

A CRITICAL NEEDS ASSESSMENT FOR A MASTER OF SCIENCE IN AVIATION
SECURITY MANAGEMENT: A QUALITATIVE INQUIRY OF AVIATION SECURITY
PROFESSIONALS

By

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I dedicate this work to the memory of my parents and brother, Edward and Autumn Loffi and Edward Loffi III. God holds you now and forever. Furthermore, I commit this research to the professional men and women who choose a career of public service to protect our great nation. A heart-felt thank you to all of the law enforcement and security professionals who seldom receive praise and commendation for what they do to keep us safe. Because of your willingness to provide an umbrella of security to your fellow citizens we live as a free nation to reap the bounty of your sacrifice.

To God goes the glory and praise. Soli Deo Gloria.

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Abstract: The world was changed by a significant event in aviation on a beach at Kitty Hawk, North Carolina on December 17, 1903. The first sustained flight of an aircraft under power was realized. The world looked on as another aviation event changed the world on the morning of September 11, 2001. The world witnessed asymmetrical warfare, as a relatively small number of committed individuals transformed four U.S. commercial airplanes into missiles and committed mass murder of innocent people in America's homeland. The purpose of this qualitative study was to conduct detailed personal interviews with aviation security professionals in the private and governmental sectors to determine knowledge demands and essential professional skill sets needed for employment in the aviation security environment. A purposeful sample of 10 aviation security management professionals was selected for interview guided by three research questions that were related to the following areas; knowledge demands and skill sets needed for employment in the aviation security environment, best teaching practices that need to be implemented by higher education faculty, and exploring a pragmatic approach to a Master of Science degree in Aviation Security. The data from the interviews was analyzed using Nvivo 10 software. Three major themes of data produced 14 subthemes which emerged from the interviews. The analysis of the data disclosed common themes associated with knowledge demands and skill sets, teaching methods, and pedagogy. This study discovered the critical components needed for a Master of Science degree in Aviation Security Management. America's institutions of higher learning can significantly transform tomorrow's aviation security managers and enable the professional work force to make air travel safer. However, educational course work, especially at the graduate level, in the field of aviation security is woefully inadequate across the United States. The results of this study increases the body of knowledge in academia and provides recommended course work and teaching methods needed to educate and prepare students for employment in the field of aviation security management.

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CHAPTER I

INTRODUCTION

On the morning of December 17, 1903, from a beach at Kitty Hawk, North Carolina, Orville and Wilbur Wright changed the world. Orville Wright successfully flew the first sustained controlled flight of an aircraft, under power, by a human. The distance was 120 feet, which lasted only 12 seconds (Bilstein, 2001). From this momentous occasion the importance of air transportation and the aviation industry evolved, and is now a conveyance on which the world depends.

Almost one hundred years later, on the morning of September 11, 2001, another significant aviation event changed the world forever. The horrific attack on America by a group of radical terrorists vividly emphasized the neglect of aviation's infrastructure and security systems in the United States. The world witnessed asymmetrical warfare, as a relatively small number of committed individuals transformed four U.S. commercial airplanes into missiles. Approximately 3,000 people were killed at a cost of \$40 billion in property and economic damage. This attack not only altered the skyline of a major U.S. city, but the political landscape of the world (Schneier, 2003).

Terrorism arrived on American soil, and the nation lost its apparent invulnerability. This method of attack had not been used before; that is, to commandeer multiple U.S. aircraft laden with jet fuel and fly them into buildings.

Historically, the concept of a suicidal mission utilizing an aircraft as a weapon was not a new one.

The attacks of September 11, 2001 astonished the world. Particularly Americans who, prior to September 11, 2001 felt secure on protected soil. America's homeland had not been attacked since Pearl Harbor in 1941. The terrorists involved in the attack were highly disciplined, well planned, and demonstrated the efficacy of a multilayered compartmentalized organization. America had intelligence that suggested an attack may be eminent using aircraft as a weapon. Our security systems in place at the time of September 11, 2001 were simply not prepared to handle this method of attack. Aviation security procedures were neglected or the authorities responsible for securing the air transportation system were not educated or informed as to how to deal with a terrorist organization determined to execute an attack of this nature.

Prior to September 11, 2001, one other hijacking instance should have been seen as a foreshadowing of what could occur using aircraft as a weapon. In 1994 an Air France flight in Algiers, Algeria was hijacked by an armed Islamic group. They had planned to fly the aircraft into the Eiffel Tower (Thomas, 2003). Fortunately the result was different as the plane sat on the ground in Marseilles; French commandos stormed the plane and ended the hijacking incident.

Security in any discipline is never simple and no security system can guarantee absolute safety. The aviation industry can never be made entirely safe from intentional and unwarranted attacks on the system; however, an established, efficient and effective security system is designed to lessen or mitigate the risks associated with these types of terrorism threats. With these facts in mind, our governmental authorities tasked with

securing our airlines and the aviation industry need to improve our security systems used to deter these types of attacks. Law enforcement and security professionals, as any other profession, have strived to better educate those persons who choose this discipline as a career.

Statement of the Problem

The U.S. aviation industry is a dynamic and layered structure. The vast extent of the aviation industry as a whole can be overwhelming. The many areas associated with aviation, such as military, general aviation, commercial, cargo, and maintenance to mention a few; clearly demonstrates the multi-faceted characteristics of the U.S. aviation system.

Each segment of the aviation industry contains strengths and weaknesses. Each has the potential for corruption and is vulnerable to intentional harmful attacks. The segment of aviation most affected today is the commercial transportation sector. This sector is comprised mostly of commercial passenger operations, cargo, and the physical facilities of operations associated with these activities; and are typically conducted on a daily basis by U.S. airlines.

America's institutions of higher learning can significantly contribute to the body of knowledge in methods of aviation security and enable the professional work force to make air travel safer. However, educational course work, especially at the graduate level, in the field of aviation security is woefully inadequate across the United States. Only a very small number of U.S. colleges and universities offer undergraduate programs, let alone graduate course work related to aviation security.

Furthermore, a pragmatic approach to aviation security coursework at the graduate level is non-existent. And yet, in a world of global unrest there exists a need to encompass learned knowledge and to exercise critical thinking skills in order to address the growing problems facing the traveling public and provide a more safe and secure aviation environment.

Purpose of the Study

The purpose of this qualitative study is to conduct detailed personal interviews with aviation security professionals in both the private and governmental sectors to determine knowledge demands and essential professional skill sets needed for employment in the aviation security environment.

Security measures always seem to be reactive and always one event behind; therefore, a more in depth research foci should be implemented to stay ahead of the game in anticipation of the next move by those intending to do harm to the flying public. Aviation security experts across a broad spectrum of disciplines can provide a rich source of data for graduate course work to meet the desired knowledge demands and skill sets sought by the aviation security industry.

Research Questions

The following research questions will be answered by this study.

1. What are the basic knowledge demands and essential professional skill sets needed for employment within the aviation security environment? Can higher education successfully fulfill these demands and skill sets?

2. What are the best teaching practices that need to be implemented by higher education faculty to ensure the student meets these employment requirements in the aviation security environment?
3. Would a pragmatic approach to a Master of Science degree in Aviation Security fulfill these employment requirements in the aviation security environment?

Assumptions

The constantly evolving state of the world and specifically in the field of aviation security requires certain assumptions, which was the foundation of this study. The first assumption is that a need exists for aviation security to protect the vital interests of the industry. The second assumption is that the aviation industry will continue to be a target for intentional and unwarranted attacks by entities intending to cause harm politically, economically, and psychologically. The last assumption is that the critical needs for a Master of Science degree in aviation security can be determined and applied to enhance the qualifications of a graduate student entering the aviation security field.

Limitations

The limitations of this study are as follows:

- The number of participants available in this qualitative research. According to Creswell (2003) it is acceptable for the participant sample size to be small and could range from one to several hundred.
- Personal bias on the part of the interviewee.
- Geographical limitations will necessitate conducting some of the interviews by video-conferencing or by telephone communication. The

participants involved in the study are located in various U.S. states and foreign countries and conducting all of the interviews in person would be financially and logistically impossible.

In consideration of the limitations of this qualitative research every effort will be made to balance subjectivity and objectivity to lend credibility to the research findings.

Definitions

AIT – is the acronym for Advanced Imaging Technology.

Air Marshal – is a federal law enforcement officer employed by the Transportation Security Administration who provides security onboard U.S. airlines.

Asymmetric Warfare – is warfare in which opposing groups or nations have unequal military resources, and the weaker opponent uses unconventional weapons and tactics, as terrorism, to exploit the vulnerabilities of the enemy.

Aviation Security – is a system or systems designed to prevent adverse consequences from the intentional and unwarranted actions of others in the field of aviation.

Behavioral Profiling – is observing and identifying suspicious behaviors, in the airport environment, which may indicate a terrorist plot or act.

BDO's – is the acronym for Behavioral Detection Officers.

CFR's – is the acronym for Code of Federal Regulations.

Department of Homeland Security (DHS) – is an executive department of the United States established by The Homeland Security Act of 2002. The primary mission of the DHS is to prevent terrorist attacks within the United States, reduce the vulnerability of

the United States to terrorism, and minimize the damage, and assist in the recovery from terrorist attacks that may occur within the United States.

Ethnic Profiling – is a method used to determine whether a person is considered likely to commit a particular crime based on factors such as ethnicity or race.

Explosive Detection System (EDS) – are systems used to detect the presence of explosives or explosive material. This is usually completed in two ways, either searching for explosives in a certain area or screening individual items or persons.

Hijacking – is to illegally seize (an aircraft, ship, or vehicle) while in transit and force it to go to a different destination or use it for one's own purposes.

ICAO – is the acronym for International Civil Aviation Organization.

Intelligence – is the capacity to assemble raw data, which can be applied and used as actionable information.

Law Enforcement Officer (LEO) – is a person who has been trained, certified, and sworn to protect the lives and property of a particular community in which he/she serves. Additionally, he/she performs the duties of enforcing criminal laws, detection of criminal activity, and investigating acts of criminal misconduct.

Passenger Misconduct – Interference by passengers before and/or during flight operations.

Passenger Screening – is the divestiture process of people and property in the airport environment by a prescribed standard to ensure no hazardous or dangerous substances and articles are brought onboard an aircraft.

Risks – takes into consideration the likelihood of the threat and the seriousness of a successful attack.

SARP – is the acronym for Standards and Recommended Practices.

Security Professional – is a person working in the field of security as an applied profession, and possessing a skill set through a body of knowledge germane to accepted security practices.

Security System – is a complex system of countermeasures designed to lessen or mitigate the threat and risks associated with intentional and willful attacks. The system interacts with itself, the protected assets, and its surrounding environment.

Security Theater – is a security countermeasure, which provides the feeling of security instead of providing real security.

Shin Bet – The internal security service for the nation of Israel.

SIDA – is the acronym for Security Identification Display Area.

SPOT – is the acronym for Screening of Passengers by Observation Techniques.

Terrorism – is the unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives.

Threat – is the potential way an asset may be attacked.

