

Public Safety Bomb Squads in the United States: Recommendations for a Nationalized  
Response System.

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Public Safety Bomb Squads in the United States: Recommendations for a Nationalized  
Response System.

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## **Abstract**

# **Public Safety Bomb Squads in the United States: Recommendations for a Nationalized Response System.**

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Under the Supervision of Dr. Cheryl Banachowski-Fuller

### Statement of the Problem

Since the onset of the war on terrorism in 2001, the 469 accredited public safety bomb squads in the United States have been called upon to perform more functions outside of their traditional design and role. Bomb squads are now present at most major concert and sporting events; they conduct infrastructure and safety studies of buildings and provide oversight on several terrorism committees. They train our first responders and citizens on terrorism, and regularly conduct training with foreign bomb squads. They provide dignitary protection to high ranking elected officials and foreign heads of state. They further assist in providing oversight on policies and procedures for government and private entities related to explosives, bomb threats, and bomb searches (FBI National Guidelines for Bomb Squads, 2010).

While all of these additional duties have incurred greater costs to the taxpayers, they have also stretched the resources and limitations of our nation's bomb squads, the vast majority of whom are simply on-call, full-time police officers. This has also stretched the resources of local government entities, which are required by the Federal Bureau of Investigation to provide for the sustainment of these units, to include any incidents occurring outside of the agencies original

jurisdiction. As a result of federal requirements, increased training and equipment demands, local political influences, economic factors, and inconsistencies in sustainment funding, there now exists inadequacies in the equipment, training, proficiency, and response capabilities of our nation's public safety bomb squads (Sheridan, 2007).

As the roots of global terrorism have embedded themselves in our nation's soil, America's bomb squads are being tasked to do far more in the areas of public safety and homeland security, while at the same time acting in their full-time capacity as police officers. This raises questions as to whether the original organizational design of bomb squads within the United States, which has not changed since its original conception over 40 years ago, is still adequate to meet the requirements, challenges, and threats of today's changing world.

#### Methods of Approach

The information used in this paper will be gathered and collected utilizing secondary sources of data from various informational resources; peer-reviewed academic journals, criminal justice magazines, bomb technician publications, governmental organizations, and credible government websites. The data gathered from these sources will provide a historical background on bomb squads; identify current and past duties for comparison which will reveal the increased demands that have been placed upon bomb squads since September 11th. The paper will then identify the existing organizational structure in which bomb squads currently operate in, identify related deficiencies associated with these practices, and conclude by recommending the nationalization of bomb squad in the United States under the control of the Federal Bureau of Investigation (FBI). In addition, a review of secondary literature will also be conducted to present the various theoretical concepts and perspectives related to the forms of causation on this topic. The collected findings from the literature review will be summarized, and conclusions

will be drawn from the gathered information, with a series of recommendations derived from the research for presentation.

### Summary of Results

The significance of this study will be in presenting inconsistencies in the current structure of the U.S. public safety bomb technician program, and in recommending changes to a system that has changed little in almost half a century. This study will recommend the use of a federalized bomb technician program for the United States that is reflective of existing nationalized models currently in use by the United Kingdom and Israel. While the FBI has attempted to replicate these programs for U.S. bomb squads in their training methodology only, consideration should be made in the future for full incorporation of these successful systems into the U.S. bomb technician program. With the domestic challenges of current and future global threats, shrinking law enforcement budgets, reductions in federal grants, and increases in sustainment and training requirements, the current system will require significant changes in the future to ensure its continued success. As the threat of improvised explosive devices (IED's) continues to pose a real and severe threat to our cities and homeland, America's bomb squads must be properly prepared to meet these challenges in the future. According to U.S. Homeland Security Secretary Michael Chertoff (Lin, 2007), "the threat of IED's is going to be with us for quite a long time."

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## **I. INTRODUCTION: The Need for Improvement in the Public Safety Bomb Technician Program within the United States**

Public safety bomb squads in the United States are a valuable asset critical to the safety of our nation. According to U.S. Army Colonel Richard Larry (2008), the FBI public safety bomb technician program produces some of the finest bomb technicians in the world. These highly trained professionals are called upon when any law enforcement entity needs help at incidents involving suspicious packages or explosives. In the entire field of law enforcement, they are the most highly trained and elite of all police specialized units. The 2,613 public safety bomb technicians currently active in the United States are the only local and state law enforcement personnel nationwide that require both Federal certification and national accreditation to perform their duties (Ashley, 2004). Since their early inception during the first part of the 20<sup>th</sup> century, bomb squads have performed a vital role within the criminal justice system by handling all incidents involving the disposal and render safe of explosives and pyrotechnic devices. In addition to these duties, they also conduct a wide variety of functions to ensure the overall safety of the general public (Dempsey, 2006).

Within the United States, bombing incidents occur throughout the country every year. The Federal Bureau of Investigation (FBI), reports that 67% of all terrorist related incidents in the U.S. between 1980 and 2001 involved explosives (FBI, 2001). In addition, the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF&E), reports that between the years 1998 and 2008, there have been 6,808 bombings involving all types of explosives, 57,000 incidents involving explosives, and 35,000 incidents of explosives being recovered in the United States. In 2003 alone, there were 386 explosives related incidents that occurred in the U.S., with an estimated economical loss to the economy of over \$US 5 million annually (ATF, 2003). While the majority of criminal acts involving explosives in the United States are usually confined to

isolated incidents, American citizens have also experienced acts of domestic terrorism involving bombings occurring on a larger scale, to include the 1920 Wall Street Bombings, the 1970 Sterling Hall Bombing at the University of Wisconsin, the multiple incidents of the UNABOMBER, the 1993 World Trade Center Bombing, and the Murrah Federal Building Bombing in 1995 (ATF&E, 2003).

The accessibility to the manufacturing methods of explosives is also increasing as a result of the internet. In June of 2009, there were approximately 14,827 videos on You Tube which depicted the process of manufacturing homemade explosives. Additionally, there were 6,478,740 links available on the Google Web site during this same timeframe related to the manufacturing and production of homemade explosives (ATF&E, 2010). As the recipes for explosives become more prevalent within our society, the incidents involving explosives will also increase, which in turn will increase the demand for the expertise of America's public safety bomb squads. Whereas American law enforcement has now become fully engaged in the era of homeland security policing, a careful examination of its specialized response teams is critical to determine their effectiveness in meeting these demands.

### **Statement of the Problem**

Since the vast majority of public safety bomb squads in the United States are "on call" units within a local or state public agency, with members performing other full-time duties, valid concerns exist regarding their abilities to function within the parameters of the original organizational system, based upon today's societal demands. Studies which have been conducted since the September 11<sup>th</sup> attacks support and affirm that most local law enforcement agencies are not prepared to deal with the threats represented by domestic or international terrorism. According to the National Security Strategy of the United States of America (United

States, 2006), the recommendation is that the major institutions of America's national security system must be transformed, as most of these agencies were initially designed in a different era to meet different challenges.

In an empirical study conducted on terrorism sponsored by the Police Executive Research Forum (Murphy & Plotkin, 2003), the findings recommend that law enforcement agencies in the United States must integrate with, and complement existing and emerging efforts at the federal level regarding terrorism. The study further acknowledged that the organizational culture and infrastructure of the Federal Bureau of Investigation, which oversees and provides training to America's bomb squads, must dramatically change to meet these demands. As Bundy (2006) noted in his study on the training competencies of U.S. bomb technicians, as sophisticated systems for constructing explosive devices become more complex, the role of the bomb technician will continue to become more difficult to perform.

In examination of the role of local police agencies to combat modern incidents of terrorism, author David Thacher has indicated that several limitations and constraints are presently facing state and local police agencies (The Local Role in Homeland Security, 2005). These functions, which are often influenced and defined by various local and political concerns, have evolved differently throughout the country, which has now created an overall lack of uniformity in response capabilities, specialized training, and the equipment resources of law enforcement. Thacher's research concludes that the policies of law enforcement agencies pertaining to terrorism must be amended to reflect the concerns of the entire nation, including the shifting of local resources towards federal police agencies. He further cites the successful nationalization policies of Israel, in a country where the realities of terrorism serve as a constant threat to both everyday life and to the existence of the state.

With the current “War on Terror,” it is essential that America’s public safety bomb squad’s are utilized to achieve their maximum response capabilities. The work performed by bomb technicians of rendering safe explosive devices is an inherently dangerous profession. With improvised explosive devices continually being cited as the number one mechanism for implementing terrorism throughout the world, it is critical that America’s public safety bomb squads receive training and sustainment that is consistent and current throughout the nation to perform their duties. Under the current system of local control, attaining these standards and meeting the obligations of the public is becoming more complex, inconsistent, and varies from agency to agency (Wilbur, 2005). In most police departments, bomb technician’s work off the clock, and on their own time, to perform their required training, and in some cases, use their own personal funds for equipment purchases. While many citizens would like to believe that their public safety bomb technicians train on a daily basis for the emerging threats of terrorism, reality tells a different story (Wilbur, 2005). With domestic terrorism attacks in the United States now outnumbering international acts at a rate of 7 to 1 (McGarrell et al., 2007), it is imperative that all bomb squads in the U.S. have the same training, knowledge competencies, and response capabilities to perform their duties in an efficient manner. In an inherently dangerous profession that requires specific physical, mental, and emotional capacities to perform, there exists a need to ensure that this valuable resource within the criminal justice field is employed to maximize its performance outcomes.

