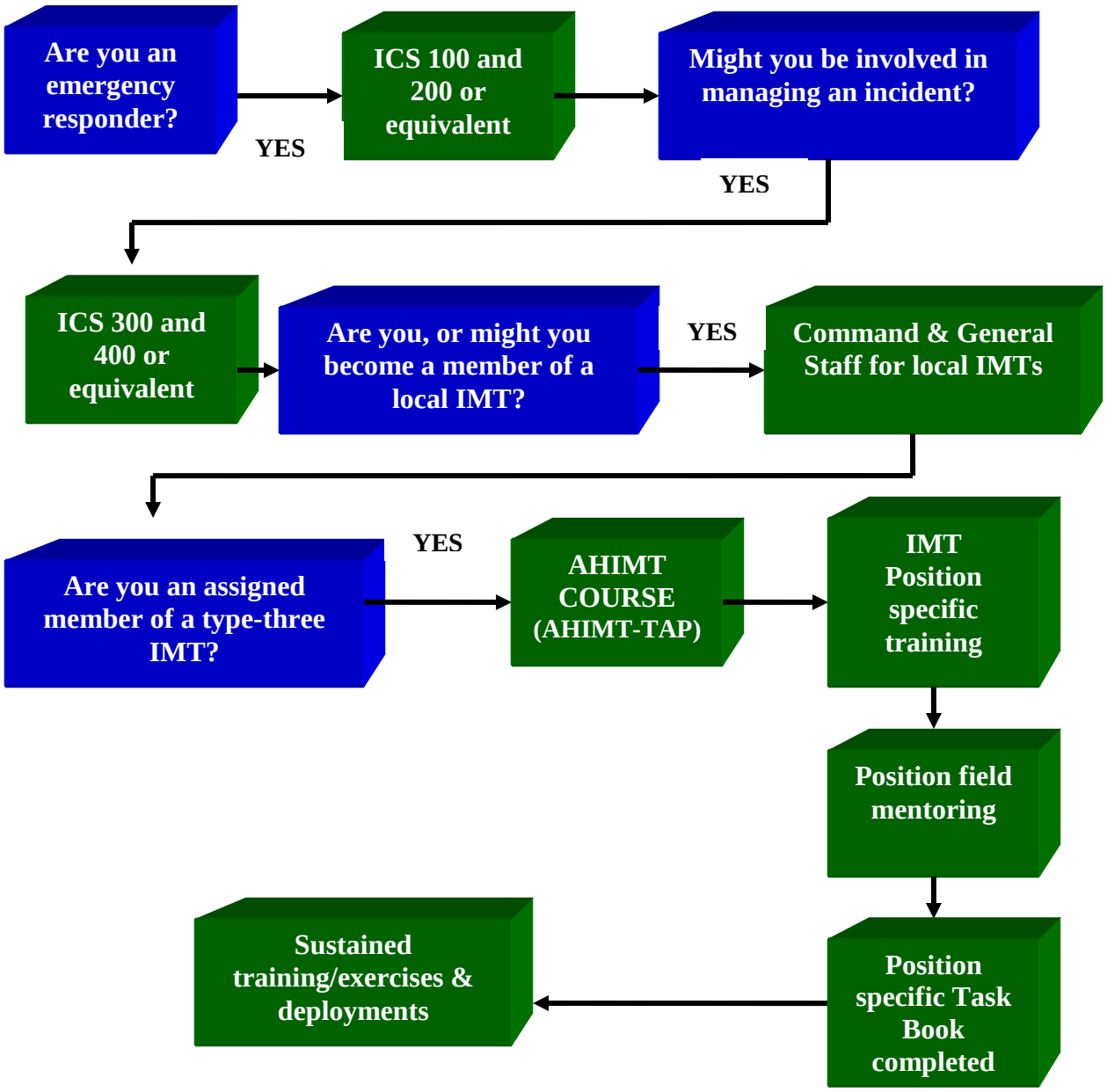
= Local (Type-five or Type-four) IMT

= Type-Three IMT

= Type-Two or Type-One IMT

APPENDIX B

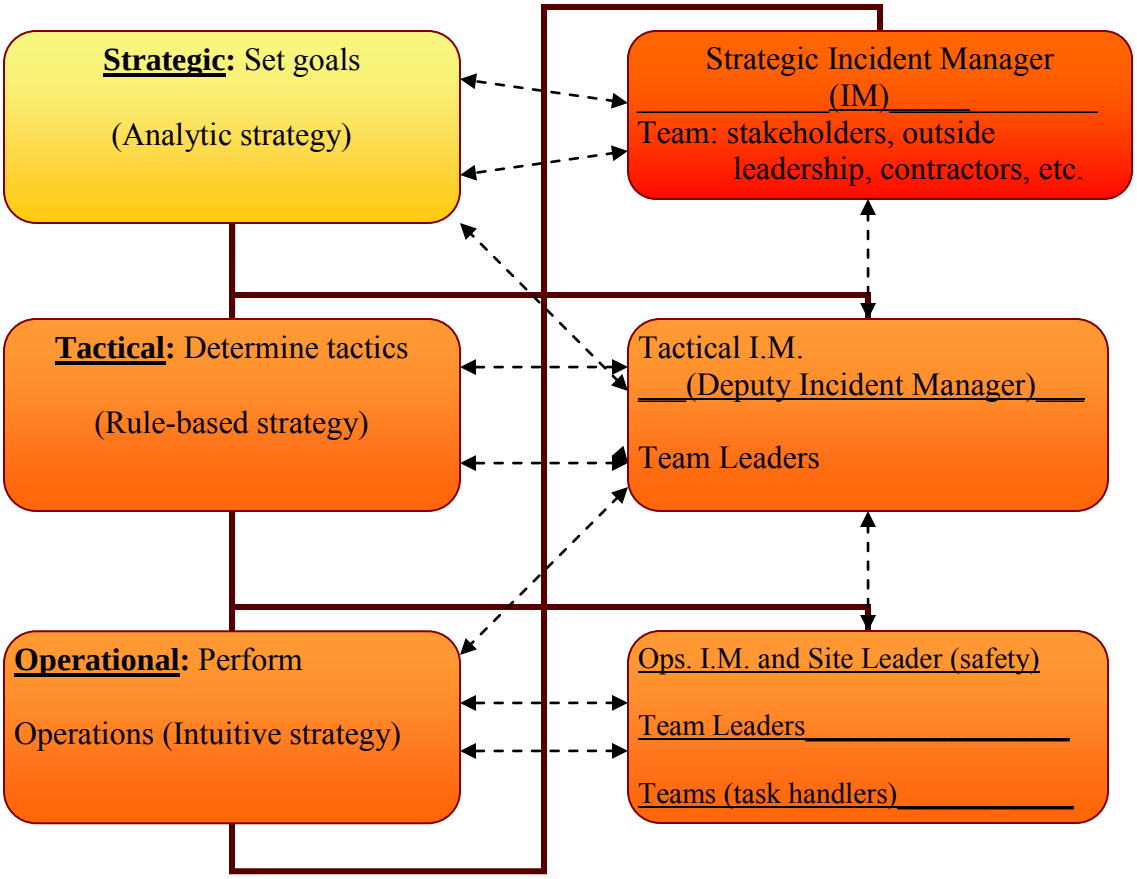
ICS/IMT Training Flow Chart (USFA, 2008a)



APPENDIX C

United Kingdom Incident Management Decision-Making Structure (Crichton et al., 2005)