Transportation Security Administration (TSA) – was formed after September 11, 2001 to strengthen the security of the United States transportation systems. TSA assumed responsibility for security at the nation's airports, including the screening of passengers and baggage. In addition TSA works closely with stakeholders in aviation, rail transit, highway, maritime transportation, and pipeline sectors; and are partners in the law enforcement and intelligence communities.

Scope of the Study

The aviation and space industry is a dynamic scheme, which the world depends on daily. The vast extent of the industry as a whole can be overwhelming. Each segment has the potential for corruption and vulnerable to intentional attacks from those wishing to cause harm. The focus of this qualitative study is to research the area, which is most vulnerable to terrorist or criminal activity. Specifically, the segment of aviation associated with commercial passenger operations, cargo, and the physical facilities of operations associated with these activities. What has been learned from past criminal and terrorist activities can be exploited to determine the security needs and strategies needed to mitigate those risks. This information can be developed into practical and meaningful curricula for a Master of Science degree to educate and prepare the graduate student to enter the work force.

The segment of aviation largely affected by criminal and terrorist activities is primarily the commercial arena. Commercial aviation is comprised of passenger and cargo flights. These can be flights commonly conducted by transportation companies, such as American Airlines, Delta, or EL AL. Additionally, private charter flights for specialized purposes are a part of the commercial aspect. Service based aircraft for medical or agricultural needs are also considered. The general aviation segment is probably the largest of all consisting of thousands of privately owned aircraft of all sizes with thousands of airports and fixed base operators to support the general aviation community.

Each segment of the aviation industry is distinctive in its own right, and each has its own specific needs in regards to aviation security. The ways in which aviation security is deployed in America and around the world has been controversial. The need

exists to exercise critical thinking skills and address the growing problems facing the traveling public in order to provide a more secure environment. According to Schneier (2003) security schemes are developed based on the most recent occurrences. For example, when a particular weapon is prohibited from being carried aboard an aircraft one of a different yet effective style is employed by those intending harm, as evidenced by terrorists of September 11, 2001 utilizing box cutters, which at the time were lawfully allowed in carry-on luggage.

Terrorism and the types of attacks are timeless based on the motivations or objectives of the terrorist. These objectives do not change. What does change is the nature of the attacks, the tools of the attacks, and the methods of the attacks (Schneier, 2003).

The need for security in aviation is obvious; however, the aviation security industry has been criticized for not getting it right. The reasons for terrorism do not change – the tactics change. In order to achieve an agenda for a security problem, and create sensible security the issues should be approached as a social problem. Additionally, the agendas of all the players associated in the security industry need to be understood (Schneier, 2003).

The critical needs that will actually prepare a graduate student for the increasing demands on a security professional is essential in protecting America and the traveling public interests alike. A new paradigm needs to exist. The critical needs derived from this research can be implemented in academia to achieve that goal.

CHAPTER II

REVIEW OF THE LITERATURE

September 11, 2001, brought the reality of terrorism to the United States homeland. The horrific acts Americans were accustomed to watching on television taking place in distant lands were now on U.S. soil. The medium of that event came in the form of four United States airlines being transformed into weapons of mass destruction by a determined group of radical terrorists. Protecting the flying public and the homeland of the United States is an imperative of our government. Educating and preparing students who seek employment in the aviation security industry is an imperative of U.S. universities and colleges. Few universities and colleges in America offer degree programs in aviation security. Moreover, graduate degrees dedicated to aviation security are even rarer. The reason for this qualitative research is to emphasize to the reader the importance of identifying the critical needs, which must be addressed for a Master of Science degree in aviation security. Literature pertaining to this discipline is scarce. According to Marshall and Rossman (2011) when conducting research in a new territory previous literature may be inadequate for constructing frameworks to guide the study. In order to determine the critical needs for a Master of Science degree in aviation security the researcher of this study purposely selected aviation security experts to identify these needs. In order to accomplish the framework for this qualitative study a review of the literature is necessary. The literature review contains six sections that focus on major categories associated with aviation security.

The sections for the review of the literature are:

1. An overview of the aviation industry and the economic impact on the world.
2. Terrorism and crimes in aviation.
3. The development of aviation security practices, and are they effective?
4. The role of government in aviation security.
5. The legal environment in aviation security.
6. The Current landscape of collegiate aviation security programs.

Overview of the Aviation Industry

Since the early beginnings of “controllable-powered” flight by the Wright brothers on a beach in Kitty Hawk, North Carolina on December 17, 1903 to Neil Armstrong’s Lunar module separating from the command module Columbia and his walk on the moon on July 20, 1969 air transportation has had a significant impact on our daily lives (Bilstein, 2001). Aviation has brought to man the ability to traverse over land and sea at speeds not imagined in the days of the Wright brothers. Aviation is a very effective mode of transportation, which brings financial and social stability to the world (Price & Forrest, 2009).

However, aviation has also brought disaster and crime to the forefront. The technology enjoyed by the advent of the airplane seems to be a two-edged sword. The physicist C.P. Snow says about technology, “. . . is a queer thing. It brings you great gifts with one hand, and it stabs you in the back with the other” (Schneier, 2003, p. 101). Crime and terrorism seemingly has worked in the background of aviation almost since the inception of the industry. Civil aviation has historically been a productive target for terrorists and criminals. Airports and aircraft have been a convenient medium for

criminal activity. This has been evidenced by terrorists typically gaining geopolitical attention to their cause by blowing up or crashing aircraft to drug smugglers bringing illegal narcotics into the United States at various key airports (Price & Forrest, 2009).

The aviation industry is a complex system of systems, but its infrastructure primarily consists of aircraft operations, airports, and supporting agencies. Many types of aircraft are used worldwide in a variety of operations. These are commonly categorized as commercial, private sector or general aviation, and military entities. Airports are similarly classified as commercial, general, privately owned, or military (Price & Forrest, 2009).

Before the start of World War 1 Ferdinand Graf Von Zeppelin developed the world's first commercial means of air passenger transportation. More than 34,000 passengers were transported by rigid airships (Millbrooke, 2006). Later in the century Europe started government subsidies of air transportation to known air carriers such as British Airways, Air France, and the Dutch airlines KLM. United States air carriers progressed more slowly, and more passengers were carried by air than rail service as measured by passenger miles in 1958. (Sweet, 2009). Air cargo is vitally important as it can haul goods at faster speeds than by rail or boat without multiple stages of transfers, albeit the volume of air cargo is small when compared to the later.

The Development of the Aviation Industry

The transatlantic flight of Charles A. Lindbergh in 1927 demonstrated the practical means of air transportation, and it was possible to cross the Atlantic by air. After Lindbergh's flight aviation saw improvements develop in the commercial aircraft industry. Prior to Lindbergh's accomplishment World War 1 clearly demonstrated the

need for aircraft and defined aviation as an industry. When the United States entered the war in 1917 the French government requested the U.S. to furnish 4,500 aircraft for service in the war. To meet the needs of the U.S. and the French the Joint Army and Navy Technical Aircraft Board directed the completion of 8,075 training planes and 12,400 service planes. In 12 months 20,475 aircraft and 41,810 power plants were planned to be manufactured. This is remarkable when considering in the years before only 411 total aircraft were manufactured by an industry valued at less than a million dollars, and by 1919 a total of \$14 million in aircraft and component parts had been manufactured (Bilstein, 2001).

After the war the U.S. Post Office authorized by the Air Mail act awarded airmail routes to private contractors, and the practice continues today. This also causes concerns for aviation security personnel in the inspection of sealed airmail bags. Additionally, the Air Commerce Act in 1926 further encouraged the aviation industry by improving technology in equipment. As a result the aviation industry expanded. Larger aircraft were developed and used for passenger transport. Aircraft were being used in diverse ways such as, crop dusting, private and corporate business, and photography to mention a few (Bilstein, 2001).

In 1938 the Civil Aeronautics Act stimulated the birth of the airline industry as we know it today. The act brought about the Civil Aeronautics Authority, which in 1940 was divided into the Civil Aeronautics Administration (CAA) and the Civil Aeronautics Board (CAB), and the responsibilities of the CAB included developing established routes, airfares, and safety standards. The intent of Congress was to develop a policy to promote the aviation industry to transport passengers and promote safety practices.

World War II brought additional advances to aviation as the technology of military aircraft was being employed in civil aircraft. The civil airlines soon expanded trunk lines, local lines were increased, and civil air carriers started routes specifically for air cargo (Sweet, 2009). The advancements of aviation technology during the war years were truly remarkable. The aviation technology was also about to advance when the U.S. gathered over 100 German scientist fleeing from Germany in what was called Operation Paperclip. In this operation Wernher von Braun and his associates brought to the U.S. a culture of the science of rocketry, which proved in later years to be a distinct advantage for America in the cold war with Russia (Bilstein, 2001).

The development of aviation-related technology is a constant. Aircraft capacities, speed, and range are ever increasing. The technologies needed to support these aircraft must stay in lock-step with their development. As the industry grew in sheer numbers a system was needed to control the traffic. The air traffic control system is a central component to the aviation industry and is an essential part of all major airports of the world. As the jet age of the late 1950's was burgeoning an improvement in radar, communications, and navigation systems was imperative. Supersonic jets reached speeds of 1400 miles per hour as aviation technology improved. The National Aeronautic and Space Administration (NASA) is currently developing even faster aircraft. The infrastructure of the aviation industry must keep up with these improvements (Sweet, 2009). As technology increases the industry must focus on the future demands these improvements place on aviation security.

The deregulation of the airlines brought about by the Airline Deregulation Act of 1978 made for widespread changes in the way the airlines conducted business and

planned for future growth. The act allowed the airlines to establish their own routes and set exclusive fares, and market entry for new start-up airlines. The act, however, did not remove the regulatory powers of the Federal Aviation Administration (FAA) over all aspects of air safety. The airlines realized financial difficulties in the 1980's and the consolidation of many air carriers was realized. Deregulation's benefits to the consumers is questionable by the traveling public. There have been many claims of price-fixing among the major airlines to drive competitive airlines out of business (Sweet, 2009).

Despite skepticism concerning deregulation airfares have been lower and service provided for the traveling public has improved. Dramatically lower fares and the expansion of service have benefited millions of Americans (Thomas, et al, 2008). Historically, the airline industry has experienced both substantial profits and immense losses.

During the 1990's the airline industry realized setbacks, such as the high cost of fuel, a global recession, and Saddam Hussein's army invading Kuwait. All American air carriers reported financial losses with the exception of Southwest. This decade also saw many airlines go out of business. The three most recognizable were Braniff, Eastern, and Pan Am; additionally, Trans World Airlines, Northwest Airlines, and Continental reorganized under bankruptcy. Aside from this turmoil the industry did realize a period of profits for most air carriers in the early 1990's. The industry was able to recover without federal intervention (Thomas, et al, 2008).

The turn of the century ushered in a devastating time for the airline industry. The official start of the millennium in 2001 was a year now indelibly etched in history. The

events of September 11, 2001, devastated the airline industry. It is believed the aviation industry was losing or experiencing direct losses of \$330 million per day. This figure represents the airline industry alone and does not include trades that depend on the airline industry (Price & Forrest, 2009).