## **Purpose**

The purpose of this study will be to investigate the current and historical roles and responsibilities of public safety bomb squads in the United States through the use of secondary literature, and in recommending changes to the organizational landscape of the current bomb

technician program, based upon the original existing response model and the increased demands of the profession over the past decade. It is hoped that this research encourages practitioners and policymakers to review the current organizational structure in which the public safety bomb technician program operates within the United States, and identify and address those deficiencies presented for future improvements directed towards the betterment of public safety.

## **Methodology**

The information used in this paper will be gathered and collected utilizing secondary sources of data from various informational resources; peer-reviewed academic journals, criminal justice magazines, bomb technician publications, governmental organizations, and credible government websites. The data gathered from these sources will provide a historical background on bomb squads; identify current and past duties for comparison which will reveal the increased demands that have been placed upon bomb squads since September 11th. The paper will then identify the existing organizational structure in which bomb squads currently operate in, identify related deficiencies associated with these practices, and conclude by recommending the nationalization of bomb squad in the United States under the control of the Federal Bureau of Investigation (FBI). In addition, a review of secondary literature will also be conducted to present the various theoretical concepts and perspectives related to the forms of causation on this topic. The collected findings from the literature review will be summarized, and conclusions will be drawn from the gathered information, with a series of recommendations derived from the research for presentation. Text books from this program will also be utilized for additional reference and potential sources of information.

## **Significance of Study**

By identifying the current organizational deficiencies within the United States bomb technician program, and in recommending a bomb technician program that is directed at nationalization, it is hoped that future consideration will be provided for restructuring one of the most highly trained units within the law enforcement community, which currently serves in the forefront of the nation's defense against terrorism. A public safety bomb technician program that enables all of its members to have the same equipment capabilities, training opportunities, and full-time employment status, will only strengthen the existing program, create a better bomb technician, reduce the potential for injury and harm to the technician and the public, and increase the efficiency and effectiveness of the profession. Information contained within this paper will be available for use by local, state, and federal law enforcement agencies for analysis, evaluation, and review of existing bomb squad capabilities.

## **Limitations**

There are a few limitations identified in this seminar research paper. As there are only 2,613 bomb technicians in the United States, there has been restricted documentation and limited research available pertaining to the field of public safety bomb squads. Additionally, as the practices and general information related to this specialized profession have been closely guarded over the decades, little information pertaining to the organizational structures of bomb squads have been made available either academically or publicly for analysis and evaluation. Since no primary data is being collected for this study, and no secondary data is being reviewed for comparable analysis, the findings in this seminar research are theoretical in basis, and are derived solely from an extensive review of empirical literature, applicable criminological theory,

and the author's background as one of the 2,613 certified public safety bomb technician's in the United States.

## **II. LITERATURE REVIEW**

To complete an analysis of the increased duties and responsibilities of public safety bomb squads in United States, an overview of the history, development, and origins of these specialized units is required. The creation of public safety bomb squads in America, like many other dedicated law enforcement teams within the criminal justice field, originated solely out of necessity.

### **Historical Formation of U.S. Bomb Squads**

The first recorded bomb squad in the United States was founded by the New York City Police Department (NYPD) in 1903 after a group of Italian immigrants, known as Black Hands, began using explosives to commit acts of extortion against fellow Italian immigrants (Dempsey, 2004). After this criminal ring was broken up, the NYPD bomb squad remained intact, as police officials quickly realized that they had no one else within the agency who could investigate these types of incidents. Throughout the years, this unit would later go on to investigate bombings on Wall Street in 1920, and two decades later at the World's Fair in 1940 (Esposito & Gerstein, 2007). The most famous incident investigated by the NYPD bomb squad during its formative years was the Mad Bomber case, in which suspect George Metesky was convicted of thirty-three bombing incidents which occurred between 1940 and 1957 (Dempsey, 2006). After the establishment of the NYPD unit, other major cities such as Philadelphia, Boston, Washington D.C., and Chicago soon followed New York's example and created their own bomb squads (Dempsey, 2006).

The period during World War Two (WWII) saw the creation and establishment of military bomb squads in the United States, whose presence would later influence the structure and training of all public safety bomb squads in the country. During this era, there were no U.S.

military personnel trained in performing render safe procedures on explosive devices. The United Kingdom, who had allied with the U.S. during the war, established formal bomb and explosives training in 1940, after multiple bombings of English cities left many unexploded bombs (UXO) requiring the immediate need for render safe and disposal (Dempsey, 2006). The U.S. military, recognizing a need for such specialized units, sent a small group of volunteers to train in England that would later become the core of all military Explosive Ordnance Disposal (EOD) teams in WWII (Reece, 2006). Several Army and Navy EOD units were established during the course of the war, and formal training for U.S. military personnel soon began in the United States on render safe procedures of ordnance, booby traps, and underwater explosives (Dempsey, 2006). The techniques that EOD units learned during WWII were also important in the peacetime days that followed the war for multiple operations related to the destruction of captured enemy ordnance and munitions (Reece, 2006).

The civil unrest witnessed in the United States during the following decades of the 1950's and 1960's involved numerous criminal acts and domestic incidents of hatred involving the use of explosives for unlawful purposes. During this era, the civil rights movement, which was creating a dominant presence throughout the southern United States, witnessed bombings of many African-American churches and other minority-owned businesses by white supremacist groups such as the Ku Klux Klan (Klobuchar, 2009). In 1963 alone, there were over five hundred recorded bombings in the Southern United States, the majority of which were attributed to various Caucasian led hate groups (Dempsey, 2006). Along with these disturbances, the nation was also witnessing mass protests against American military involvement in Southeast Asia, which resulted in further criminal bombings being conducted in several U.S. cities and on major college campuses (Bates, 1992). These incidents, organized by various student, militant,

and anarchist groups, were designed to incite public opinion and sway government policies against the Vietnam War.

During the decade of the 1960's, federal and local governments had no resources available to properly investigate explosive incidents, nor the personnel to safely respond to and handle suspicious packages (Jernigan, 2006). The military bomb squads, which had traditionally responded to these types of incidents in the past, were now being assigned to Europe and Asia, resultant of the continuing political climate of the Cold War. As local governments found themselves increasingly unable to deal with the growing incidents involving explosives in the latter half of the decade, they finally turned to the Federal government for assistance (Dempsey, 2006). Prior to this, the roles of public safety bomb-disposal units in the U.S. were relegated to only a few larger cities, including New York, Boston, Miami, Chicago, and Los Angeles. Outside of a limited handful of metropolitan areas, responses involving explosives continued to fall solely upon the jurisdiction of the military (Jernigan, 2006).

A joint decision by the Federal Bureau of Investigation (FBI) and the U.S. Army was concluded in 1970 that would shape the future development of the modern public safety bomb technician program in the United States. Together, these entities determined that public safety bomb technicians would be drawn from the ranks of law enforcement, with the best candidates from the profession being trained and certified at a single school run jointly by the FBI and U.S. Army (Jernigan, 2006). The agencies which were initially selected for public safety bomb squads were designated in areas where either civil unrest was continual, or in areas which had experienced multiple explosives incidents (Dempsey, 2006). The Hazardous Devices School in Huntsville, Alabama was chosen as the site to train future law enforcement personnel, and today remains as the only school in the nation to certify and oversee accreditation of all public safety

bomb technicians in the United States (Jernigan, 2006). Since its inception, the school has certified over 18,000 public safety bomb technicians on the techniques and procedures for disposing of hazardous devices, including chemical, nuclear, and biological devices (Jernigan, 2006).

### **Composition of U.S. Bomb Squads**

The composition of public safety bomb squads across the United States varies in the structure, training, size, and overall response capabilities of each team. Most bomb squads are either affiliated with a state, county, or municipal law enforcement agency, and in limited areas, within the command structure of a fire department (FBI, 2001). According to the National Bomb Squad Commanders Advisory Board (NABSCAB, 2010), there are currently 2,613 bomb technicians incorporated into 457 bomb squads across the United States. The majority of these squads are “on call” units which respond to incidents at any time, and in addition to their full-time public safety duties; weekends, off-days, and holidays are no exceptions (Hughes, 2006). A request for a new bomb squad can only be approved by the FBI, and only after a strict needs assessment has been conducted (FBI, 2001). Therefore, not every public safety agency in the United States can have a bomb squad. Since a bomb technician’s work is an extremely perishable skill, it entails repetition and training to maintain proficiency (Hughes, 2006). For this reason, most bomb squad jurisdictional boundaries will vary based on the volume of response, demographics, response capabilities, and response times.