Legend: Communications links = ◄- - - - - - - - - - ►



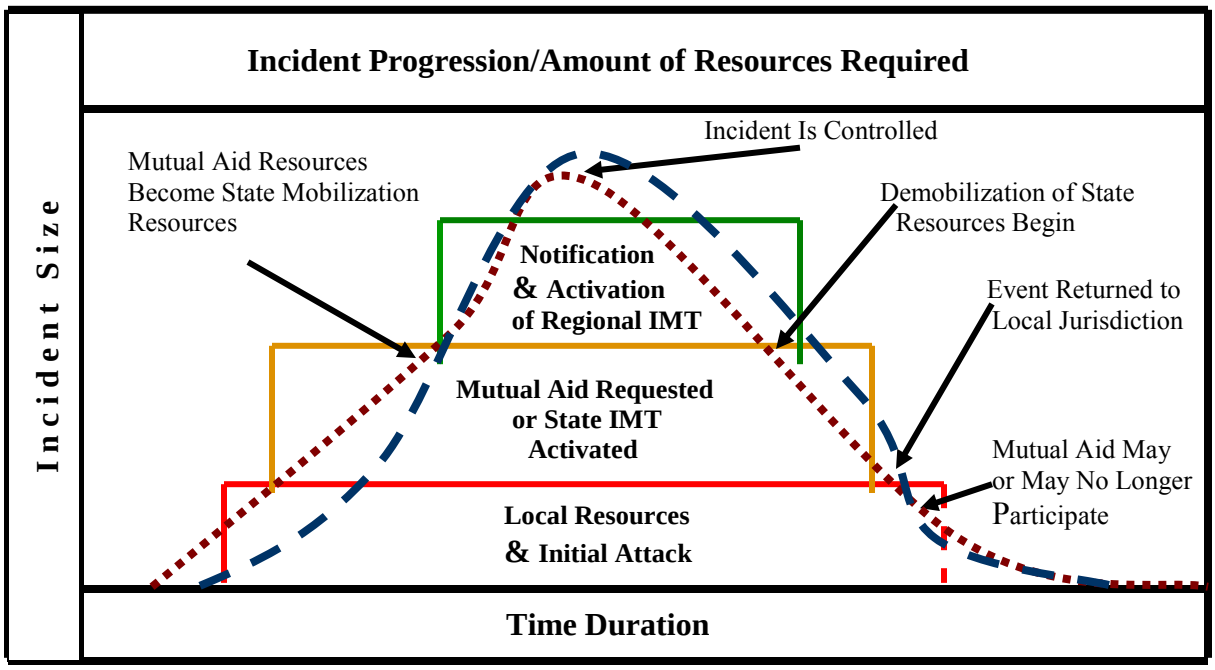
APPENDIX D

United States ICS Command Structure (FEMA, 2003)

Legend: ←– – – –→ = Communications Links.

APPENDIX E

Incident Progression and Mobilization Thresholds (Washington State Fire Marshal's Office, 2005)



Legend:

Incident progression.

Resource requirements for containment and control.