The controversial Air Transportation Security and Stabilization Act (ATSSA) was passed 11 days after September 11, 2001. The ATSSA earmarked \$15 billion for the aviation industry. The airlines were reimbursed for increased insurance premiums and it limited the amount, which could be awarded for compensation to the victims of September 11, 2001 to \$1.6 million each, but only if they waived their right to sue. Albeit, the act was designed specifically for the attacks of September 11, 2001 it provides awareness for how future policies and procedures may be promulgated.

DRI-WEFA, an economic information company, reported in 2000 the impact of civil aviation in the United States exceeded \$900 billion and provided 11 million jobs. These figures correspond to 9% of U.S. gross domestic product. According to DRI-WEFA the commercial airlines transported 600-800 million passengers in 2002 and cargo shipments were approximately 20 billion tons. Additionally, more than 160 million passengers each year flew on general aviation aircraft in the United States.

One important aspect of air cargo is the ability to deliver just-in-time goods. This enables businesses to shorten production times and reduce inventory, which ultimately saves the company money. The following quote by DRI-WEFA, Inc. (2002) is a summary of aviation's influence on the world economy:

Aviation is the primary means for economic growth with a significant influence on the quality of life of populations around the globe. Aviation facilitates the world

economy and promotes the international exchange of people, products, investments, and ideas. Indeed, to a very large extent, civil aviation has enabled small community and rural populations to enter the mainstream of global commerce by linking such communities with worldwide population, manufacturing, and cultural centers (as cited in Price and Forest, 2009, p. 6).

The airline industry is of great importance not only to the economy, but to our national security. With few exceptions economically the industry has been a money loser. Sir Adam Thomson said this about the industry, “A recession is when you have to tighten your belt; depression is when you have no belt to tighten, and when you’ve lost your trousers-you’re in the airline business” (as cited in Thomas, 2011, p. 17).

The development of the aviation industry and the importance of its existence make it an indispensable commodity in our global society. Since its beginning the industry has relied largely on government subsidies for its very life. This financial dependency is not exclusively applied to U.S. air carriers. The majority of airlines around the world depend on the generosity of their respective governments to keep them in business. Commercial and general aviation support major sectors of the economy. The industry depends on the government for economic assistance and the government needs the service provided by the aviation industry (Thomas, 2011).

Terrorism and Crimes in Aviation

An examination of terrorism and their associated assaults reveals they are timeless. The motivations and inspiration are timeless. Terrorist acts change only in their nature, tools, methods, and the desired result (Schneier, 2003). The nature of criminal exploits on aviation has ranged from narcotics smuggling, cargo theft,

bombings, assaulting airports, and hijacking commercial flights. The threats on aviation have been essentially the same since their inception (Price & Forrest, 2009). Typically when the term aviation security is mentioned in contemporary times it envisages the commercial hijacking of an airliner. However, the concept of aviation security goes well beyond this one particular aspect of the problem. The violent threats against aviation have been recorded since nearly the foundation of commercial flight.

Literally thousands of attacks and crimes have been committed against aviation related targets in the last half-century. In early reports of hijackings most of these were done to escape communist countries in Europe and Cuba or some other reason to escape an undesired government. More recently these hijackings have become synonymous with acts of terrorism. The word terrorism has become commonly used in the news media. The word terrorism has its beginnings from the Latin *terrere*, “to cause to tremble” (Thomas, et al, 2008, Vol. 1, p. 98).

No single or universally accepted definition of terrorism exists. The mainstream media defines terrorism as, “acts of politically motivated violence perpetrated against noncombatant targets by subnational groups or clandestine agents” (Thomas, et al, 2008, Vol. 1, p. 98). The Federal Bureau of Investigation’s official definition in the Code of Federal Regulations, 28 C.F.R. Section 0.85 is, “the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives” (fbi.gov, n.d. “Definitions” para. 7).

Scholarly research has noted that terrorists’ acts are a part of a broader strategy and not necessarily a random act of violence. Historical research of political violence

and the associated acts of terror were found to have been committed by individuals and/or groups of individuals for what is perceived as a practical reason, and that is to bring about change in a social or political environment. The threat of terrorism has developed from early incidents in isolated parts of the world to becoming a true global phenomenon (Thomas, et al, 2008).

Early terrorists did not have the logistical ability to perpetrate their crimes in locales from one geographical community to another. In a true definition of irony it is the aviation industry, which provided this ability. Aircraft have been the target of hijackings, in-flight bombings, surface-to-air missile attacks, and the use of the aircraft itself as a weapon of mass destruction (Thomas, et al, 2008).

The earliest recorded act of hijacking an aircraft was in 1930 with the takeover of a Peruvian airplane. These episodes of air piracy spread over the decades reaching a crescendo in the late 1960's when 19 of 22 hijackings were ordered to fly to Cuba. By the end of the decade approximately 1,360 Americans had been side tracked to Cuba as a result of air piracy (Sweet, 2009). One seminal event of particular notoriety occurred in September of 1970 when a terrorist group known as the Popular Front for the Liberation of Palestine (PFLP) hijacked a TWA flight from Frankfurt, Germany to New York City. On the same day another group of terrorists from the PFLP hijacked a SwissAir DC-8 departing Zurich, and a third aircraft an El Al flight from Tel Aviv to Amsterdam was attacked, but the EL AL event was not successful. The captain refused to open the cockpit door and forced the airplane into a sudden negative G maneuver. One hijacker was killed by an Israeli Sky Marshal, and the other terrorist, a Palestinian female was arrested and taken to London.

A Pan American 747 was seized by another group after departing Amsterdam and was not part of the original plot. All three planes were diverted to the Jordan desert to an airfield known as Dawson's Field. Dawson's Field was actually a hard area of desert specifically picked by the terrorists for its geographical location and its ability to sustain the weight of heavy aircraft. News reports described the individuals in the PFLP as guerillas or freedom fighters, and not terrorists. Approximately 500 passengers and crew endured six days of hardship in the desert confined inside the aircraft with little food, water, or sanitary conditions. Ultimately the three aircraft were blown up by the terrorists after a negotiated release of the hostages by authorities.

None of the terrorists were brought to trial and the female hijacker who had earlier been arrested in London was released by British authorities as part of the bargaining effort (Sweet, 2009). This act by the PFLP was described by the media as America's wake-up call to global terrorism. This event brought to the forefront the popularity of attacking aircraft as a means to gain publicity for a cause, which compared to no other acts for worldwide attention. According to Schneier (2003) "the primary aim of a terrorist is to make a statement; news of the attack is more important than the attack itself" (p. 70).

The U.S. response under President Nixon was to place armed military personnel on U.S. commercial flights. This was discontinued chiefly because of airlines objections and costs (Sweet, 2009). The Nixon administration also urged various governmental entities, such as the Department of Defense, Department of Transportation, and the FBI to develop electronic screening equipment, research and development measures in access control and explosive detection (Sweet, 2009).

Much was debated about how to deal with this new threat. A public survey was initiated for suggestions to be forwarded to the appropriate authorities as a means of brain storming the problem by the public, and by doing so the politicians would garner public approval in the process. Many bizarre solutions came to light. The following are a few examples: Place poison hypodermic needles in each airline seat so in the event of a hijacking the captain could activate the needle and thereby subdue the would be offender, another suggestion was purposed that all passengers would strip naked and be required to wear a flight suit to ensure an accurate screening for weapons, and lastly all passengers would be issued a firearm and this would ostensibly empower the passengers to take care of whatever situation developed. Obviously none of these suggestions were implemented, but reveals the desperate feeling of inadequacies by the authorities and the American public (Sweet, 2009).

The enormity of securing the traveling public from unwarranted and intentional attacks is daunting. The appeal of aircraft and airports as a means for publicity and achieving a desired political or social goal is alluring to terrorist groups and states that sponsor terrorism. The most common forms of aviation attacks are hijackings, in-flight bombings, surface-to-air missiles, and using the aircraft as a weapon of mass destruction (Thomas, et al, 2008). Airport terminals have also proved to be a popular target for terrorists as demonstrated at the Domodedovo airport in Moscow in January 2011, which resulted in the deaths of 35 persons, and 100 others were injured (cnn.com, 2011, "Why Terrorists Attack Airports," para. 1).

The following is a chronological list of significant attacks and crimes against civil aviation. The list is not all inclusive, but exemplifies the magnitude of the threat. The list

comprises four periods of time beginning in 1931, and ending in the post September 11, 2001 era:

- February 21, 1931, Arequipa, Peru, first recorded hijacking by armed revolutionaries. The pilot refused their demands and the use of his plane for several days. The incident ended when the revolutionaries convinced the pilot to fly one of their members to Lima, Peru (Price & Forrest, 2009).
- October 10, 1933, first airline bombing. United Air Lines Boeing 247 destroyed by a nitroglycerin-based explosive device believed to have been placed in the luggage compartment. All on board were killed, including the first flight attendant to be killed while on duty (Price & Forrest, 2009).
- June 30, 1948, an anti-communist group hijacked a TABSCO Ju-53 aircraft after taking off from Varna Airport in Bulgaria. The plane was ordered to fly to Istanbul. The pilot was killed in an ensuing struggle (Aviation Safety Network, n.d.).
- July 17, 1948, a Cathay Pacific Airlines PBY-5A Catalina was hijacked while flying from Macau to China. Control of the aircraft was lost as a result of a struggle in the cockpit causing the aircraft to crash into the ocean. The control of the aircraft was believed to be the result of an armed passenger incapacitating the pilot (Aviation Safety Network, n.d.).
- July 6, 1954, an American Airlines Douglas DC-9 bound for St. Louis, Missouri from Cleveland, Ohio was attacked by a 15-year old boy with an unloaded pistol. The boy forced his way into the cockpit and confronted the captain and

demanding the flight be diverted. The captain produced his own pistol and fatally wounded the assailant (Aviation Safety Network, n.d.).

- 1960 – 1973 was an extremely active period of hijackings resulting in more than 240 hijackings or attempted hijackings mostly occurring on flights to or from Cuba. Congress passed the Anti-hijacking Act of 1974, which mandated passenger and carry-on luggage screening (Price & Forrest, 2009).
- November 21, 1971, the infamous hijacker known only as D.B. Cooper hijacked a Boeing 727 after departing Portland, Oregon. Cooper parachuted from the rear of the aircraft with \$200 thousand in U.S. currency. He was never found. This crime resulted in Boeing installing the “Cooper Vane” which prevented the rear door and stairs on 727’s from opening during flight (Price & Forrest, 2009).
- May 31, 1972, Lod Airport in Tel Aviv, Israel, was attacked by three passengers who had disembarked from an Air France flight from Paris. The three terrorists, members of the Army of the Red Star, retrieved their luggage containing weapons and grenades. They randomly fired on persons in the airport and threw the grenades in the terminal killing 26 people and wounding 78 others (Sweet, 2009).
- July 3, 1976, Entebbe, Uganda, Israeli commandos rescued 103 Israeli hostages from a hijacked plane by Palestinian and German terrorists. In addition to freeing the hostages 11 Soviet MIG fighter aircraft and most of the airport were destroyed. Only one Israeli military fatality resulted. The victim was Colonel Jonathan Netanyahu, the brother of Benjamin Netanyahu, who was shot in the back by a terrorist (Sweet, 2009).