### **Standards and Requirements of U.S. Bomb Technicians**

The initial assessment, selection, and training of America’s public safety bomb technicians are also controlled by the direct federal oversight of the FBI. Accordingly, only those individuals from accredited public safety bomb squads may attend the FBI’s Hazardous

Devices School in Huntsville, Alabama (FBI, 2001). A candidate nominated from an agency must be of upstanding character, and have at least five years of law enforcement experience and retention in the field. All candidates are required to be in excellent physical condition, and must pass a vigorous series of testing prior to attending the basic bomb technician course (FBI, 2001). After successful completion of the basic six-week course, a candidate is certified as a public safety bomb technician in the United States for a period of three years.

At the end of the initial and every preceding three year period, a bomb technician is required to return to the Hazardous Devices School in Alabama for recertification training. During this intense one-week course, a bomb technician is provided with briefings on the latest tools and techniques for dealing with suicide bombers, large vehicle bombs, weapons of mass destruction, and other explosive threats (Ashley, 2004). To retain this knowledge, the FBI recommends a minimum of 16 hours of monthly training for bomb technicians, and an additional 40 hours of specialized training annually in maintaining operational readiness (NABSCAB, 2010). While these training standards serve only as a recommendation, they are not *mandated* by the FBI; therefore the minimum in-house monthly training and any specialized training that a bomb technician receives is arbitrarily left to the discretion of the individual agency (Wilbur, 2005).

During the course of their careers, public safety bomb technician may also obtain additional training on a variety of topics within the explosives field. These courses may encompass advanced electronics, suicide bombers, destruction techniques, electronic countermeasures, and large vehicle bomb countermeasures (NABSCAB, 2010). Since the FBI only provides funding for its recertification course, the local agency is responsible for absorbing

any and all specialized training costs including and beyond the minimum training provided at the six-week basic course (FBI, 2001).

As a result of this practice, inconsistencies currently exist throughout the country in the quantity, uniformity, and standardization of bomb technician training, as the quality and level of expertise of each bomb technician is influenced by an individual agency's training budget, and that agency's ability to release the "on call" bomb technician from their full-time duties to attend specialized training. According to Larry (2008), "the existing training for public safety bomb technicians is insufficient, and as a result of the September 11<sup>th</sup> terrorist attacks, the nation can no longer allow the knowledge and expertise of our public safety bomb technicians to be stove piped." Since uniformity of knowledge and consistency in training is essential for all public safety bomb technicians, inadequacies and deficiencies in existing training programs may have future negative implications regarding response capabilities, general public and bomb technician safety, and core competencies of the technician's defined tasks and duties. According to Laska (2002), "Since the events of September 11, public safety officials don't understand the nature of the bomb technician's job, nor do they understand the extensiveness of the technician's training."

### **Mission of Bomb Squads in the United States**

While bomb squads perform many functions, their primary duty in the United States is to perform the render safe and removal of improvised and commercial explosives (NABSCAB, 2010). Some examples of this would include pipe bombs, wireless initiated devices, large vehicle bombs, suicide bombs, and booby traps. Bomb squads also respond to the removal and disposal of deteriorated nitroglycerin dynamite from farms and rural businesses, and investigate incidents where commercial explosives have been stolen from legitimate explosives companies (NABSCAB, 2010). Public safety bomb squads further collect and destroy all pyrotechnic

fireworks and pyrotechnic powders seized annually, and respond to schools and laboratories for the safe removal and disposal of ether and picric acid (Hughes, 2006).

In addition to these functions, bomb squads also respond to limited types of military ordnance calls such as hand grenades, mortar rounds, old ammunition, and various artillery rounds, most of which have been discovered in private homes (Vanegeren, 2009). Other functions performed by public safety bomb technicians include the rendering safe of nuclear, chemical, and biological devices, and other types of explosives items which could be used in the construction of a weapon of mass destruction. Although most of these types of incidents will seldom if ever be encountered, the public safety bomb technician must still possess the knowledge, skills, and abilities for rendering these types of devices safe (Jernigan, 2006).

America's bomb squads also perform numerous other functions apart from their traditional duties of safely handling explosives. They investigate bomb threats, conduct post-blast investigations of bombing scenes, enforce state commerce laws pertaining to explosives, collect and preserve bomb scene evidence, provide dignitary protection, and prepare courtroom testimony as experts in criminal cases (NABSCAB, 2010). In addition to these tasks, bomb squads provide operational assistance to other law enforcement agencies and specialized units, compile data for evaluation, and maintain accurate records for federal reporting purposes (Jernigan, 2006).

### **Research that Supports Increased Responsibilities**

In the performance of almost all of these hazardous duties, bomb squads must also have available an array of specialized tools and equipment when completing the render safe and transportation of improvised and homemade explosives (Laska, 2002). While most of America's public safety bomb squads currently have these items, many are still lacking resultant of local

and federal funding over past decades. With the enactment of the global war on terrorism, it has been acknowledged by many agencies throughout the country that first responders do not have the tools to deal with today's terrorism incidents (Sheridan, 2007). With the complexity of explosive devices resultant of modern technology, bomb squads are now being required to maintain far more sophisticated advanced diagnostic and render safe equipment in their response arsenal. Because of these extensive equipment requirements, a bomb disposal response now resembles a forensic or fire-rescue operation instead of a conventional law enforcement callout (Laska, 2002).

After the September 11<sup>th</sup> attacks, the U.S. government disbursed Homeland Security monies through competitive and state grants to assist bomb squads in attaining these necessary tools. While several public safety bomb squads received funding to procure equipment through grants that could not be obtained through local budgetary processes, many received little or nothing in terms of federal funding (Sheridan, 2007). As a result of these inconsistencies, the disparity in financial support has facilitated a new dimension in public safety, one in which an agency's preparedness for responding to terrorism may hinge solely upon its ability to obtain federal and state funding (Stewart & Morris, 2009).

While various strategies have been employed by Homeland Security officials to offset and eliminate inconsistencies in equipment funding gaps, America's bomb squads continue to lack in equipment needs that support overall response capabilities. In review of the National Improvised Explosives Device Prevention and Preparedness Act (2008), several U.S. Senate sponsors stated:

The bomb squads, public safety dive teams, explosive detection canine teams, and special weapons and tactics team capabilities of the United States

are inadequate for the domestic threat of an improvised explosive device attack. Federal funding of U.S. bomb squads is inadequate, and lacking any sufficient strategic planning to properly equip, train, and prepare the Nation's emergency response providers. (p. 2)

As a result of these disparities, certain parts of the country now have excellent bomb squad response capabilities, while others do not. According to Sheridan (2007), "public safety bomb squads still don't have the equipment they need to currently handle multiple events or even to provide the top-line services that we need in this day and age." With a bomb robot averaging \$160,000, an x-ray system \$30,000, bomb suits \$26,000 and response vehicles \$400,000, many agencies no longer have the fiscal means of procuring required equipment (Knurr, 2004). While these items encompass only minute portions of the required equipment for a standard bomb squad response, local agencies are being further strained financially by incurring obligatory sustainment costs to include insurance, maintenance, registration, extended warranties, and associated licensing, all of which are not provided for under federal homeland security grants (Wisconsin Office of Justice Assistance, 2010). According to Senate chairman Joseph Lieberman (2008), if the deficiency in funding to first responders continues, local agencies across the country will not be able to capably partner with the federal government to prevent attacks, or be able to respond effectively when disaster actually strikes.

In addition to increased training, equipment, and associated maintenance requirements, bomb squads are also being tasked to devote additional training time to developing new proficiencies. While bomb equipment and technological solutions have greatly advanced overall safety within the bomb community, the training of the bomb technician will consistently remain the highest priority in the explosives profession (Wilbur, 2005). The advent of rapidly emerging

technologies, combined with increasing global threats since September 11th, has resulted in the development of more advanced forms of IED's at an alarming rate. In just twelve months after the liberation of Iraq, insurgents surpassed the level of bomb-making ability achieved by the Irish Republican Army (IRA) in thirty years; in Afghanistan this required only eighteen months (Hunter, 2008). The practice of learning additional skills, and training them to survivable levels of proficiency, requires additional time (NABSCAB, 2010). With the complexity of new technology driven devices originating in the Middle East and importable via the Internet worldwide, a bomb technician must now be prepared to understand how *every* device functions in order to perform proper render safe procedures (Hunter, 2008). Since a bomb technician is only allowed "one chance" to get it right, proper training in these areas is critical to their survival (Durham, 2003).