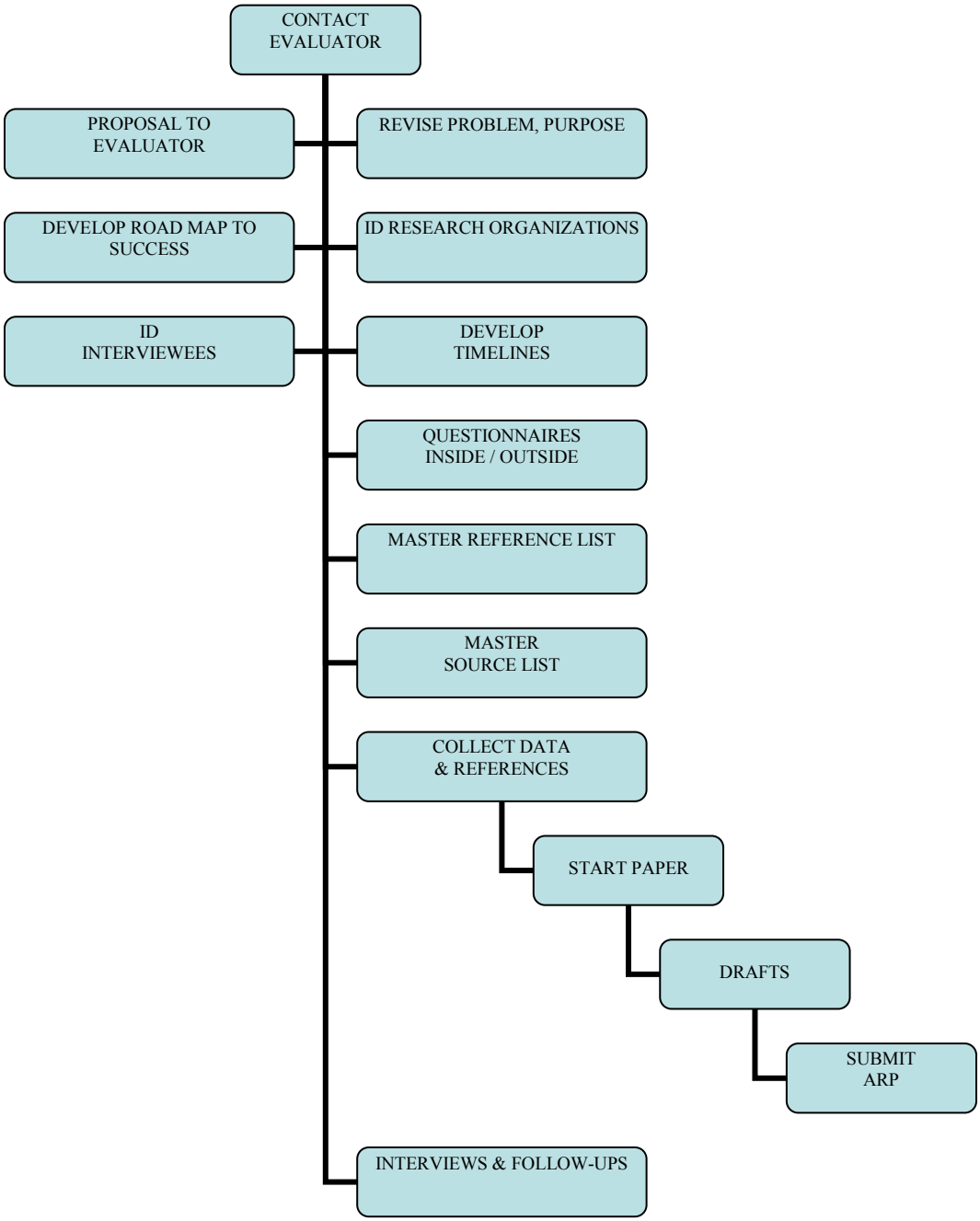
The local jurisdiction responds. This jurisdiction will remain involved throughout the incident duration regardless of magnitude. If the event is within the capabilities of this jurisdiction, it will be handled exclusively by that jurisdiction.

Mutual Aid is requested by the local jurisdiction when it can no longer contain or control the incident using its limited resources. Mutual Aid is summoned and will augment the local jurisdiction according to pre established written agreements. In most situations the combination of such resources can achieve incident stabilization and control. However, should the local and Mutual Aid resources be overwhelmed or lag behind the incident growth, a state IMT and/or mobilization may be necessary. Once a state mobilization is authorized and approved, statewide resources are activated. All local and Mutual Aid resources being utilized become part of the mobilization process and are reimbursed by the state.

If state resources are overwhelmed then a national disaster declaration can be sought through the federal government, which provides regional and national resources. Federal reimbursement for resources can be obtained under extremely strict guidelines.

APPENDIX F

Road Map to Success



APPENDIX G

ARP Required Elements and Timeline

SECTION	TARGET DATE	COMPLETED	Proof 1	Proof 2
1. Title Page	_____	☐		
2. Certification Page	_____	☐		
3. Abstract (Separate page)	_____	☐		
4. Table of Contents (Separate page)	_____	☐		
5. Main Body Sections			**X**	**X**
Introduction (Separate page)	_____	☐		
Background & Significance	_____	☐		
Literature Review	_____	☐		
Procedures	_____	☐		
Results	_____	☐		
Discussion	_____	☐		
Recommendations	_____	☐		
6. Reference List (Separate page)	_____	☐		
7. Appendixes (Optional/Separate page)	_____	☐		