- June 24, 1985, TWA flight 847 was hijacked by two terrorists and a third terrorist was not allowed to board before it took off. A U.S. Navy diver was tortured and executed on the aircraft and his body dumped on the tarmac. After several days of negotiations the hostages were released at the Beirut airport and the terrorists escaped and were not captured. The third terrorist had been released as a result of the negotiations. Only one terrorist was ever prosecuted for these crimes two years later (A&E Television Networks, 1985; see also Sweet, 2009).
- December 21, 1988, Pan American Flight 103 was destroyed by a bomb over Lockerbie, Scotland. All 243 passengers and crew were killed; additionally, 11 more persons were killed on the ground from falling debris. An intensive investigation revealed Libya was responsible, which resulted in the prosecution of Abdal-Basit Al-Megrahi (Sweet, 2009).
- November 1991, An Islamic fundamentalist group hijacking/suicide attempt was foiled by Spanish authorities. Middle East peace talks were being held in Madrid and world leaders were assembled. Two aircraft were to be hijacked. One was to fly into the Spanish Royal palace and kill U.S. President George Bush. The second was to fly into a hotel killing the Soviet delegation. This act is a recognizable foreshadowing of September 11, 2001 almost ten years prior (Thomas, et al, 2008).
- September, 11, 2001, four U.S. airlines were purposely hijacked by al' Qaeda terrorists and used as weapons of mass destruction. The World Trade Center was destroyed by two aircraft; a portion of the Pentagon destroyed by a third

aircraft, and the fourth was crashed into a field in Pennsylvania. An estimated 3,000 persons were killed and billions in property damage resulted from this attack. The American aviation industry for the first time in history was shut down and all aircraft were grounded (Sweet, 2009).

- December 21, 2001, Richard Reid known as the shoe bomber attempted to ignite a shoe bomb on a flight from Paris to Miami, Florida. Reid had been detained in Paris the day before trying to board the same flight. An observant gate attendant thought Reid was suspicious (Price & Forrest, 2009).
- December 25, 2009, Umar Farouk Abdulmutallab attempted to detonate an explosive hidden in his underwear while on-board a Delta flight from Amsterdam to Detroit, Michigan. Al-Qaeda in the Arabian Peninsula (AQAP) claimed responsibility. He was restrained by passengers after the bomb failed to detonate. Abdulmutallab was prosecuted and convicted of his crimes (Associated Press, 2012)

The above list is not exhaustive, but it demonstrates the vulnerability and seriousness of those wishing to do harm to the flying public and the civil aviation sector in particular. What is especially troublesome in these examples is how ineffective aviation security efforts have been in deterring these attacks. In the example of the wave of Cuban hijackings, which resulted in Congress passing the Anti-Hijacking Act of 1974, approximately 60 hijacking or attempted hijackings occurred from 1974 until 1989 (Price & Forrest, 2009). The attempted hijacking of two airliners in Spain in 1991 was thwarted by intelligence efforts. Moreover, Richard Reid was not prevented from attempting to carry out his attack by any security measures extant even after being

detained for a full day. Neither was Abdul Farouk Abdulmutallab's failed underwear bomb thwarted by existing countermeasures in aviation security practices. These attacks were not successful because of good actionable intelligence, it was the terrorists' lack of sophistication, and the passengers' willingness to become involved in stopping and detaining the culprits.

The Development of Aviation Security Practices

In order to provide effective aviation security a review of the literature on the methodology in evaluating the risks and threats associated with the attacks on the aviation industry must be done.

The long history of aviation terrorism is evidenced by all of the documented occurrences since the first hijacking in 1931. The most successful and devastating attack was perpetrated by al Qaeda on September 11, 2001. The aviation industry has been involved with this phenomenon by groups seeking specific political goals be they demanding change or release of political prisoners, and some groups with seemingly no clear objectives. Obviously aviation will remain in the forefront as a viable target for terrorists and it will not soon go away. Aviation has been used for a host of criminal purposes from drug smuggling to people smuggling, and terrorism.

Risk Based Approach

A risk based approach is a thorough process of analysis, decision-making, and employing the countermeasures developed in the security system. All of these areas must be reevaluated frequently as the tactics of the criminals and terrorists attacking the aviation industry continuously evolve.

Schneier (2003) suggests a risk-based approach to solve the problem in implementing effective security practices. Schneier's notion of a risk-based approach is also supported by Thomas (2003) and Thomas, et al., (2008). Both of these authors suggested a multi-step approach to the analysis of a security system. Schneier's process recommends the following questions be thoroughly addressed for efficacy in a security system:

1. What assets are you trying to protect?
2. What are the risks to these assets?
3. How well does the security solution mitigate those risks?
4. What other risks does the security solution cause?
5. What costs and trade-offs does the security solution impose? (Schneier, 2003, pp. 14-15; Thomas, p. 137; Thomas, et al, Vol. 1, 2008, p. 10)

Schneier points out how simplistic the first question may appear but reminds the reader how seldom this first question is asked. This enables the security manager to evaluate the scope of the problem, and he emphasizes the differences in protecting an airplane, an airport, commercial aviation, the transportation system, and a nation from the intentional and unwarranted attacks are all a separate and different security problem, and each requires its own examination of the question.

Question two addresses the actual need for a security system. The answer will disclose what is being protected, what will be the consequences of a successful attack, who wants to attack, how the system may be attacked, and the reason for the attack.

Question three asks if the system does not solve the problem how effective can it be. The concept is asking to test how well the security system works, but also involves

evaluating its efficacy as it pertains to its surrounding environment, its operation, and failures.

Question four deals with what Schneier refers to as unintended consequences or emerging properties. This is the concept of a ripple effect, and how each solution usually causes new security problems. The purpose is to ensure the new problems are not larger than the first problem.

Question five refers to the principal that all security involves trade-offs. Usually the trade-off is money. The trade-offs may be a matter of inconvenience, the loss of basic freedoms, and privacy concerns. It is extremely important to understand the trade-offs before implementing a security plan.

Thomas (2003) describes measures, which can lead to reducing risk. These measures closely parallel Schneier in their content as they ask what security problems the measure answers, how well does it resolve the problem, what other problems may emerge as a result of the measure, the costs involved, and ensuring the costs are worth the measure (P.137).

Thomas, et al (2008) describes a similar risk-based approach in that two essential components must be considered. A security manager must consider “the probability of a given vulnerability being exploited and the consequences of that exploitation” (P.10). He further points out three additional considerations in evaluating a security approach, which are “the intentions of a given group, its ability to act on these intentions, and the operational environment involved” (p.10). Without these basic steps the primary focus will always be on the potential threat and never concentrating on the actual threat and realizing the risks. Furthermore, an emphasis needs to be placed on

those working within the system instead of the users of the system. This concept is also in agreement with Schneier who says insiders are a dangerous and sinister enemy. Insiders have access to information an outsider can only hope for. Schneier (2003) goes on to say, "The most common security mistake of all is to expend considerable effort combating outsiders while ignoring the insider threat" (p.62).

An important consideration both Schneier and Thomas emphasize is 100% security is not possible. No security system can guarantee certainty of its efficacy. Security is about reducing or mitigating the risk of a successful attack (Schneier, 2003; Thomas 2003). According to Thomas (2003) when a security system is under consideration a basic risk analysis must evaluate three areas. The potential threats must be identified. Threats are potential ways a system can be attacked. The areas of vulnerability must be evaluated, and employing the discerning measures to mitigate the risks. According to Schneier (2003) risks will account for both the threat and the consequences of a successful attack.

Threats to Various Components of the aviation Industry

In consideration of the risk based approach the question arises as to what are the threats to the aviation industry. This is a herculean task given the enormity and complexity of the aviation system. Typically commercial aviation has two parts. The landside operations are one component and the airside operations are the second component. The landside component is one of the most vulnerable, but has not been exploited to any great extent by terrorists. Only four documented attacks of notoriety have taken place. The Red Army attack in Israel in 1972, the Abu Nidal attack in Rome in 1985, the Colombo Airport was attacked by the Tamil Tigers in 2001, and the attack

on the Glasgow Airport in 2007 (Thomas, et al, 2008). Taking into consideration the apparent lack of concern by terrorist organizations for innocent casualties it is surprising more attacks have not been employed against airport terminal areas, which is considered a soft target by security experts. What has been observed most frequently on the landside component is criminal activity. According to Los Angeles World Airports (2012) these activities include, but are not limited to, drug smuggling, human trafficking, theft, and assaults not related to terrorism. Areas considered landside would also include hotels on airport property, which in this environment; travelers are victims of identity theft, robbery, auto burglary, and auto theft.

Access control is considered critical to aviation security. This includes control to secure areas within the airport and the Airport Operations Area (AOA) typically identified by fencing, gates, and other access points to the AOA. No evidence exists in the literature to suggest these areas are being exploited by terrorists, but they do offer an effective way of gaining access to aircraft parked on the tarmac at gate areas. Many larger airports offer high-tech solutions to secure the AOA and have spent millions of dollars on equipment. However, despite the sophistication of this equipment J.F.K Airport spent \$100 million on their security system to protect the AOA. In August of 2012 a stranded jet skier in Jamaica Bay swam ashore and penetrated the security system undetected, all the while wearing a brightly colored life jacket. He walked across two active runways, across the tarmac, and entered the airport where he was eventually spotted by an airline employee and arrested for trespassing (Reuters, 2012, "JFK's \$100 mln system breached").

The relative ease by which a stranded jet skier simply gained access to one of the most technically advanced airports illustrates the importance of employing vigilant and ethical people to work within the industry. If the people working in the industry are inept or have been corrupted the technical advances deployed at airports are of little use (Thomas, et al, 2008).

It is important to consider what constitutes the landside and airside operations of the aviation industry. These two areas comprise four segments of the industry. The foremost of these is the civil passenger sector, which entails domestic and international flights. The threat to this area remains high. The second segment is military and government aviation operations. Military aircraft are a coveted target by terrorists in hostile areas where these aircraft are being operated. Equally important to terrorists are aircraft transporting important political figures in and out of these embattled zones. A third area is cargo transportation. Little has been done to adequately secure the cargo sector of aviation. A 2012 study by the European Parliament Directorate General for Internal Policies concluded in its summary that, “the current air cargo and mail security framework is not satisfactory” (p.9). Furthermore, it addressed four areas of inadequacy in the cargo sector. These include:

- Biased towards addressing threats external to the aviation sector and fixated on passengers rather than cargo.
- The current security process is too orientated on shifting responsibility and liability to carriers, ground handlers and other such entities than actually implementing security practices, which are seen mostly as bureaucracy.

- Important differences exist in interpreting and implementing EU security procedures in certain member states.
- Noted as critical was security procedures tended to be reactive and implemented on a case-by-case basis. No overarching strategy for cargo and airmail security (European Parliament Directorate General Study, n.d.).

The fourth area is general aviation, which includes private aircraft, corporate, medical, and agricultural. These areas within the general aviation sector have not been exploited by terrorists. Recently after September 11, 2001, some concern existed for the use of crop dusters by intelligence collected on al Qaeda (Thomas, et al, 2008). Pilots of crop dusters came under close examination of their facilities and equipment by law enforcement, and ultimately it was determined no viable threat was evidenced.