To assist in preventing future acts of terrorism, bomb squads are also being called upon with regularity to assist area law enforcement agencies with site security and planning at most major public venues (Wade, 2002). With the events of September 11, the tactics of terrorism arrived on the shores of the United States, and American's quickly realized that they were no longer immune to the activities of global terrorism, even upon their own soil (Brandl, 2003). With concerts, political gatherings, and major sporting events each having the potential for becoming high-profile, target rich environments for terrorism, bomb squads are being tasked to play an integral role at each event. Each venue requires bomb sweeps, security checks, suspicious package runs, negotiations with private security firms and other law enforcement agencies, and a continual visible presence throughout the event (Esposito & Gerstein, 2007).

For the majority of America's "on call" bomb squads, these duties are again performed outside of their regular full time assignments, generate additional overtime costs to the public,

and divert resources from law enforcement's ability to deal with the ordinary policing issues of the community (Stuntz, 2002). The 2001 Conference of Mayors, which was held in Madison, Wisconsin, generated a \$290,000 bill in law enforcement overtime services alone for the five-day event, and involved participation from the FBI, ATF, and five area police departments (Hall, 2002). With only 2,613 public safety bomb technicians in the entire United States, the added presence of providing site security at most of these events has created even more stress to an already stressful profession.

Another function that America's public safety bomb squads are performing in the post 911 world is in an advisory capacity to governments and private sector companies. Bomb squads often meet with area governments, schools, hospitals, and businesses and assist in revising, updating, and creating bomb threat policies and plans. They also assist in infrastructure oversight planning, and evaluate and participate in training exercises concerning terrorism annually (Dempsey, 2006). Since the states have been significantly tasked with the responsibilities concerning the prevention and deterrence of terrorist activities (Pelfrey, 2009), bomb squads are being requested to serve on state and local terrorism committees due to the specialized knowledge which they possess.

In a recent study which measured American's perceptions of future terrorist attacks on the homeland (Giblin, et al., 2008), their findings concluded that the majority of respondents perceived that conventional explosives will be used to inflict terror (30.1%), while another study, which evaluated specific types of terroristic threats, determined that suicide bombers will represent the future threat to our nation (Jafa, 2005). Since the majority of all terrorism incidents worldwide (94%) involve the use of explosives (FBI, 2009), bomb squads are being looked upon by the general public as the experts to consult with.

In past decades, bomb squads traditionally provided training presentations to only other law enforcement agencies; now this role has expanded to include fire departments, emergency medical personnel, citizen groups, hospital staffs, and emergency management personnel (National Bomb Squad Commanders Advisory Board, 2010). While public presentations indirectly support the mission of most bomb squads and provide knowledge to first responders in the event of a real world incident, they require a great deal of preparation time and planning that most of our nation's "on call" bomb squads do not have, and further create another layer of services that the public has come to expect of public safety bomb squads.

With the mobility of terrorism and the knowledge of explosive devices available worldwide by terrorist groups, public safety bomb squads are also conducting joint training with bomb squads from other countries (Esposito & Gerstein, 2007). Since the events of 9/11, hundreds of U.S. bomb technicians have made repeated trips to Israel to learn from their counterparts and their extensive experience in detecting and deterring Palestinian suicide bombers (Ragavan, 2006). The British government has also shared their knowledge on render safe procedures with America's bomb technicians based on their tactical experiences over three decades in dealing with terrorist bombings in Northern Ireland (Mordechai, 1998). While this information sharing and technical training is critical for American's bomb technicians, it creates additional expenses to local communities, and further removes the bomb technician away from their primary full-time law enforcement duties.

Through examination of the literature review, this study has identified several limitations and constraints presently facing the public safety bomb technician program in the United States. The profession, whose development has been influenced, shaped, and defined by world events, political factors, and technological changes, has evolved unequally over time and now exists in

various forms throughout the nation. This has created a working environment that lacks uniformity in response capabilities, inconsistency in specialized training, and equality in the equipment resources of public safety bomb technicians. David Thacher's research (2006) concluded that the policies of law enforcement agencies pertaining to terrorism must be amended in the future to reflect the concerns of the entire nation, to include the shifting of local resources towards federal police agencies.

A summary of the literature contained in this research has attempted to provide an overview of the public safety bomb technician program within the United States from a historical growth perspective, by addressing both the positive aspects of the profession and those areas requiring future enhancement. The literature review has identified multiple areas in which the existing program is efficient, to include certification, accreditation, composition, assessment and selection. In the areas of training, response capabilities, vocational status, and sustainment, there are somber inconsistencies noted amongst America's public safety bomb squads. These apprehensions now raise serious questions as to whether the organizational structure of the public safety bomb squads in the United States, which have changed little since their original inception of over 40 years, is still adequate to meet the requirements, challenges, and threats of today's changing world.

Therefore the purpose and goal of this research will be to examine current bomb technician programs in other western democracies for comparison; those which encompass nationalization, are focused on uniformity of standards, equalized training and response capabilities, and have been successful in protecting the public against acts of terrorism. An analysis of the Casual Model of Organizational Performance, Rational Choice, and Organizational Administrative theory will be reviewed and examined as a framework in

understanding causation and elucidating deficiencies in the current bomb technician program, and the imperative need for restructuring. It is hoped that the results of this research will help in redefining the future role of public safety bomb technicians in the United States, by recognizing the need to revise the existing system, with the goal of improving response capabilities, standardizing equipment, equalizing training, and redefining the vocational environment for America's public safety bomb technicians.

### **III. THEORETICAL FRAMEWORK**

Theoretical concepts provide valuable assistance to society by explaining why a specific problem exists within a given culture. These articulated propositions provide us with a diverse and informative framework of thought, drawn upon real world situations, which attempt to identify the complexities and relevancy of the subject matter under investigation. Theoretical concepts also provide us with answers and insight into the underlying forms of causation, by capturing a rich and diverse range of ideas through the process of analytical approach, in providing society with an accurate portrayal of how the existent world operates (Paternoster & Bachman, 2001). Theory also guides us in identifying what we need to examine in order to attain a better understanding of what should be changed, or rather left unchanged, when reviewing specific issues that affect human lives.

In the following section, a comprehensive analysis, review, and application of the theoretical concepts of Casual Model of Organizational Performance, Rational Choice, and Organizational Administrative theory will be examined, to further supplant and emphasize the need for restructuring of America's public safety bomb technician program. Through investigation into each of these theories, a better understanding and accurate portrayal of the phenomenon will be captured and attained. The concluding implications will demonstrate that empirical data presented in the literature review is reflective of the theoretical concepts being examined, which will strengthen the cognitive validity of the general dissertation related to the topic. The findings will provide for greater insight into causation, identify potential roadmaps for restructuring, and enhance the hypothesis for implementing changes to the nation's public safety bomb technician program.

## **Casual Model of Organizational Performance**

The Casual Model of Organizational Performance and Change, as developed by Burke and Litwin (1992), assists us in identifying the interrelationships of organizational variables and the transformational dynamics that necessitate transformational organizational change. While political, economic, and social modifications have affected the public safety bomb technician program, there has been minimal changes noted to the organizational structure of bomb squads for over four decades. The Casual model of organizational theory suggests that performances of organizations and the need for change are casually linked to both internal as well as external factors within the environment. Within this model, Burke and Litwin (1992) identify two forms of organizational change as necessary mechanisms in establishing the tenants of the theoretical concept, which are defined as transactional change and transformational change.

The element of transactional change focuses on the premise that changes to an organization can be seen as part of an overall evolutionary process. These changes are resultant of additional tasks, system changes, and other needs being placed upon the individuals within an organization over a period of time, which require greater specialization that cannot be attained internally (Burke & Litwin, 1992). An example of this concept within the criminal justice field would be in the creation of a drug task force to address the frequency of criminal drug acts, and for individuals whose training is specifically focused solely on the enforcement of controlled substance laws (Marks & Sun, 2007). While the creation of such units normally function outside of most police organizations, and are usually attached to federal agencies, their newfound presence creates little if any changes to the overall core organizational mission and culture of a police department (Marks & Sun, 2007).

The second component of Burke & Litwin's organizational theory of change encompasses the element of transformational change. This factor, which can be attributed to environmental forces, is aimed at improving the overall goals and performance strategies of an agency. The concept of community policing, which has been embraced by many police departments across the nation, emerged in response to improving police services by addressing the growing crime rates and quality of life issues in problem neighborhoods (Schmallegger, 2007). With the advent of terrorism resultant of the 9/11 attacks upon America, the ramifications for law enforcement has emphasized a greater need for change in the organizational processes of law enforcement (Marks & Sun, 2007). In accordance with the tenants of the Burke-Litwin model, when influences from the external environment impact the performance outputs of an organization, effective changes to the organization are necessary.