APPENDIX H

Master Source List (In Contact Order)

NAME	AFFILIATION	CONTACT #/E-MAIL
Commissioner Mary Ellen Dorsett	Fort Meyers, FL	xxx-xxx-xxxx
Assistant Chief Robert Sweeney	FDNY	xxx-xxx-xxxx
Assistant Chief Edward Kilduff	FDNY	xxx-xxx-xxxx
Deputy Chief William Seelig	FDNY	xxx-xxx-xxxx
Deputy Asst. Chief James Manahan	FDNY	xxx-xxx-xxxx
Deputy Asst. Chief Ronald Spadafora	FDNY	xxx-xxx-xxxx
Deputy Chief Robert Maynes	FDNY	xxx-xxx-xxxx
Battalion Chief James Kane	FDNY	xxx-xxx-xxxx
Battalion Chief George Maier	FDNY	xxx-xxx-xxxx
Tim Murphy Northern Rockies Area	Command	xxx-xxx-xxxx
Fire Chief Bob Anderson	Spokane County, WA	xxx-xxx-xxxx
Wild Fire Lessons	Website	xxx-xxx-xxxx
George Custer	IC, PSW IMT	xxx-xxx-xxxx
Director James Callahan	Nassau County, NY, OEM	xxx-xxx-xxxx
Deputy Comm. Henry Dingham	FDNY	xxx-xxx-xxxx
Yolanda Daeninck	McKinsey & Co., NY	xxx-xxx-xxxx
Jim Smalley	NFPA Wildland Fire Prot.	xxx-xxx-xxxx
Chief Thomas J. Wutz	NYS OFPC	xxx-xxx-xxxx
Deputy Chief Bill Davis	Albany, NY, FD	xxx-xxx-xxxx
Bill Cambell	NYS OEM	xxx-xxx-xxxx
Charles Hamilton	Brookhaven Natl. Lab.	xxx-xxx-xxxx
IMT Center.org	Website	xxx-xxx-xxxx
USFA	USFA	xxx-xxx-xxxx
Stephen Foley	USFA	xxx-xxx-xxxx
USFA/NETC/NFA	NETC	xxx-xxx-xxxx
Fire Chief Salvatore Cassano	FDNY	xxx-xxx-xxxx
Dan Oltrogge	IC, SW IMT	xxx-xxx-xxxx
Jonetta Holt	PIO, East. AZ, IMT	xxx-xxx-xxxx
Dan Frazee	Phoenix, AZ, FD	xxx-xxx-xxxx
Battalion Chief Ronald Hicks	San Diego, CA, FD	xxx-xxx-xxxx
Steven Cage	IC, Boise, ID, IMT	xxx-xxx-xxxx

APPENDIX I

FDNY Questionnaire for Chiefs and IMT Members

September 25, 2008

Dear Chief _____,

With Chief Cassano's consent I am currently enrolled in my third semester of the Executive Fire Officer Program at the National Fire Academy. One of the program requirements for each of the four classes is to write a research paper on issues that face our department and the fire service in general. These projects require extensive research and take months to complete. My first two papers received 4.0s and have been considered for national outstanding research awards.

My current project is on developing activation protocols for the FDNY IMT during local large-scale, multi-agency incidents. I would like to know if I may contact you through department e-mail and if you are willing to share your expertise and experiences to assist me in gathering information for the project? Any information or direction you can offer me on the following research questions will be greatly appreciated.

The general research questions are as follows:

1. What are the general activation mechanisms used nationally to activate IMTs?
2. What states have IMT activation protocols within the U.S.?
3. What are the IMT activation protocols for those states/IMTs that have them?
4. What specific activation mechanisms are used by other all-risk-hazard IMTs in the urban environment?

FDNY-specific questions are:

1. At present who can activate the FDNY IMT?
2. Do you, as a trained IMT member feel that pre designated activation protocols would be beneficial to the FDNY, FDNY IMT, and the City of New York?
3. How can the FDNY better utilize its IMT for incidents within the city?
4. Have there been any recent incidents that you know of where an FDNY IMT response would have helped manage the incident?