Political Threat Phases

The political threat can be divided into three segments. According to Thomas, et al., (2008) the first phase was 1948 until 1968. Airline hijackings were mostly perpetrated for escape from prosecution in foreign countries. People were fleeing their home land to avoid persecution and aircraft were a fast and effective means of achieving that goal. An example of this occurred in 1948 when the crew and most of the 26 passengers of a Ceskoslovenske Aerolinie (CSA) domestic flight from Prague to Bratislava diverted the plane to the American zone in Munich. This phase included the period of the Cuban revolution when Fidel Castro was attempting to overthrow Fulgencio Batista. This period saw an unprecedented volume of hijackings from Miami to Cuba. This era ushered in for the first time enhanced aviation security measures in

the United States. A police presence at airports, passenger screening, and profiling efforts were presented as a result of these attacks on aviation.

The second phase was from 1969 until 1994. The incidents of hijacking aircraft were politically or cause motivated, such as the PFLP's attack in 1970. This incident brought about the age of modern terrorism and taught those responsible for these attacks the importance of news media coverage to bring their cause to the attention of the world. Between 1969 and 2004 approximately 1,000 hijackings occurred. Authorities estimated 85% of these were for political purposes (Thomas, et al, 2008). This era saw the development and implementation of X-Ray machines, which caused terrorists to evolve their tactics.

The third phase from 1994 until present is the use of aircraft as weapons of mass destruction as witnessed on September 11, 2001. This evolutionary tactic came about as a result of the increase in aviation security. It became increasingly more difficult to smuggle weapons or explosives on board commercial aircraft. Many of the attacks were in response to actions or sanctions on state sponsored terrorism. The Pan Am 103 bombing occurred after President Ronald Reagan ordered the U.S. military to bomb Muammar Qaddafi's Libyan forces in what was named, "Operation El Dorado Canyon" in 1986 (About.com, n.d.).

As emphasized by Schneier (2003) news of an event is more important than the attack itself is also supported in Thomas, et al., (2008) in the Pan Am event, ". . . because the aircraft exploded over land, rather than over the ocean as planned, it provided gruesome images that enraged the public . . . the propaganda value of an attack is more important than the lives lost" (Vol. 1, p.15). Few will forget the news

images of the Pan Am jumbo jet 747's nose lying in a crumbled heap near Lockerbie, Scotland. This was an indelible image of terrorism in the eyes of the public.

As the terrorists' tactics evolved the methods of aviation security did not and these security procedures lagged behind. Clearly the motivations for current or third phase attacks have been centered on religion. The religious ideology of al Qaeda, Hezbollah, and the Algerian group GIA, to mention a few have been to impose radical religious beliefs against the non-believers. Their zealous belief to convert the infidels and eradicate the Jewish nation of Israel has been highlighted in news media reports of on-going attacks around the globe.

Al-Qaeda was not known to American authorities in the early 1990's. The first arrest of an al-Qaeda member was El Sayyid Nossair. Nossair assassinated a Jewish Rabbi in New York City in 1992. Authorities only learned of al-Qaeda's existence after Nossair's arrest. Suspects in the first World Trade Center bombing were later linked to Nossair and the architect of the first World Trade Center bombing, Ramzi Yousef (Clarke, 2004). Al-Qaeda since these events has been known for their well-planned, well-executed, and spectacular attacks.

Yousef was also linked to an al-Qaeda plot to bomb as many as 12 American owned airlines over the Pacific Ocean in a plan named "Operation Bojinka" in a 48-hour period. Khalid Sheik Mohamed actually designed the Bojinka plan as well as the September 11, 2001 attack and was Yousef's uncle. This plan was foiled as a result of a fire in Yousef's apartment in the Philippines and the integrity and the dedication of a Philippine female police commander who resisted being bribed and not arrest Yousef (Thomas, et al., 2008).

The policy makers and authorities responsible for aviation security were slow to recognize the religious shift of motivation in phase three. The willingness to commit suicide in a planned attack was not on the radar screen of policy makers. Training and management of aviation security personnel was out-of-date. A complete overhaul of existing aviation security practices was needed. As cited in Thomas, et al., (2008)

Sadly, no one was aware of the requirements. The existing training infrastructure had grown stale. This is in part due to the reliance either on retired security professionals who had aging anecdotes but little teaching ability or on academics who may have been able to teach but were unable to translate the material into useful information for security professionals at any management level. At the time when management and academia needed to be working together, they failed to develop the most basic working relationship (p. 17, Vol.1).

The aviation industry heavily relied on the government or state-of-the-art training consultants for the information and training needed to overcome the problem. A wide spread and false notion was only those individuals with classified or highly sensitive information could adequately inform and train the aviation industry (Thomas, et al, 2008). Even if this paradigm was true those agencies responsible for protecting the homeland were not sharing this highly classified and sensitive information. As evidenced in the September 11, 2001 Commission Report. In the report a term referred to as the “wall” is described when referring to the sharing of intelligence. “In 1995 procedures dealt only with sharing between agents and criminal prosecutors, not between two kinds of FBI agents, those working on intelligence matters and those working on criminal matters” (p.79). The report further discloses that due to tensions

over the scope of the Foreign Intelligence Surveillance Act (FISA) the FBI operated under the notion they could not share *any* [emphasis added] intelligence matters with criminal investigators. The commission's report further disclosed during the years, 1999, 2000, and 2001, "information sharing was not occurring, and the intent of the 1995 procedures was ignored routinely" (p.79). The information the aviation industry needed to know was literally at their fingertips. Most intelligence roughly 90 to 95 percent of all information on terrorism is available on what is referred to as open sources. As explained in Thomas, et al., (2008)

The industry does not need to invest in its own research and analysis; it can utilize the existing academic infrastructure. An additional benefit is that in many cases academics can provide training materials and in some cases trainers for at least some aspects of the course (pp. 17-18, Vol. 1).

As evidenced from the three phases of aviation terrorism the development of aviation security practices has been reactionary. It was not until events of the 1960's were policies and methods developed. The U.S. government passed legislation pertaining to air piracy (Price & Forrest, 2009). The first use of armed officials on commercial aircraft was seen under President John F. Kennedy's administration in 1961 named the Sky Marshal Program. President Kennedy wanted federal agents to fly on high risk flights. The government could make the determination of which flights would have marshals or the airlines could make a request for a marshal. A point of interest in President Kennedy's plan for aviation security was his insistence for a secure flight deck and the door to the cockpit would be locked and these doors should also be strong enough to deter forcible entry (boardingarea.com, n.d.).

As hijackings and other crimes increased in the aviation industry the sky marshal program could not keep pace. Weapons used in these incidents were mostly handguns and grenades, which resulted in metal detectors being employed at airports. Plastic explosives were available, but were not commonly used by terrorists. Their choice of explosives was dynamite, which is possible to detect with the use of X-ray. According to Thomas, et al., (2008) X-ray was only effective about 19 percent of the time. This security evolution also caused the terrorists to change their tactics. Weapons constructed of material other than metal was not considered by authorities either, and as a result no policy or technology advances were considered (Price & Forrest, 2009).

The incidents' occurring in the 1980's and 1990's brought more policy and legislation. During the 1990's the aviation industry saw an increase in the violence as evidenced by TWA Flight 847 and PSA Flight 1771. In TWA Flight 847 as the flight was departing Athens, Greece for Rome, Italy a group of Shiite Hezbollah terrorists took over the flight. An American U.S. Navy diver was tortured and killed and his body dumped on the tarmac (History.com, 1985, "TWA Flight 847 Hijacked," para. 2).

The incident on PSA Flight 1771 was different as it was not the result of foreign terrorists or political motivations. The assailant was an American who had been employed by PSA and had been terminated. His credentials had not been seized and he boarded a flight frequently used by his supervisor. He used employee status to circumvent security. He shot and killed his supervisor in-flight and entered the cockpit and fatally wounded the flight crew. He caused the aircraft to crash into the hills of Santa Ana, California killing all on-board (airdisaster.com, n.d., "Special Report Flight 1771").

The 1990's also saw the first World Trade Center bombing by an explosive laden vehicle, operation Bojinka, and the Murrah Federal Building bombing in Oklahoma City, Oklahoma, which resulted in yet more policy and legislation (Price & Forrest, 2009).

The International Civil Aviation Organization (ICAO) Annex 17 to the Chicago convention was promulgated by ICAO in March 1974 and updated in July 2011, and is published in six languages. It developed and adopted Standards and Recommended Practices (SARPs) for international aviation. The ICAO publishes a security manual for the interpretation and implementation of these practices. An aviation security plan was developed to strengthen aviation security globally (icao.int, n.d., "Aviation Security Branch," para. 2).

ICAO Annex 17 provided for best practices in international aviation security. It is important to note these established guidelines. These include:

- Procedures to prevent unauthorized access to airfields.
- Development of training.
- Isolating security processed passengers.
- Inspection of aircraft for dangerous weapons and device.
- Transporting prisoners
- Law enforcement officer transport checked baggage.
- Cargo and mail screening.
- Incorporating security considerations in airport design.
- Background checks for aviation employees.
- Passenger/baggage reconciliation.
- Security measures for catering supplies and operators.

The following were added after September 11, 2001:

- Access control standards.
- New standards for passenger, carry-on, and checked baggage screening.
- In-flight security personnel.
- Protection of the cockpit. (Price & Forrest, 2009).

An important consideration of all the aforementioned SARP's is their effectiveness in stopping unwarranted and intentional attacks on civil aviation?

According to Thomas, et al., (2008) member states of ICAO may simply opt out if they are unable to comply with ICAO security procedures. They are not required to explain the standards they cannot meet, how long they intend to be out, and when they may seek readmission status.

The review of literature on these issues brings into focus those areas, which are truly critical for higher education to incorporate into existing curriculum to provide a "cutting-edge" program in aviation security.

The Role of Government in Aviation Security

Aviation security leaders, managers, and professionals working in the field need to understand the role and significance of government in matters of aviation security. Government for the purpose of this review includes federal, state and local agencies who contribute to the overall success of securing our nations aviation industry. The following review of the literature will inform the reader the individual agencies responsibility and jurisdiction regarding matters of civil and military aviation.

The International Civil Aviation Organization (ICAO) was first created in 1944. It was developed to promote an orderly and safe environment for civil aviation on a global

basis. ICAO is comprised of 191 member states and it sets standards for safety, security, and environmental protection. It provides a forum in all associated areas of civil aviation among all of its member states (icao.int, n.d., "ICAO in Brief," para. 1).

To that end the United States created the Department of Homeland Security. The department was brought about by bills introduced into legislation in 2002 by both legislative bodies. The Homeland Security Act was signed by President George W. Bush on November 25, 2002. This act authorized a range of federal changes after the September 11, 2001 attacks ostensibly to address inefficiencies and vulnerabilities that led to the attack (Bullock, et al., 2006).

The Department of Homeland Security oversees the United States Transportation Security Administration (TSA). The role of TSA is to regulate all forms of interstate transportation security. TSA not only regulates civil aviation, but also interstate transportation by rail, trucking, and shipping. The spotlight on TSA has been primarily on issues pertaining to aviation security.