### **Rational Choice Theory**

The Rational Choice model also presents another theoretical concept which explains and supports the need for organizational change to the nation's public safety bomb squads. This model emphasizes the importance and need for decision makers to implement organizational goals through *standardized* arrangements (Marks & Sun, 2007). Since police organizations are prone to local political and economic influences and manipulation from outside competing interests, it is critical that formal decisions be based upon rational knowledge which enables an agency to best maximize its resources. According to Crank & Langworthy (1992), as a result of the variations in institutional authority and funding within law enforcement, organizational changes have become uncoordinated and incomplete. Within the public safety bomb community, this pattern has been evidenced by the inconsistencies that currently exist in training, equipment, and response capabilities throughout the country.

The core tenant of the rational choice theory assumes that people are rational individuals who seek to maximize pleasure and minimize pain (Cornish & Clarke, 2006). While this theory shares many commonalities with Beccaria's classical school of thought, it differs in several important ways. As applied to organizational structures, this model examines the costs and benefits of an agency's decisions based on rational, decision making evaluation, which includes weighing the benefits of actions based upon resulting formal and informal sanctions potentially imposed by society. According to Akers (1990), the rational choice theory can be applied to any action or decision, and is not limited solely to the study of criminal behavior. In applying this theoretical approach to organizations, an agencies perceptions of the potential benefits and the costs of its actions have the strongest influence in the final decision making process.

The issues facing America's public safety bomb squads in today's society are multifaceted, and have been shaped by a range of factors operating within their organizational structure, by changing world events, and by technological advances. The concepts of rational choice theory clearly indicate that decision making processes must be based on the perception of the overall benefits to an organization. The theory cannot be positively sustained within the bomb community when the current organizational structure of public safety bomb squads varies throughout each jurisdiction in the United States. Since a theoretical model is required which reflects a correlation to the rational choice concept, and incorporates the premise for centralized organization, the theory of administrative management will also be examined.

### **Classical Theory of Organizational Management**

The theoretical organizational concept founded by classical management theorist Henri Fayol in the early twentieth century potentially holds the greatest validity in support to the theme of this research. Fayol, who has often been referred to as "the grandfather of modern operational

management theory,” defined 14 principles to the successful management of organizations (Smith & Boyns, 2005). Some of these concepts include division of work, authority, discipline, unity of command, unity of direction, function of specialization, centralization, scalar chain, order, equity, initiative, and esprit de corps (Parker & Ritson, 2005). While Fayol applied his knowledge as an engineering manager in France, he advocated that the principles of his organizational theory had applicable use for all types of organizations.

Fayol’s principles of unity of command, scalar chain, and centralization hold validity in supporting the needs for the nationalization of America’s bomb squads. Under the current bomb technician program, the 457 bomb squads currently in the United States operate independently under local homeland rule, being either attached to a local or state law enforcement agency, or assigned to a local fire department (Jernigan, 2006). As such, no existing chain of command exists to connect these independent units in case of multiple attacks involving explosives on our nation’s shores. While the FBI provides accreditation, certification, and limited training to these specialized teams, there is currently no clearly defined unity of command when these units are operationalized across the country.

Under Fayol’s tenant of organizational management, all units should operate as a single mind, with a single purpose, so that all play an equal part in the plan (Torres, 2007). To accomplish this task, Fayol’s theory advocates the need for centralization, so that all employees within the organization report to a single entity, thereby promoting order and discipline (Parker & Ritson, 2005). This component has valid application in the organizational structure of today’s bomb squads, as it would eliminate interagency rivalries for grant monies and jurisdictional responses, inconsistencies in training and equipment, and uniformity in responses to today’s unconventional acts of terrorism.

An organization based on Fayol's centralized theme would also promote esprit de corps, function of specialization, equity, authority, and unity of direction. According to Brunsson (2008), Fayol saw specialization of the workforce as part of the natural human process, which created expertise, and increased output through repetition. As bomb technician work requires repetition to maintain proficiency, the ability to perform these tasks full-time in either a training environment or in real world situations, without the distractions of other full-time law enforcement proficiencies, would greatly improve the overall quality and expertise of the bomb technician. Additionally, Fayol believed that the function of esprit de corps encompassed the tenant that dividing one's own team is a grave sin against the business (Brunsson, 2008). As applied to the existing bomb technician program, it is imperative that all bomb technicians receive the same training, with the same equipment, and under the same unity of direction throughout the country.

A review of theoretical concepts can help define causation and advance potential implications for future changes to the public safety bomb technician program in the United States. Since the primary goal of the current bomb technician program is to create the most highly trained bomb technician that can effectively respond to any incident involving explosive devices and international acts of terrorism, it is critical that the organizational structure of programs in other western nations be examined which incorporate these principles and guidelines. As the above theoretical concepts have shown, the benefits of utilizing models which incorporate the tenants of casual organizational theory, rational choice, and administrative theory are preferred. Through analysis of the existing bomb squad programs in the United Kingdom and Israel, a better understanding of the concept of a nationalized response system for the United States will be examined.

#### **IV. CURRENT NATIONALIZED BOMB SQUAD RESPONSE PROGRAMS**

Through analysis of the literature review and the various theoretical concepts set forth in this research, several areas of programming have been identified which support and guide the need for organizational changes to the existing public safety bomb technician program in the United States. To further sustain and reinforce the hypothesis, an examination of two successful bomb technician programs, both of which incorporate a centralized theme, nationalized response, and operate within the parameters of a western democracy will be discussed to enhance the proposal for transformational change to the existing program within the United States.

As the majority of deficiencies cited within the U.S. bomb technician program are resultant of a 40-year old organizational framework, whose function is based predominantly upon local “on call” law enforcement agencies, a strong centralized approach that incorporates nationalized programming will specifically be addressed. Since the United States can learn from other western nations that have developed effective bomb response programs (Roberts, 2005), the organizational structure, history, and training of bomb technician programs currently in use by the United Kingdom and Israel will be examined.

##### **United Kingdom**

Within the bomb technician community, the ammunition technicians of the British Army have been referred to as the bravest of the brave (Harding, 2010). In the Helmand province of Afghanistan, British army bomb technicians have rendered approximately 2,500 bombs safe in a period of just over one year (The Sun, 2009). In addition, the 11<sup>th</sup> British EOD regiment, which is also serving in Afghanistan, recorded over 1,400 enemy devices disarmed in a period of just over six-months (Ministry of Defense, 2010). In another six-month time span, British Army EOD Staff Sergeant Karl Ley defused 139 explosive devices, often in temperatures hovering at

122 degrees, and in many instances, while being shot at by Taliban snipers. In just one 72-hour period, Sgt. Ley amazingly defused 28 bombs; of these, 14 were rendered safe within a period of scarcely nine hours (Rayment, 2010). According to British bomb technician Gaerth Wood, “we are probably the most highly trained IED operators in the world. We are confident in our abilities, and as a team we are always learning (Ministry of Defense, 2010). With their worldwide reputation as being the best bomb technicians in the explosives community, one British lieutenant-colonel simply stated “If you have a chance to interview a terrorist, I bet you’d find that they have an unstated admiration for our bomb disposal man.” (King, 1991)

The bomb squads in the United Kingdom can trace their historical origins to World War II, when military personnel had to quickly develop and improvise new tactics for the render safe and removal of all unexploded bombs (UXB) and anti-personnel mines resultant of German aerial bombings throughout the country (Dempsey, 2004). As a result of these proactive measures, the United Kingdom was the first nation to establish formal bomb disposal training to its personnel (Ryder, 2006). In the post-war years to follow, the British bomb squads were also the first to establish standardization of training, equipment, safety protocols, and render safe procedures for all personnel assigned to disposal operations (Ryder, 2006). With the collapse and separation of most of its empire after World War II, the bomb disposal units of the United Kingdom remained continually busy. With most of the former British colonies in either civil war or open rebellion, the bomb technicians of the United Kingdom were able to hone their newfound skills and operating procedures throughout many of these nations (Ryder, 2006).

The following decades of the sixties and seventies evidenced the growth and expertise of the British bomb squads through their experiences in dealing with the Provisional Irish Republican Army (IRA). During their 21 years of service in Northern Ireland, British bomb

technicians responded to over 40,000 calls, defused over 4,700 bombs, and had approximately 20 of its members killed (Cusack, 1993). As a result of the indiscriminate IRA bombing campaigns recorded during the 1970's, the death rate among British bomb technicians was five percent, with one bomb technician being killed during each one-year tour of duty in the country (Cusack, 1993). In 1972 alone, the Provisional IRA carried out 1,300 bombings against British interests. However high these numbers may appear, the efforts of the British bomb technicians in this decade actually reflected an admirable level of success. The EOD units serving during this period rendered safe over 205,000 pounds of explosives, protected millions of dollars in property from ruin, and saved countless lives as a result of their growing expertise (Cusack, 1993).