Once the research project has been completed would you be interested in reading a condensed version of the finished recommendations so that we may consider adopting the recommendations it provides for our IMT?

I know your time is limited. Thank you for your time and consideration in this matter.

Respectfully submitted,

_____
Stephen Marsar, Captain
Division 3

APPENDIX J

Outside Organization Questionnaire

Date of Correspondence

Dear _____,

Thank you for replying to my research request for information concerning Incident Management Team activation protocols.

The following research questions will guide you towards the information required for my research:

1. What are the general activation mechanisms used nationally to activate IMTs?
2. What states have IMT activation protocols within the U.S.?
3. What are the IMT activation protocols for those states/IMTs that have them?
4. What specific activation mechanisms are used by other all-risk-hazard IMTs in the urban environment?

Any other information you feel that would be beneficial toward producing activation protocols for the FDNY all-risk-hazard IMT would be most welcome and greatly appreciated.

Please pass this information request to whoever you feel may be best suited to provide the requested information.

Thank you for your help on this research project.

Most sincerely,

_____
Stephen Marsar, Captain
FDNY

APPENDIX K

Questionnaire Cover Letter

October 7, 2008

To Whom It May Concern,

My name is Stephen Marsar. I am a Captain in the Fire Department of New York City (FDNY) and a member of the FDNY Incident Management Team (IMT). I am currently enrolled in the Executive Fire Officer Program at the National Fire Academy. One of the requirements of the program is to write research papers to better our departments and the fire service at large.

My present research project is on developing local activation protocols for the FDNY IMT. The FDNY now operates two fully functional all-risk-hazard IMTs (AHIMTs), recognized as both a national Type-One team and NY State Type-Two AHIMT. The FDNY AHIMT has successfully completed three national deployments since 2005: twice in New Orleans, LA (Hurricanes Katrina [2005] & Gustav [2008]), and once on the East Zone Complex wildfire near McCall, Idaho (2007).

To help in my research I need information on IMTs and U.S. states that have standard activation/deployment protocols for local incidents. I already have information on national teams and their deployment procedures as well as EMAC deployments.

If you can provide details or copies of any activation procedures that your IMT, municipality, or state uses, that would be greatly appreciated.

My contact information is:

Stephen Marsar
Xxxxxxx Ave.
Xxxxxxxx, NY #####

Home: ###-###-####
Cell: ###-###-####
E-mail: Xxxxxxxxxxxxx@Xxxxx.xxx

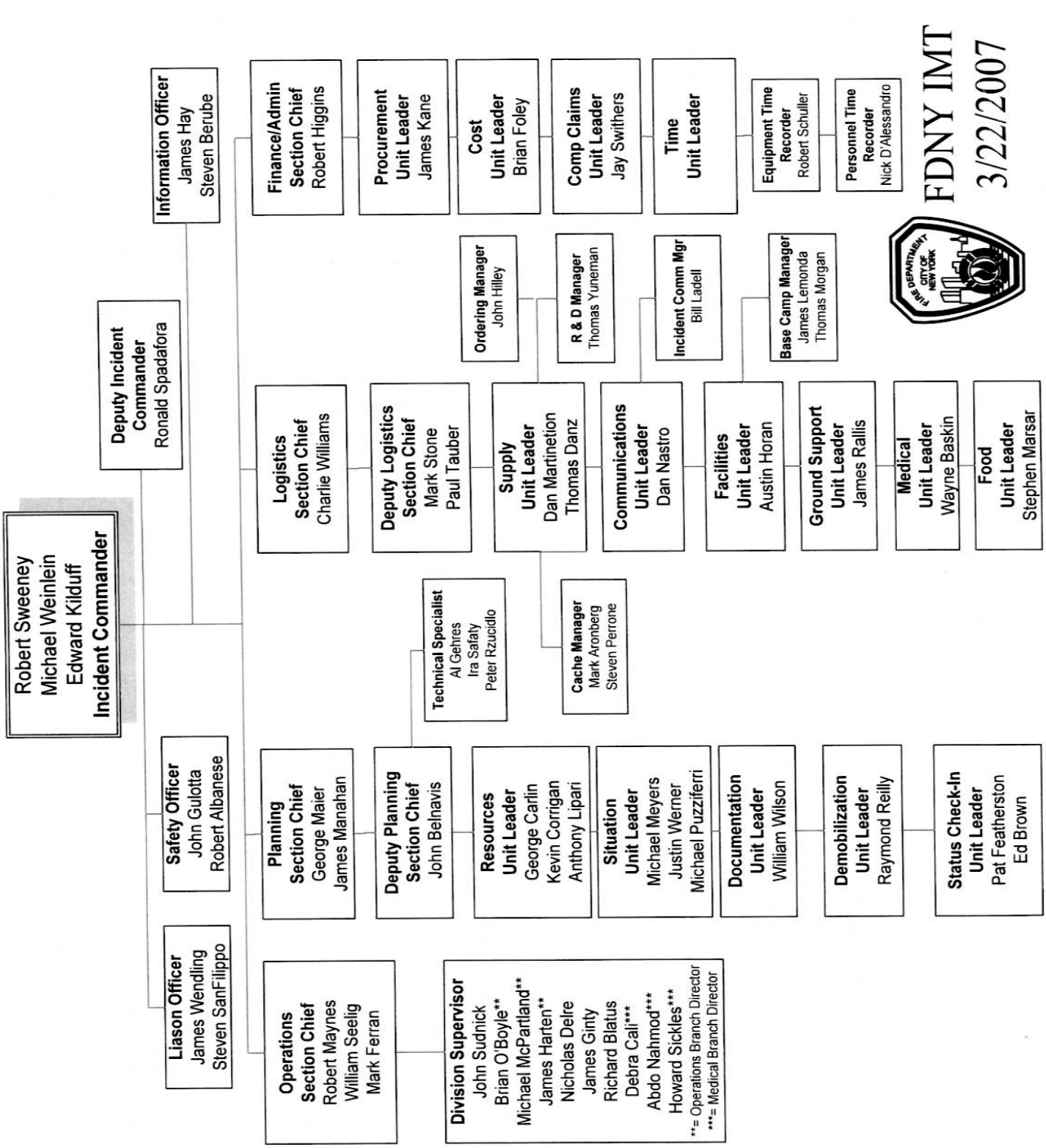
Thank you for your time and consideration on this research project.

Sincerely,

_____
Stephen Marsar, Captain
FDNY

APPENDIX L

FDNY IMT Organization Chart



APPENDIX M

Jurisdictions Contacted for Research and Their Results

STATE or Other Jurisdictions	Contacted to Validate Contact Info.	Positive Contact Made	Information Received	Utilizes NWCG or EMAC	Regional/ National IMT	Statewide Policy	
						Yes/ No L=local	In Process
Alabama	Yes	No	No	NWCG	-	No	-
Alaska	Yes	Yes	Yes	NWCG	-	No	-
Arizona	Yes	Yes	Yes	NWCG	-	No	-
Arkansas	Yes	Yes	Yes	-	-	Yes	-
California	Yes	Yes	Yes	NWCG	-	Yes (L)	-
Colorado	Yes	Yes	Yes	NWCG	-	Yes	-
Connecticut	Yes	No	No	-	-	-	-
Delaware	Yes	Yes	Yes	-	-	Yes	-
Florida	Yes	Yes	Yes	NWCG	Yes	Yes (L)	-
Georgia	Yes	Yes	Yes	-	-	Yes	Yes
Guam*	Yes	Yes	Yes	EMAC	-	No	No
Hawaii	Yes	No	No	-	-	-	-
Idaho	Yes	Yes	Yes	-	-	No (L)	-
Illinois	Yes	Yes	Yes	-	-	Yes (L)	-
Indiana	Yes	No	No	-	-	-	-
Iowa	Yes	Yes	Yes	EMAC	-	Yes	-
Kansas	Yes	Yes	Yes	-	Yes	No	Yes
Kentucky	Yes	Yes	Yes	-	-	No	Yes
Louisiana	Yes	No	No	-	-	-	-
Maine	Yes	Yes	Yes	-	-	No	Yes
Maryland	Yes	Yes	Yes	-	Yes	No	No
Massachusetts	Yes	No	No	-	-	-	-
Michigan	Yes	Yes	Yes	-	-	(L) only	No
Minnesota	Yes	No	No	-	-	-	-
Mississippi	Yes	No	No	-	-	-	-
Missouri	Yes	Yes	Yes	-	-	No (L)	Yes
Montana	Yes	Yes	Yes	NWCG	-	No	No
Nebraska	Yes	No	No	-	-	-	-
Nevada	Yes	No	No	NWCG/ EMAC	-	-	-
New Hampshire	Yes	Yes	No	-	-	-	-
New Jersey	Yes	No	No	-	-	-	-
New Mexico	Yes	No	No	NWCG	-	-	-
New York	Yes	Yes	Yes	EMAC/ NWCG	Yes	No	Yes
N. Carolina	Yes	No	No	-	-	-	-