The beginnings of the Department of Homeland Security had its start under President Bill Clinton's administration following events, which attracted global attention. These incidents were the first bombing of the World Trade Center, the bombing of the Murrah Federal Building in Oklahoma City, and the sarin gas incident in the Tokyo subway. These events caused congress to address what course of action the United States would take in the aftermath of a terrorist attack. The Nunn-Lugar-Domenici Weapons of Mass Destruction (WMD) Act in September of 1996 was passed (Bullock, et al., 2006). This act did not, however, focus on how the government might prevent or mitigate a terrorist attack.

The events of September 11, 2001 caused all Americans to feel a sense of vulnerability, and caused an economic ripple world-wide. President George W. Bush by executive order established the Office of Homeland Security nine days after the attack. Former Governor of Pennsylvania Tom Ridge was charged with leading the new agency, comprised of a mere 120 employees (Bullock, et al., 2006).

Prior to the creation of the TSA the Federal Aviation Administration (FAA) was responsible for aviation security. Oklahoma Senator A.S. Monroney introduced legislation to create the Federal Aviation Agency to be an independent Federal agency, in May of 1958 (faa.gov, n.d., "Birth of Federal Aviation Agency, para. 10). Early on the FAA designed Federal Aviation Regulations (FARs), which provided the security of airports and scheduled carriers to establish screening programs. These FARs were designed to detect and deter unauthorized contraband, such as weapons from being carried on-board aircraft. Airports were also regulated by the FARs to prevent unauthorized access by persons into controlled areas, such as the airport operations area, baggage areas, etc., and ensured support from law enforcement agencies in the passenger screening areas (Sweet, 2009).

FAR Parts 107 and 108 placed the responsibility on the airport operators and airlines to produce security procedures to meet these guidelines. These FARs established the guidelines for U.S. airports and all carriers servicing U.S. airports (Sweet, 2009).

According to Sweet (2009) security procedures were required to be in writing and signed by the operators and approved by the FAA. Certain descriptions of a security procedure were required to include the following:

- The AOA, which is the area of an airport used for taxi, takeoff, and landing.
- Areas near the airport that may be affected by security of the AOA.
- Any exclusive area.
- Facilities and equipment used by carriers and the airport to control functions.
- Contingency plans used for emergencies or unusual situations.
- Records systems documenting security incidents.
- The law enforcement agency support and training procedures.

State Agencies in Aviation Security

Typically in the U.S. each state develops standards and best practices regarding the aviation industry and these responsibilities usually fall under the State Department of Commerce or transportation system. The National Association of State Aviation Officials (NASAO) represents state governmental officials at the federal level, and has been in place since 1931 (NASAO, 2012, para. 1). In Oklahoma the Oklahoma Aeronautics Commission is a part of state government that develops standards and promotes the aviation and aerospace industry (ok.gov, 2012, “About the OAC,” para. 1). In its 78-years of experience NASAO has provided valuable information to the Federal government.

NASAO and the individual states have had seventy-eight years of experience with general aviation and related aviation issues. Immediately after the events of September 11, 2001, NASAO formed a standing committee comprised of state aviation directors in eight geographic regions pledging all available resources to federal authorities. Their assistance was also provided in the early formation of the Department

of Homeland Security and the startup of the Transportation Security Administration (ok.gov, n.d.).

The Oklahoma Aeronautics Commission has promulgated a directive for general aviation security based on best practices. The guidelines established in this report are not required by general aviation airports, but are suggested procedures for consideration by individual operators for their particular location. The report was submitted to the TSA for further review. What is interesting to note is these practices are not required by federal standards.

State and local authorities do strive to maintain compliance with TSA, however, as evidenced by a notice of proposed rulemaking (NPRM) issued by the TSA suggests disparity between TSA and state professionals in the aviation industry. In October 2008 the TSA proposed new rules for a large aircraft security program among U.S. operators. According to the NPRM issued by TSA, “The Large Aircraft Security Program (LASP) regulation would require all U.S. operators of aircraft exceeding 12,500 pounds maximum take-off weight to implement security programs that would be subject to compliance audits by TSA” (tsa.gov, n.d. “TSA Large Aircraft Security,” para. 2).

Local professionals representing Oklahoma and other states found the new regulation concerning large aircraft would cause an adverse effect on the general aviation community, and interestingly the new regulation did not enhance security measures for general aviation. The states working through NASAO concluded certain rights, such as the 2nd and 4th amendments guaranteed by the U.S. constitution are being ignored by this regulation. The following are excerpts regarding this NPRM from member states working through NASAO:

State of Colorado – “which is filing comprehensive comments separately, believes this NPRM will have a devastating impact on the element of the aviation industry the TSA is trying to secure and safeguard” (ok.gov, 2012, “NASAO Large Aircraft NPRM”).

State of Maryland – “(this) NPRM is not based on any vulnerability assessment”. . . That the “list of airports cited by TSA as impacted by this NPRM is incomplete and incorrect” . . . and that the “NPRM’s economic analysis is unreliable” (ok.gov, 2012, “NASAO Large Aircraft NPRM”).

The Commonwealth of Virginia – “. . .the LASP proposal is far too broad in the scope of its reach, while at the same time not persuasive as to the security gain that might be achieved”. . .and, “We believe that the proposed NPRM will unduly degrade the entire premise of the GIA business model” (ok.gov, 2012, “NASAO Large Aircraft NPRM”).

The State of Oklahoma – “The Commission has great concerns that the proposed NPRM will essentially impose air carrier security measures upon General Aviation (GA) aircraft weighing more than 12,500 pounds”. . . additionally, the statutory authority of TSA to impose these proposed regulations upon general aviation is dubious at best, and the constitutionality of such regulations is also a legitimate question” (ok.gov, 2012, “NASAO Large Aircraft NPRM”).

The State of Alaska went on to suggest this particular NPRM risks destroying all of rural Alaska’s aviation industry. The review of the literature on this issue suggests how ineffective and burdensome a large bureaucracy such as TSA can become.

Local Agencies in Aviation Security

Local law enforcement in aviation security plays an important role in protection, securing, prevention, and conducting investigations of criminal or terrorist acts. Local law enforcement officers typically respond daily to calls for service and assist in minor disasters in their jurisdiction, which may include local airports.

Local law enforcement officials are the true front line in national security. They are the first responders in all disasters. According to Bullock, et al., (2006) local police departments in the U.S. employ approximately 556,000 full-time equivalent (FTE) employees of which 436,000 are sworn police officers. Sheriff's departments employed approximately 186,000 full-time sworn employees from a total FTE of 291,000 full-time employees.

Local law enforcement is instrumental in other areas of homeland security and the local police chief is typically the emergency manager for his or her local jurisdiction. Local law enforcement officers' train and practice protocols according to the National Incident Management System (NIMS) and the Incident Command System (ICS) so they are better prepared to respond to and assess disasters (Bullock, et al., 2006).

In the Transportation Security Administration (TSA) 49 CFR, Chapter XII, Part 1542.217 defines a law enforcement officer, which is airport qualified as follows:

- Have arrest authority as defined by TSA
- Are identifiable by, uniform, badge, or other indicia of authority
- Are armed with a firearm and authorized to use it
- Have completed a training program that meets the requirements of TSA

(Electronic Code of Federal Regulations, n.d.).

Airport operators who are required to have an approved security program under 1542.217 (a) or (b) must ensure they have an adequate number of law enforcement personnel and in a manner, which supports its security plan. These regulations further enumerate requirements airport operators must be in compliance with concerning law enforcement personnel in regards to their security plan. For example, uniformed law enforcement personnel must be available for screening persons and baggage unless TSA provides Federal law enforcement support for the air operator, law enforcement personnel must be available to respond to calls for service by an aircraft operator or foreign carrier (Electronic Code of Federal Regulations, n.d.).

According to TSA 1549.215 (2012) law enforcement personnel assigned at airports must have certain qualifications while they are on duty. These include, but are not limited to, having the authority to arrest with either a warrant or without a warrant for crimes committed in their presence or felonies when the officer has probable cause to believe the person(s) arrested committed the felony. Law enforcement personnel on-duty at an airport must also comply with training standards as prescribed by the TSA and state training mandates in the jurisdiction the law enforcement officers are serving. This training includes firearms, courteous treatment of persons being inspected, detained, searched, arrested, or other aviation security activities, the responsibilities of the security program of the airport operator, and *any other subject TSA determines is necessary* [emphasis added]. The training provided to the law enforcement personnel must be documented and available for inspection by TSA personnel.

Law enforcement personnel assigned to an airport have an enormous task and an increase in law enforcement responsibility. These officers are not only working to

prevent criminal acts, but they are also trained and responsible for detecting or preventing acts of terror. Law enforcement personnel must also work in concert with private security personnel. Special training or certain levels of federal security clearance may be required. The differences between airport security personnel and law enforcement personnel are many with few similarities.

Law enforcement officers assigned at airports must be available to respond to security screening checkpoints when summoned. Depending on the size and classification of the airport officers may be present on the premises on a full-time basis or airport operators may need to call local police to respond to incidents as needed (Sweet, 2009).

Training for airport police officers is available from an assortment of venues. One such training facility has been and continues to be conducted at the FAA's Mike Monroney Aeronautical Center in Oklahoma City, Oklahoma. The school is known as the Transportation Safety Institute. Law enforcement officers may also receive training at the Federal Bureau of Investigation academy in Quantico, Virginia. Many cross training opportunities exist for local law enforcement officers with federal law enforcement agencies, such as the U.S. Customs Service, The Drug Enforcement Agency, the U.S. Marshals Service, and the Immigration and Naturalization Service to mention a few.

Officers graduated from the FAA facility in Oklahoma City, Oklahoma as early as January 1973. Training in aviation security at the center promotes the FAA mission of protecting the public in aviation. Training includes the prevention of criminal and associated disruptive acts against civil aviation, investigative techniques supporting

FAA's activities, drug interdiction into the U.S., cargo security, crisis management, risk management, and courses in support of the national security (faa.gov, n.d. "Aviation Security Training").

The legal Environment in Aviation Security

The U.S. by design was founded as a nation under the rule of law. The Preamble to the Constitution was written after the first draft of the Constitution was completed. When the Constitution was given to a committee it was revised and the Preamble was added. The Preamble is written as follows:

We the people of the United States, in order to form a more perfect union, establish justice, insure domestic tranquility, provide for the common defense, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity, do ordain and establish this Constitution for the United States of America (Cornell University, n.d. "Preamble").

The founders highlighted the importance of law and its importance to protect the nation as noted in the first three mentions of topics as establish justice, insure domestic tranquility, and provide for the common defense. The Constitution established the way a nation would govern itself and the rule of law as it pertains to what government can and cannot impose on its citizens.

An issue of controversy in the U.S. is the balance between effective law enforcement and the rights of individual citizens. Some argue the courts have gone overboard in protecting the rights of criminals while ignoring victim rights. Others would argue the police power of government has afforded law enforcement authorities too much power (Sweet, 2009). Nevertheless law enforcement authorities in the U.S. must

comply with decisions of constitutional law as ruled by its courts. The following will be a review of the literature as it pertains to enforcing laws as they relate to aviation security, the Fourth Amendment, passenger rights, border searches, and associated legislation affecting aviation security.