The lessons of Northern Ireland would further enhance the expertise of the British bomb technicians worldwide, by their innovation and development of new ideas within the bomb disposal field. As a result of the pioneering efforts of British bomb technicians in the 1970's, only three bomb squad members died between the years of 1977 and 1991; this can be directly attributed to the creative tactics and advances in bomb technology by the British (King, 1991). The bomb technicians of the United Kingdom can also be credited with standardized procedures for dealing with remote detonated devices, victim actuated devices, and vehicle borne car bombs produced by the Provisional IRA (Ryder, 2006). The British bomb squads were also the first to develop, incorporate, and standardize the use of bomb robots for dealing with explosive devices in 1972, and are also credited with the development of the "pig stick" or water cannon for disruption of packages (Ryder, 2006).

The extensive reputation and expertise of the bomb technician program in the United Kingdom can be traced to a program that incorporates a unified, military-style response system, which is centralized throughout the country. With the exception of the Metropolitan Police in

London, the responsibility for all bomb squad operations in the United Kingdom fall solely upon the military, with the Royal Logistics Corp of the Army taking the primary role for providing guidance on all bomb response and disposal activity (Johnstone, 2005). To gain admittance and membership into such elite units in Great Britain requires that a candidate possess several skills, qualities, and abilities to be able to perform the functions of a bomb technician, which is referred to in the United Kingdom as an ammunition technician.

To become an ammunition technician in the British Army requires several attributes. A soldier is first assessed for suitability. The pre selection process includes psychometric testing, leadership skills, problem solving, and numeracy tests (British Army, 2010). All applicants must have a high school grade point average of “C” in math, English, physics, and science; they must also display calmness under pressure, attention to detail, be a quick thinker, and be good with people (British Army, 2010). The basic course for a British bomb technician is 15 weeks long, followed by 25 weeks of trade training on explosives and ammunition at the Royal Military Academy (British Army, 2010).

Approximately 600 candidates are accepted into and complete the program annually, with a cost of \$200,000 per student (King, 1991). The training encompasses three phases, consisting of conventional munitions disposal, biological and chemical munitions disposal, and improvised explosive devices. The courses further cover land mines, ammunition disposal, guided weapons, and explosives theory (British Army, 2010). Like their American and Israeli counterparts, all ammunition technicians are experts in chemical, biological, incendiary, radiological, and nuclear devices. Unlike the six week training program currently in place within the United States, the course of instruction for a bomb technician in the United Kingdom takes approximately 40 weeks to complete, after which the technician is assigned to various posts around the world

(British Army, 2010). In contrast to the existing program in the United States, a bomb technician in Great Britain serves in a full-time capacity; they receive identical training throughout their careers, with equalized equipment in all assignments, and operate under one unified chain of command, which differentiates 100% from the existing American model.

As a result of this uniformity in training, equipment expertise, and educational standards, the bomb technicians of the United Kingdom are regarded throughout the world as the subject matter experts on improvised explosive devices and disposal operations (The Sun, 2009). Their main training facility, known as the Felix Centre, was named after the fictional cat with nine lives, and was used as the specific model for the FBI's own training facility for American bomb technicians in Huntsville, Alabama (Jernigan, 2006). As the review has demonstrated thus far, while the British and American programs are comparable in facilities only, the differences and discrepancies between these two models remain vast in scope. Another program which also differs greatly from the American program is that of Israel, where years of terrorism have refined the bomb disposal profession.

## **Israel**

Over the course of the past 62 years, the State of Israel has lived under the threat of war and terrorism. While the threat of attack from another country is largely limited to Iran today, the threat of a terror attack is a daily reality of life in Israel (Guiora, 2005). Whereas the experiences of the United Kingdom bomb squads may be the closest to Israel in terms of the severity and long-term nature of the threats, the nation of Israel has faced the most consistent threat of terrorism than any other western democracy (Weisburd, et al., 2002). In the years of 2000-2005, over 1000 Israelis were killed as a result of Islamic terrorist attacks (Guiora, 2005).

During 2000-2002, more than 101 suicide bomber attacks were carried out against Israeli targets by Palestinian terrorist networks located in the West Bank and Gaza (Perliger, et al., 2009).

When the nation of Israel was established in 1948, the police command of the British Mandate continued to form the legal basis for civilian police activities throughout the country. The Israeli National Police (INP) was originally founded as a simple brigade of the armed forces, or Israeli Defense Forces (IDF). With its historical lineage deeply rooted in a nationalized, military model of policing, which is evidenced by its organizational structure, culture, and procedures, the 28,000 members of the INP are one of the most efficient law enforcement organizations in the world (Shalev, 2003). Like other police agencies, the mission of the INP, as defined by law, includes preventive crime, investigating and clearing crime, identifying offenders and bringing them to justice, supervising and controlling traffic, maintaining public order and safety, securing the imprisonment of prisoners, and maintaining homeland security (Weisburd, et al. 2009).

Like their western counterparts in Great Britain and the United States, the bomb squads within Israel also developed out of specific need. As a result of the rise in Palestinian nationalism, the bomb disposal units, also known as *Chablan Mishtara*, were created in 1974 to combat the growing acts of terrorism involving the use of explosives against the state of Israeli and its citizens (Guiora, 2005). As specialized units assigned to the operations division of the INP, the bomb squads are commanded by the commissioner of police, who is appointed by the national government. The bomb squads are currently structured across the country into six separate response districts: Northern, Tel-Aviv, Central, Judea and Samaria (West Bank), Jerusalem, and Southern (Guiora, 2005). These geographic areas represent a simple hierarchy of

command, with all units being subordinate only to the commissioner and the deputy commissioner of the national police.

As a result of the extent and persistence of terrorism, the Israeli bomb squads have responded to more explosives incidents than any other bomb squad in the world. Annually, the Israeli explosives teams, which operate within the realm of both criminal and terrorist sabotage activities, respond to over 100,000 calls a year for service. They check suspicious objects, parcels, cars, and suspected persons carrying bombs on their person (Guiora, 2008). As a result of their counterterrorism efforts, tactics, and training, the bomb technicians within Israel are considered experts in their field, and are regular guests at training conferences with their American counterparts. According to U.S. Capital Police Chief Terrance Gainer, “Israel is the Harvard of antiterrorism” (Horwitz, 2005).

In support of this expertise, the Israeli bomb squads have a long history of experience, specifically in addressing the problems of terrorism. Since the early 1970’s, the squads have been tasked with significant homeland security responsibilities (Weisburd, et al., 2009). As members of the INP, the Israeli bomb squads are highly efficient and professional in their approach to homeland security responsibilities, and remain an important example from which to draw lessons in terms of policing strategies (Kamhine, 2000). In a four-year period alone, from 2000 to 2004, the Jerusalem bomb squad responded to 42 separate suicide attacks and attempted bombings alone. According Mickey Levy, the commander of the Jerusalem police, “We are a nation that has paid with blood for our experience.” (Horwitz, 2005).

To become a member of an Israeli specialized unit is not an easy task. Selection into these specialized units are extremely competitive amongst college students, and is considered the national equivalent of acceptance into Harvard, MIT, or Stanford University, as the knowledge

contingent to serve requires a high degree of intelligence, multi-disciplinary skills, and attributes of innovation and improvisation (Senor & Singer, 2009). A candidate must enlist in the Israeli engineering corps, and after an extensive testing selection of physical and mental conditioning, those selected will attend an 18 month course, after which they must commit to at least five years of service (Senor & Singer, 2009). Though established in a strict, hierarchal order of a paramilitary organization, its members are encouraged to challenge and debate superiors, which in turn produces cutting edge, and unconventional solutions to the problems of terrorism. According to one member, “the rank is almost meaningless; the profession is more defined by what you are good at.” (Senor & Singer, 2009).

The INP bomb squads, as part of the national police force, are specifically organized with a strong central form of control. Although this centralized form of organizational structure is common throughout Europe, it is vastly different from the local control model of bomb squads within the United States. In Israel, the strong link between the military and the bomb squads is also different from the relationship with the military in United States. By having regular formal and informal contacts with the military, there is much better coordination regarding homeland security activities than in the United States, where the lack of intelligence amongst agencies was strongly criticized after the September 11<sup>th</sup> attacks (Henry, 2002).

Since the police specialized units in Israel are full-time professionals, they are able to become involved in the early prevention, interdiction, and treatment regarding the sources of terrorism, and provide a broader, more consistent range when educating the public about domestic preparedness (Senor & Singer, 2009). The INP, the Army, and the security management in Israel all work together to defeat and prevent attacks, through various levels of

protection and intelligence sharing; in Israel, they go after the bombers and not just the bomb (Roberts, 2005).

In evaluating the success of the INP and its bomb squads in dealing with homeland security and terrorism issues in Israel, former assistant FBI director Steven Pomerantz has stated that “the Israelis have this down better than we do. “ (Horwitz, 2005). Through a nationalized system of unified, full-time response, the public safety bomb squads of Israel are coordinated under a strict chain of command; their training is uniform throughout the country, and officer’s focus on only one function, which provides for repetition of tasks to ensure for greater proficiency in response capabilities.