STATE	Contacted To Validate Contact Info.	Positive Contact Made	Information Received	Utilizes NWCG or EMAC	Regional/ National IMT	Statewide Policy	
						Yes /No L=Local	In Process
North Dakota	Yes	Yes	Yes	-	-	No	Yes
Ohio	Yes	No	No	-	-	-	-
Oklahoma	Yes	Yes	Yes	EMAC	-	No	Yes
Oregon	Yes	Yes	Yes	NWCG	-	-	-
Pennsylvania	Yes	Yes	Yes	-	-	Yes	-
Puerto Rico*	Yes	Yes	Yes	EMAC	-	-	Yes
Rhode Island	Yes	No	No	-	-	-	-
S. Carolina	Yes	No	No	-	-	-	-
S. Dakota	Yes	No	No	-	-	-	-
Tennessee	Yes	No	No	-	-	-	-
Texas	Yes	No	No	NWCG	-	-	-
Utah	Yes	Yes	Yes	NWCG	-	No	No
Vermont	Yes	Yes	Yes	EMAC	-	No	No
Virginia	Yes	Yes	No	-	Yes	-	-
Washington	Yes	Yes	Yes	NWCG	-	Yes	-
Washington DC*	Yes	No	No	-	-	-	-
W. Virginia	Yes	Yes	Yes	EMAC/ NWCG	-	No	No
Wisconsin	Yes	No	No	-	-	-	-
Wyoming	Yes	No	No	-	-	-	-

Compilation by Stephen Marsar, December 12, 2008

APPENDIX N

FDNY Chief Officers Checklist Additions

The following considerations are to be added to the checklist sections as noted.

Extended Operations/Incident Management Team Considerations:

__ Large-scale event?
__ Multiple Operational Periods?
__ Multiple Agencies Involved?
__ Unified Command Required?
__ Single Command incident with unified (multi-agency) operation sections?
__ Multiple Sectors/Branches required?
__ Mass casualty/Media sensitive event?

If yes to any of the above items, have the City Wide Command Chief contacted by a Chief Officer to alert/activate/deploy the IMT.

AIRCRAFT EMERGENCY CHECKLIST: Section B) Size-Up and Initial Operations.

BUILDING COLLAPSE CHECKLIST: Section C) Collapse Rescue Plan Management.

EXPLOSION CHECKLIST: Section D) Resource Response.

HAZ-MAT INCIDENT CHECKLIST: Section B) Size Up and Initial Operations.

HIGH ANGLE EMERGENCY CHECKLIST: Section G) Additional Resources.

RADIOLOGICAL INCIDENT CHECKLIST: Section D) Response Resources.

MTA TRANSIT LIAISON CHECKLIST: Add a NEW Section G) Resources Required.

MAYDAY CHECKLIST: Section F) Incident Command.

APPENDIX O

The ICS/IMT Planning P