The Rule of Law and Security

In the U.S. law enforcement authorities have undergone a series of legal rulings as to how they will perform their daily activities in detecting, preventing, and prosecuting criminal acts. Legislation regarding law enforcement authority to “stop and frisk” a person who is suspected of having committed a crime or may be in the process of committing a crime have been an issue of debate and confusion for law enforcement.

The Fourth Amendment to the Constitution of the U.S. reads as follows:

The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no warrants shall issue, but upon probable cause, supported by oath and affirmation, and particularly describing the place to be searched, and the persons or things to be seized (Cornell University, 2012, “Amendment IV”).

The Fourth Amendment was designed to protect Americans from illegal actions of agents of the government. What the courts and law enforcement officials must consider is unreasonable searches and the existence of probable cause for a warrant to be issued. Law enforcement officials must present a probable cause affidavit before a magistrate of the courts and be sworn under penalty of law that they are being truthful concerning the information contained in the affidavit. The courts have not ruled as to the legal definition by which airport security personnel are classified.

The Fourth Amendment has been interpreted by case law that the right to be secure in their persons, places, and things, and unreasonable searches pertains to government agents, which essentially is any commissioned police officer employed and empowered by a government agency. At issue is do searches conducted by private security personnel at an airport negate the Fourth Amendment reasonableness language? Airport security personnel are operating under a technical aspect of the Fourth Amendment and are not subject to the Fourth Amendment restrictions (Sweet, 2009).

The debate is ongoing as to whether airport security officials are considered to be functioning as government agents, and if they are the Fourth Amendment is applicable. The argument is the FAA required airlines and airport operators to employ measures to screen passengers and luggage under 14 CFR Sec 108, which states in part:

- Certificate holders will screen passengers and luggage according to their security plan to stop carriage of explosives and dangerous weapons.
- Will refuse to transport a person or their property who does not consent to search.
- Follow procedures in approved security program for dangerous weapons in a sterile preboarding area.
- To inspect all accessible property under that person's control (gpo.gov, n.d.).

Accordingly, some court decisions have said by the government's involvement in requiring these FAA security measures do in fact bring the searches conducted in airports under the reach of the Fourth Amendment. That being said if a search does fall

under the Fourth Amendment it then becomes subject to specific exceptions. Accordingly, if the searches are conducted within the scope of the Fourth Amendment there exists three exceptions, which apply to not only aviation security, but law enforcement personnel performing their daily work. These have been called the administrative search exception, the stop and frisk exception, and the consent exception. Other exceptions do exist, such as the exigent circumstances or conducting a search subsequent to a lawful arrest established by probable cause (Findlaw, n.d., “Fourth Amendment – Search and Seizure”).

The Administrative Search Exception

The administrative search exception to the Fourth Amendment is defined by searches conducted on the basis of serving a societal purpose. This exception has its roots in the *Vernonia School District 47j v. Acton*, 115 S. Ct. 2386, (1995). This ruling pertained to school official’s right to search a select group of individuals, such as athletes. When an athlete joins a team he or she is held to a higher standard than students in the general population. Implying the students waived their Fourth Amendment right when they volunteered to join the team. This same logic applied to aviation security as passengers voluntarily submit themselves to a search when they elected to fly and offer their luggage for scanning (Sweet, 2009).

The standard the courts evaluate in the administrative exception is the balance between privacy concerns and a legitimate societal interest for the search. The courts must also consider if the search could have been conducted in a less invasive manner. If the search meets these tests certain citizens’ rights under the Fourth Amendment are sacrificed under certain circumstances. Concerning air travel the test is whether the

need by governmental officials to prevent a terrorist act is greater than the restrictions of the Fourth Amendment rights guaranteed to U.S. citizens or in this example an airline passenger. To date the courts have held that in light of the current terrorists method to use aircraft to deploy their threats does outweigh Fourth Amendment restrictions, and airport searches can be legally conducted (Sweet, 2009).

Stop and Frisk Exception

Law enforcement frequently employs the so called “stop and frisk” exception to the Fourth Amendment when appropriate under the Terry law. In *Terry v. Ohio*, 392 U.S. 1, (1968) a ruling was made by the Supreme Court that said a police officer based on his instincts and suspicions accompanied by the need for self-protection may conduct a limited search for weapons without a *warrant or probable cause* [emphasis added] if he had reason to believe a crime had been committed. The Terry ruling allows officers to make a limited search for weapons in the absence of probable cause and it does not need to be a search incident to a lawful arrest. The test is whether a reasonable prudent man in these circumstances would be justified in believing his safety or others were in jeopardy. This translates to airports in that a minor intrusion on an individual’s rights is balanced on the need to prevent a terrorist attack.

Another form of the “stop and frisk” exception pertains to a selected class category. This pertains to a certain group of persons singled out for further inspection. In this example the suspicion is established on probability, and not certainty from the entirety of the circumstances. A court ruling in *U.S. v. Sokolow* in 1989 dealt with the defendant’s actions being known to agents of the Drug Enforcement Agency (DEA) in Hawaii. They knew the defendant had paid \$2100.00 for two airlines tickets from a stack

of \$20.00 bills, his telephone number information did not match the name he was traveling under, his original destination was Miami where he stayed for only 20 hours, and appeared nervous during his travel, and he did not check his luggage. The court ruled the person fit the profile of a drug courier as defined by the DEA. This interpretation may extend to profiling a person at an airport based on that of a terrorist (Sweet, 2009).

Consent Exception

Consensual searches are another procedure employed by law enforcement in lieu of a warrant as required under the Fourth Amendment. The Fourth Amendment requirement to unreasonable search and seizure is considered moot if a person voluntarily offers his person and/or property to be searched by a law enforcement official. The person may withdraw their consent at any time during the search. In the example of a passenger flying on an airline he or she voluntarily surrenders their Fourth Amendment rights when allowing their luggage to be screened (Sweet, 2009).

At issue is what defines “voluntariness” of a person being searched. Several court rulings are noted concerning a voluntary search. In the case of *Schneckloth v. Bustamonte*, 412 U.S. 218, 93 S. Ct. 2014, Bustamonte had been arrested after giving an officer permission to search a vehicle of which he was a passenger. He exclaimed he was the brother of the owner of the vehicle. He was asked by the officer if a search could be conducted and he agreed. Stolen documents were discovered as a result of the search and charges were filed. A motion to suppress the evidence was made at his trial and it was denied. The conviction was upheld at appeal; however, the 9th circuit set

aside the conviction citing the state must prove the search was in fact voluntary and not done under a form of duress (Sweet, 2009).

When relating the voluntariness of a search conducted at an airport the balance must be on the side of being truly voluntary and not the passenger acquiescence to authority, which if true the courts have ruled that no consent occurred. Citing the only alternative to a search is not to fly is hardly a voluntary consent (U.S. v. Albarado, 1973/1974).

Another challenge to the courts regarding airports searches was the decision in U.S. v. Lopez, 328 F. Supp. 1077, which dealt with the posting of signs at an airport advising passengers they were subject to search before boarding an aircraft. The government maintained the signs were sufficient for implied consent on the part of the passengers. In this case the courts disagreed saying the Fourth Amendment right to unreasonable searches cannot be taken lightly. The judge said in this decision, “Nor can the government properly argue that it can condition the exercise of the defendant’s constitutional right to *travel* [emphasis added] on the voluntary relinquishment of his Fourth Amendment rights” (Sweet, 2009, p. 248).

Consensual search issues by law enforcement authorities have remained steady over time; however, the procedures of police officers regarding asking a person to consent to a search have come to the attention of the courts pertaining to minorities. The instances of minor traffic stops of minorities was noted by Justice Sandra Day O’Conner as a dissenting vote in *Atwater v. Lago Vista*, 532 US 318 when she wrote, “as the recent debate over racial profiling demonstrates all too clearly, a relatively minor

traffic infraction may often serve as an excuse for stopping and harassing an individual” (Sweet, 2009, p. 249).

The applicability of racial profiling can translate to the airport environment when minorities are approached and questioned by law enforcement, and could be construed as racially motivated regardless of the authorities intentions. Typically when persons in the minority class are questioned they are asked to consent to a search. Most persons when placed in this situation have little knowledge of their right to refuse a search especially in the confines of an airport and in the presence of a uniformed officer. As pointed out by Sweet (2009) two essential questions concerning consensual search at an airport have gone unanswered by the courts. That is to say, no clear distinction has been identified as to when a passenger has relinquished their Fourth Amendment right, and the exact nature of that consent.

Border Searches

Other exceptions to the Fourth Amendment requirements of the Constitution are in place. Border searches are conducted at the point of entry into the United States by authorities and are allowable without a warrant or probable cause to search vehicles, persons, and property entering the United States. The courts have defined the border as any place, which is the functional equivalent of the border. This definition applies to airports if that airport is the first place an aircraft lands after entering air space over the United States or an inspection station near the border. One such example is passengers flying from Montreal, Canada into the United States undergo clearance from U.S. Customs and Immigration officials at the inspection station in Montreal. The authority of Customs officials extends to any person suspected of carrying contraband,

which includes mail. The decisions regarding the aforementioned examples are *United States v. Martinez-Fuerte*, 428 US 543 (1976) and *United States v. Ramsey*, 431 U.S. 606 (1977).

Exigent Circumstances

The law pertaining to exigent circumstances is another exception to the Fourth Amendment. This allows searches to be made without regard to the limitations of the Fourth Amendment. Authorities may search in cases where there exists clear danger to life, escape, and removing or destroying evidence (Sweet, 2009). The exigent circumstances rule was decided in *Warden v. Hayden*, 387 US 284 (1967). Another case of critical importance to the exigent circumstance rule was in *Mincey v. Arizona*, 437 US 385 (1978) where the court found authorities could search without a warrant if to delay a search in the course of an investigation would endanger the authorities lives or the lives of others. These are in emergency circumstances where life is at stake and this translates to the airport environment if a passenger or passengers have weapons or destructive devices, which could endanger the lives of those persons at an airport. What challenges authorities are to determine how a weapon or device becomes apparent, and how authorities determine a threat exists (Sweet, 2009).

Passenger Rights

Airport security officials have been deemed not to be agents of the government even though they are directed by Federal law to conduct searches of passengers and their luggage, and are employed by a government agency. At issue here is these searches are allowed so long as they are searching for weapons or destructive devices that may bring harm to the traveling public and provide for the safety of the airline. This

power granted to security personnel should not be used as subterfuge by law enforcement officials to search for other illegal contraband, such as drugs and other smuggling related crimes. Additionally, if a passenger's Constitutional rights have been violated that passenger may bring a civil suit against the *person(s)* [emphasis added] who was responsible for the violation of their rights.

Legal analysts have concluded passengers terminate their Fourth Amendment rights when they place their luggage on a conveyor belt in a secure area for boarding for a visual inspection and a possible hand search for weapons or other destructive devices for the safety of the airline.

A passenger's right to terminate a search and elect not to fly has been viewed by the courts in two decidedly different decisions. In *U.S. v. DeAngelo*, 523 F.2d 496 – 4th Circuit (1978) found when DeAngelo's request to authorities not search his luggage and he wanted to opt out of his flight was denied and a subsequent search found narcotics was conducted legally. The courts ruled the screening officers had a reasonable suspicion of DeAngelo's actions and he may cause harm to passengers and officers, and to withdraw the search would defeat the purpose of the regulation's purpose in deterring hijackings.