Through comparative analysis with the existing U.S. bomb response program, the established models in use by the United Kingdom and Israel offer significant insight into the benefits of centralized organization and function, and provide us with a viable roadmap to address changes within the existing U.S. system. Through analytical review of each of these programs, the viability and feasibility of a nationalized response system successfully functioning within the parameters of a democratic society can be established. By examination of the current organizational framework, combined with the application of theoretical concept and nationalized programming, a valid recommendation can be sustained which supports the compelling need to implement organizational changes to the existing public safety bomb technician program within the United States.

## **V. RECCOMENDATIONS FOR A NATIONALIZED RESPONSE SYSTEM FOR PUBLIC SAFETY BOMB SQUADS IN THE UNITED STATES:**

After comparable analysis and examination of the existing bomb technician programs within the United Kingdom and Israeli, it is evident that organizational changes are required within the current U.S. model to confront the growing threats and challenges inherent of a modern society. Throughout the introduction, literature review, theoretical analysis, and program evaluation of this essay, the reiterate hypothesis and general aim of this evaluation has been directed at identifying deficiencies resultant of an outdated organizational model within the current U.S. public safety bomb technician program, with strong emphasis being placed upon the need for transformational changes directed at improving overall bomb response capabilities.

Based upon these established findings, recommendations for organizational changes that can be implemented into the existing framework of the current public safety bomb technician program are desired. These changes, supported by inherent and increased shortcomings identified in the existing program, will ensure for future continuity in training, response and equipment capabilities, interoperability requirements, and provide the nation with a modern, nationalized program that is tailored to increase efficiency and professionalism, and conforms to, and is consistent with the practices of the best nationalized bomb technician programs in the world.

In recommendation of a nationalized public safety bomb technician program, one must first understand the historic applications of the hypothesis within the United States to quickly realize that the practice of nationalization is not simply a conceptualized theory. During the Great Depression of the 1920's, the federal government assumed control of most banks and banking practices throughout the country. The purpose of this initiative was aimed at revising

outdated banking procedures, improving services, and creating uniformity and efficiency within the industry. Since the Northwest Ordinance Act of 1789 and the Louisiana Purchase of 1803, the federal government has remained actively involved in the nationalization of the general public domain. From our airspace, coastlines, waterways, and nation's roadway systems, the federal government provides trillions of dollars annually in support of the public infrastructure, both as a critical necessity to the operations of the private sector, and as a required element of the common good (Parker, 2009).

The successful nationalization of services and programs within the United States can also be observed in other historical facets. In World War I, the U.S. government nationalized all railroads within the country, as a means of providing more efficient services in sustaining the war effort against Imperial Germany. During World War II, the government nationalized all pricing of consumer goods throughout the country by use of a rationing system, to protect against inflation, black marketing, and hoarding of consumable products. In this domain, the government was highly successful in controlling the nation's perishable resources, and in redirecting their use for our armed forces fighting around the world (Parker, 2009).

Throughout more recent decades, the concept of nationalization has remained within the America culture as an instrumental part of the societal landscape, by assisting citizens in their daily lives and tasks. In the 1980's, the Resolution Trust Corporation of the federal government seized hundreds of failed savings and loan companies in order to protect and resuscitate the nation's monetary system, resultant of unethical banking practices committed by private sector entities (Parker, 2009). In addition to the banking industry, over 45 million Americans annually receive utilities from some form of government owned energy agency, while many others receive nationalized medical services through the federal Medicare, Medicaid, and Veterans Assistance

programs. Further, millions of American citizens utilize government-owned public transit systems on a daily basis, and most of us receive our mail from the nationalized United States Postal Service (Sirota, 2009). While each of these anecdotes demonstrate the nation's ability to successfully incorporate the concept of nationalization, the application of its use within the domain of homeland security can further be evidenced by the federal government's acquisition of all airline security firms in the wake of the September 11<sup>th</sup> terrorist attacks.

As a result of the Aviation and Security Act of 2001, the Transportation Security Administration (TSA) was established as a nationalized security entity within the federal government's Department of Homeland Security. Tasked with providing security for all modes of transportation, and for providing screening of all checked baggage throughout the nation's 450 airports, the 67,000 members of this newly created agency were incorporated into the existing federal framework from the private sector within a period of only one year (TSA, 2010). With an annual operating budget which now exceeds 6.4 billion dollars annually, the creation of the TSA provides evidence that the federal government not only has the financial means, but the organizational capacity and planning expertise to absorb a group of employees into a federalized system for the purposes of enhancing public safety and protecting the nation against terrorism.

As the research has demonstrated through the empirical data contained within the literature review, a nationalized form of organizational structure for the public safety bomb squads within the United States is realistic, and is recommended as a means of addressing current and future programming needs. Since the terrorist attacks of September 11<sup>th</sup>, global terrorism has now predicated itself upon our nation's shores. With this added threat to our national security, the public safety bomb squads across the United States have been required to perform greater tasks in the areas of public safety and homeland security, while the vast majority of bomb

technicians are still being required to perform the full-time duties of a local police officer. As stated in Section I, this raises serious questions as to whether the original organizational design of public safety bomb squads within the United States, which has not changed since its original conception in over 40 years, remains feasible to meet the training requirements, expectations, challenges, and threats of today's changing world.

Under the current programming structure, all public safety bomb squads operate under the authority of local control and rule. Over the decades, this practice has resulted in increased deficiencies and general inconsistencies in training, equipment, sustainment, and response capabilities for most bomb squads, which can directly be attributed to the methodology of the original organizational framework. As a result of political influences, restrictive agency budgets, continuity in organizational support, and an overall lack of knowledge by agency administrators regarding bomb squads, the current program lacks any semblance of uniformity throughout the nation. While Homeland Security grants have attempted to infuse the profession with much needed equipment, the glaring reality is that the majority of local agencies do not have the financial means to sustain a bomb squad, nor do they have the ability to provide the proper learning environment that is now being required to be a bomb technician in today's changing world.

As noted in Section III of this research, the theoretical concepts of the Casual Model, Rational Choice, and Theoretical Organizations have supplanted the findings of this study by providing valuable insight into causation, and in providing concise recommendations for transformational changes that reinforce the need for nationalization of America's public safety bomb squads. The Casual model of organizational theory has identified that the performance of any organization is part of an overall evolutionary process, requiring transformational changes

resultant upon outside environmental factors. These changes are resultant of additional tasks, system changes, and other needs being placed upon the individuals within an organization over a period of time, which require greater specialization that cannot be attained internally (Burke & Litwin, 1992).

Within the bomb technician field, the sophistication of devices encountered, and the skills needed to perform proper render safe procedures have increased over the past four decades. With the complexity of explosive devices resultant of modern technology, bomb squads are now being required to maintain far more sophisticated advanced diagnostic and render safe equipment in their response arsenal. The advent of rapidly emerging technologies, combined with increasing global threats since September 11th, has resulted in the development of more advanced forms of IED's at an alarming rate. Since most bomb technicians do not function in a full-time capacity, the Casual Theory implies that changes must be effected since bomb technicians cannot attain these proficiencies internally within the environment of a local law enforcement agency. Under a recommended nationalized form of response, all bomb technicians would serve in a full-time capacity, which would allow them to focus their abilities, skills, and competencies specifically on bomb technician training and expertise, much like their counterparts currently do in the United Kingdom and in Israel.

The Rational Choice model also supports the need for organizational change to the nation's public safety bomb squads. As applied to organizational structures, this model examines the costs and benefits of an agency's decisions based on rational, decision making evaluation, which includes weighing the benefits of actions based upon resulting formal and informal sanctions potentially imposed by society. Since most communities no longer have the financial means to properly sustain virtually every aspect required of maintaining a bomb squad,

the nationalization of America's bomb squads would relieve local communities of the enormous financial burden associated with such specialized units, and would create uniformity for all technicians in training and equipment under a federalized system of response. This would also allow local communities to focus on local issues of crime, and enable them to dedicate their limited and dwindling resources towards the growing areas of problem-oriented policing, and other traditional functions that police agencies are required to perform

The theoretical organizational concept of Henri Fayol further supports the validity of this research. Under the current bomb technician program, the 457 bomb squads currently in the United States operate independently under local homeland rule, being either attached to a local or state law enforcement agency, or assigned to a local fire department (Jernigan, 2006). As such, no existing chain of command currently exists to connect these independent units in case of multiple attacks involving explosives on our nation's shores, as is practiced and evidenced by the centralized programs in the United Kingdom and in Israel. By applying Fayol's principles to successful management of organizations under the realm of a nationalized public safety bomb response system, the concepts of unity of command, unity of direction, function of specialization, and centralization can be attained throughout the nation. This component also has valid application in the organizational structure of today's bomb squads, as it would eliminate rivalries for grant monies, jurisdictional responses, inconsistencies in training and equipment needs, and provide for uniformity in response capabilities to today's unconventional acts of terrorism.

In recent years, the public has placed strong emphasis on homeland security in the advent of September 11<sup>th</sup>. As this research has strongly demonstrated, America's public safety bomb squads are not prepared to meet the multiplicity of challenges facing them under the current

organizational framework. Through evaluation of the bomb technician programs currently in use in the United Kingdom and in Israel, a recommendation for incorporation of the basic tenants of these two successful nationalized programs by the United States is strongly suggested. In each of these programs, the training, expertise, and knowledge of the bomb technician far surpasses that of their American counterparts. Through decades of dealing with numerous incidents of terrorism involving the most unconventional use of explosives, each of these nations stands apart professionally from all other countries in terms of their bomb response programs.

In review of the available literature, both countries place strong emphasis on uniformity of training, standardization of equipment, full-time status of personnel, specialization for all of its members, and a scalar chain of command, resultant of their centralized, national approach to incidents involving bomb squad responses. As a result of these applied concepts, the western democracies of the United Kingdom and Israel have bomb response models that are far advanced in comparison to the United States, and which should be replicated for future consideration in the restructuring of a nationalized U.S. bomb response program.

The Federal Bureau of Investigation is currently tasked with providing all oversight related to the certification and accreditation of all public safety bomb technicians in the United States. They are the federal agency that is directly responsible for the creation and inception of public safety bomb technicians within the United States, and whom currently maintain the only training facility in the country which specifically instructs the nation's public safety bomb technicians. As such, they are the logical choice of all federal agencies that should assume the role of incorporating America's public safety bomb technicians into one nationalized unit, through the creation of a nationalized response program comparable in standards to the existing models of Israel and the United Kingdom. As noted earlier, if the federal government can absorb

over 60,000 private-sector civilians into the TSA under the doctrine of homeland security, it is highly probable that the 2,600 public safety bomb technicians within the United States can easily be incorporated into the framework of the Federal Bureau of Investigation.

The issues facing America's public safety bomb squads in today's society are multifaceted, and have been shaped by a range of factors operating within their organizational structure; by changing world events, technological advances, political influences, and increased training demands. The recommendation of a federalized public safety bomb technician program, under the guidance and direct control of the FBI, will ensure that all members of the public safety bomb community have the same response capabilities, training opportunities, employment status, and equalized expertise. The long-term implications of enacting changes to the bomb technician program will result in a stronger response model, increased efficiency of the bomb technician, and a nation that is better capable of preventing acts of terrorism, based upon the modernization of one of its most specialized response units.

## **VI. SUMMARY AND CONCLUSION:**

A government's ultimate responsibility is in protecting its citizens. As the roots of global terrorism have embedded themselves into our nation's soil since September 11th, 2001, America's bomb squads are now being tasked to do far more in the areas of public safety and homeland security, while at the same time acting in their full-time capacity as police officers. This raises questions as to whether the original organizational framework and design of public safety bomb squads within the United States, which has not changed since its original conception over 40 years ago, is still adequate to meet the requirements, challenges, and threats of today's changing world.

The 2,613 civilian bomb technicians currently active in the United States are the only public safety employees within the entire criminal justice field that perform the render safe of improvised explosive devices. They are also the only specialized public safety units in the country that destroy pyrotechnics, deteriorated dynamite, home-made explosives, military ordnance, and explosive chemicals. They are also the only personnel in the public sector tasked with the "hands on" knowledge for dealing with incidents involving chemical, nuclear, and biological explosive devices. They are also the sole source within law enforcement that conduct first responder training on explosives, bomb threat assessment, and critical infrastructure security, based upon their firsthand, professional experience as bomb technicians. As a result of this critical expertise, they are the only public safety personnel in the entire nation that require FBI certification and accreditation to perform their duties.

With domestic terrorism attacks in the United States now outnumbering international acts at a rate of 7 to 1 (McGarrell et al., 2007), it is imperative that all bomb squads in the U.S. have the same training, knowledge competencies, and response capabilities to perform their duties in a

safe and efficient manner. In an inherently dangerous profession that requires specific physical, mental, and emotional capacities to perform, there exists a need to ensure that this valuable and limited resource within the criminal justice field is employed to maximize its performance outcomes. The 9/11 Commission Report (2004), which addressed many homeland security deficiencies resultant of the September 11<sup>th</sup> attacks, emphasized in detail the need for standardization of accountability in implementing counterterrorism measures with resulting concrete objectives. The report stated that:

We do not believe it is possible to defeat all terrorist attacks against Americans, every time and everywhere.....But the American people are entitled to expect their government to do its very best. They should expect that officials will have realistic objectives, clear guidance, and effective organization. They are entitled to see some standards for performance so they can judge, with the help of their elected representatives, whether these objectives are being met. (p. 364).

The review of literature has identified that the existing public safety bomb program is riddled with insufficient levels of expertise, inconsistencies in training and equipment standards, inadequate program sustainability, and no clear unity of command. As a result of these deficiencies, the current framework lacks a cohesive definition of effectiveness, which has produced scattered approaches, duplication of purpose, and gaps in regional assets and response capabilities. According to Guiora (2006), the current conception of homeland security within the United States remains fragmented; it exists simply as a group of preventive measures undertaken by a jurisdiction or an individual state in an attempt to reduce the probability that a terrorist attack will actually occur. Further concerns exist regarding the implications of dividing existing police resources between traditional crime control and counterterrorism efforts (Riley, et al.,

2005). By maintaining the current module or “status quo” of policing within the United States, where the majority of bomb technicians perform their functions in an on-call capacity, combined with the numerous responsibilities that they have been tasked with since 2001, will eventually result in individual fatigue, degradation of normal police services, and ultimately more crime (Fishman, 2005).

Since September 11th, the Federal Bureau of Investigation (FBI), the agency which oversees all training and accreditation of public safety bomb squads in the United States, has been facing agency-wide challenges related to terrorism. According to Guiora (2008), the FBI as an agency has struggled since 2001 to acquire and develop adequate staffing needs to meet the current and emerging work force required to strengthen the nation’s capacity to protect itself against terrorism. Based on the concluding findings of this research, a nationalized public safety bomb response program, under direct command and control of the FBI, would appear to be the next logical step in the development of U.S. civilian bomb squads, and would assist in alleviating one of the major dilemmas facing the nation’s leading law enforcement agency. According to Marks & Sun (2007), when such specialized units are created, they are normally attached to federal agencies, and function outside of police organizations, since their newfound presence creates little if any changes to the overall organizational mission or culture of a police department.

Based upon the historical growth of public safety bomb squads within the United States, as reflected in the literature review, this study has provided recommendations that will enhance the existing public safety bomb technician program in the United States. These recommendations, which have been based upon the principles of the casual theory, rational choice theory, and the organizational management theory, have been applied to correct the

current deficiencies identified within the existing public safety bomb program. The recommendation for organizational changes include the incorporation of all public safety bomb technicians into the federal government, forming one nationalized public safety bomb technician response program, under the guidance and direct oversight of the Federal Bureau of Investigation. The recommended practices cited within this research include the full-time status of all current and future public safety bomb technicians; with uniformity in training, equipment, and response capabilities, operationalized through a nationalized command system comparable to the existing systems found within the United Kingdom and Israel.

Throughout this essay, it was discovered and noted that limited public information is available regarding public safety bomb squads in the United States, due to the nature and sensitivity of the functions that they perform. Since there are only 2,613 certified bomb technicians in the United States, the academic data available for analysis and evaluation is predominantly generic in verbiage, or has been restricted by government sources. Since no primary data was collected for this study, and no secondary data was reviewed for comparable analysis, the findings in this seminar research are theoretical in basis, and are derived solely from an extensive review of empirical literature, applicable criminological theory, and the author's background as one of the 2,613 certified public safety bomb technician's currently serving in the United States. It is recommended that future studies on this topic utilize quantitative data from a variety of sources to provide a more detailed analysis of the current preposition, as well as to identify other potential areas of concern that may require additional investigation by academic, public, or peer enhanced expertise.

The resulting conclusions derived from this research have been in providing sustainable recommendations for the improved and efficient response capabilities of America's public safety

bomb squads, through the adaption of a nationalized program. The concluding implications, if implemented, will provide the United States with greater response capabilities to all incidents involving explosives, increased expertise and proficiency of all public safety bomb technicians, and most importantly, increase the overall safety and security of the American public. By identifying the current organizational deficiencies within the public safety bomb technician program, and in recommending a bomb technician program that is directed at nationalization, it is hoped that future consideration will be provided for restructuring one of the most highly trained units within the field of law enforcement. A public safety bomb technician program that enables all of its members to have the same equipment capabilities, training opportunities, and full-time employment status, will only strengthen the existing program, create a better bomb technician, reduce the potential for injury and harm to the technician and the public, and increase the efficiency and effectiveness of the profession.

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