In *U.S. v. Albardo*, 495 F.2d 799 2nd Circuit (1974) found a passenger may refuse to being searched and cancel his travel by air. This process serves the reason for the search process, which is not intended to stop criminals, but to deter armed hijackers from boarding aircraft. Airlines do not want to be involved in finding all forms of contraband and prefer to search for harmful devices.

Law enforcement is not allowed to use airport security inspections to look for illegal items, which are not related to safety. In *U.S. v. \$125,570 US Currency*, 873 F.2d 1240 – Court of Appeals, 9th Circuit (1989), dealt with a discovery of a large sum of cash being carried in a passenger's brief case by a screening official and was later reported by that screening official to a Customs officer, and this action resulted in the seizure of \$125,570 in cash. The passenger was released and detained by DEA officers at his final destination. Customs officers had offered a reward of \$250.00 to screening personnel if they discovered currency in excess of \$10,000. The passenger was asked by the DEA to open his briefcase and if he refused they would obtain a search warrant. The passenger relented and the cash was seized.

A motion was filed in the District Court to suppress the evidence and the court denied the motion. An appeal was made to the 9th Circuit whereby the judge considered two key issues. The screening officials were more concerned in finding cash than looking for harmful devices based on the \$250.00 reward offered by Customs officials. The second issue was had the passenger in fact freely given voluntary consent based on the screeners only looking for harmful devices. The judge ruled the search had not been conducted as outlined by the defined rules of screening passengers for the purpose of airline safety. He reasoned the Air Transportation Act of 1974, which requires all passengers be screened, does not extend an exception to the Fourth Amendment for other contraband (Sweet, 2009).

Other decisions by the courts regarding technology and its rapid growth may spill over into airport searches as well. In *U.S. v. Scarfo*, 263 F.3d 80 – Court of Appeals, 3rd Circuit (2001) found the FBI's use of a keystroke-logging device surreptitiously installed

on his work place computer to monitor his activities was lawful and his motion to suppress the evidence was denied. A tool such as this in the scope of airport security may permit lawful snooping of passengers computers in searching for terrorist (Sweet, 2009).

As explained by Sweet (2009) the legal matters of the Fourth Amendment are complicated and have resulted in many court rulings. Educational procedures for law enforcement and airport security officials should always be implemented to ensure an understanding of the many issues related to search and seizure.

To date the courts have held searches at airports are legal and passengers consent to these searches by the administrative nature by which they are conducted. The courts have also found these searches serve a specific public need and if the searches go beyond the scope of this need the exclusionary rule may render certain evidence seized as inadmissible in court. The exclusionary rule was designed to keep law enforcement “in check” and to ensure agents of the government do not violate the constraints of the Fourth Amendment (Sweet, 2009).

International Legal Components

Terrorism and aircraft hijackings are clearly not isolated to the United States. A review of the literature would be remiss without an overview of the international legal components regarding the issues of aviation security.

After the attacks of September 11, 2001, the Prime Minister of Great Britain, Tony Blair, commented the attack was not just on America, but was on all the civilized nations of the world. Following the attacks the international community came together in a form of solidarity in support of ways to find a solution to the global threat of terrorism.

Regionally and internationally agencies came together to express outrage. The North Atlantic Treaty Organization (NATO), the European Union (EU), and the United Nations (UN) all rallied behind the cause. A world-wide concern of possible attacks, such as that of September 11, 2001, being carried out on other countries caused internal examinations of their own laws and policies (Beckman, 2007).

Currently 14 treaties and protocols exist in the international arena through the United Nations, which were designed to prevent terrorism. These were developed under the umbrella of the United Nations and other specialized agencies. In 2010 two legal instruments were added to enhance aviation security. The first document is the Protocol Supplementary to the Convention for the Suppression of Unlawful Acts Relating to International Civil Aviation. The second document is the Protocol Supplementary to the Convention for the Suppression of Unlawful Seizure of Aircraft.

The essence of these recent treaties is to further criminalize acts of using civil aircraft as a weapon, and using materials considered dangerous to attack aircraft or other targets on the ground. These treaties further enforce the unlawful transportation of chemical, biological, and nuclear weapons and any related material. These treaties also articulate directors and organizers of attacks against civil aviation and airports, “will have no safe haven” (United Nations, n.d., para. 3).

The following is a summary of some of the treaties and they are as follows: Convention on Offenses and Certain Other Acts Committed on Board Aircraft, which applies to acts affecting in-flight safety, authorizes the aircraft commanders to impose restraint on persons suspected of committing or about to commit an act to protect the aircraft and passengers(1963); Convention for the Suppression of Unlawful Seizure of

Aircraft, which makes it an offense for any person to unlawfully commandeer an aircraft, requires parties to make hijacking severe penalties, extradition and prosecution issues 1970; Convention on the Prevention and Punishment of Crimes Against Internationally Protected Persons, which defines an Internationally protected person, requires parties to criminalize intentional murder, kidnapping and other attacks on the person of Internationally protected persons, property, means of transportation, either by threat or attempt to commit such acts (1973); and the International Convention against Taking of Hostages, which provides any person who detains and threatens to kill or injure another person in order to compel a third party to do or abstain from doing acts for the release of the hostage (1979) (United Nations, n.d.).

Typically these treaties also impose upon member states the responsibility to promulgate domestic laws making these treaties punishable under those member state's domestic laws. If these member states fail to incorporate the treaties into domestic law they then become in violation of International law (Beckman, 2007).

Member states who are found to be in violation of International law may force the implementation of actions on that state by other nations. These actions could range from sanctions, reciprocity, and loss of International capital. This is done by the method of horizontal enforcement. What that means is international law is enforced by nation-states as equals on the notion of the so-called horizontal enforcement rather than a vertical or top down system imposed by some form of international law enforcement entity.

The overarching problem associated with the United Nations and all of the resolutions they have passed is they are largely a symbolic effort. Under Article 10 of

the UN Charter resolutions are not binding on nations as a matter of international law (Beckman, 2007).

The importance of educating students of aviation security management in the rule of law is of paramount importance. Educators and employers should keep law enforcement officials and airport security officials charged with the responsibility of aviation security abreast of the ever changing landscape of the legal system.

The Current Landscape of Collegiate Aviation Security Programs

A review was conducted of the 97 U.S. colleges and universities who are members of the University Aviation Association (UAA) to ascertain if a Master of Science in Aviation Security Management degree program was offered. The search was further limited to only universities or colleges in the U.S.

The UAA was first organized in 1947 as the National Association of University Administrators of Aviation Education (NAUEE) in Denver, Colorado. Their purpose was to expand growth and the status of aviation programs in the United States. In 2011 memberships exceeded 500 and include colleges and universities internationally (UAA.aero, n.d. History).

Only one of the 97 member universities or colleges reviewed offered a Master of Science degree in Aviation Administration/Aviation Safety and Security, which was Middle Tennessee State University, Murfreesboro, Tennessee. The degree is a combination of safety and security course work. According to the course work offered in their program two courses in aviation security is required. One was an introduction to aviation security, and the second was an option in the required field titled aviation

security II. The following is a description of the degree program Middle Tennessee State University offered as posted on their webpage:

MS in Aviation Administration Aviation Safety and Security Management

Concentration:

Required Core Courses (18 hours)

AERO 6120 Aviation History

AERO 6130 Aviation Safety Management

AERO 6150 Aviation Industries

AERO 6610 Introduction to Aerospace Research

AERO 6611 Applied Statistics in Aviation Research

AERO 6640 Thesis Research OR AERO 6441 Applied Research Capstone Project

Required Courses (9 hours)

AERO 6310 Introduction to Aviation Security

AERO 6420 Aviation Safety Investigation OR **AERO 6320 Aviation Security II**

AERO 6430 Human Factors in Aviation

Electives (9 hours from the following)

AERO 6076 Selected Readings in Aerospace

AERO 6170 Scheduled Air Carrier Operations

AERO 6190 Airport Organizational Structures and Operational Activities

AERO 6220 Environmental Policy

AERO 6250 Aviation Policy and Planning

AERO 6350 General Aviation

ETIS 6010 Safety Planning

ETIS 6020 Safety Technology and Engineering

ETIS 6070 Anthropometric Factors in Accident Prevention

INFS 6610 Information Systems Management and Applications or INFS 6720

Knowledge Management (Middle Tennessee State University, n.d.).

CHAPTER III

METHODOLOGY

The purpose of this qualitative study is to conduct detailed personal interviews with aviation security professionals in both the private and governmental sectors to determine knowledge demands and essential professional skill sets needed for employment in the aviation security environment.

The study explored from a purposeful sample of aviation security professionals their perceptions of the critical components, which should be incorporated in a Master of Science degree in aviation security management. The researcher believed that a better understanding of aviation security provided by professional experts currently employed in the aviation security environment would provide aviation faculty with a more informed perspective design, assisting them in creating and implementing a “cutting-edge” graduate program in this field of study.

This study addressed three research questions: (1) What are the basic knowledge demands and essential professional skill sets needed for employment within the aviation security environment? Can higher education successfully fulfill these demands and skill sets? (2) What are the best teaching practices that need to be implemented by higher education faculty to ensure the student meets these employment requirements in the aviation security environment? (3) Would a pragmatic approach to a Master of Science degree in Aviation Security fulfill these employment requirements in the aviation security environment?

This chapter describes the research methodology and includes discussions based on the following areas: (a) the rationale used for the approach to the research, (b) the research sample, (c) validity and reliability, (d) methods of data collection, (e) instrumentation, and (f) analysis of the data.

The epistemology of this study was constructionism. The theoretical perspective was symbolic interactionism with the primary research methodology being applied research using a method of participant interviews from structured questionnaires. See figure 1.



Figure 1 Research Perspective

Rationale for Research Design

Essentially qualitative research is couched in a constructionism epistemological position. According to Crotty (2010) constructionism holds, “that all knowledge, and

therefore all meaningful reality as such, is contingent upon human practices, being constructed in and out of interaction between human beings and their world, and developed and transmitted within an essentially social context” (p. 42). Lincoln and Guba (1985) in their assumptions of constructionism had this to say:

- “Truth” is a matter of consensus among informed and sophisticated constructors, not of correspondence with objective reality.
- “Facts” have no meaning except within some value framework; hence there cannot be an “objective” assessment of any proposition.
- “Causes” and effects do not exist except by imputation. . . .
- Phenomena can only be understood within the context in which they are studied; findings from one context cannot be generalized to another; neither problems nor solutions can be generalized from one setting to another. . .
- Data derived from constructivist inquiry have neither special status nor legitimation; they represent simply another construction to be taken into account in the move toward consensus (pp. 44-45).

The theoretical perspective of symbolic interactionism perfectly describes the perspective and justification of a constructionist in this study. According to Crotty (2010) “Symbolic interactionism offers what is very much an American perspective on life, society, and the world” (p. 72).

In the opinion of the researcher the use of quantitative methods were unlikely to bring forth the rich data needed to address the research proposals goals. The basic premise and key features of qualitative research methods are appropriate for this study. These features include, but not limited to, (a) understanding the process of actions and

events, (b) contextual understandings of the varying viewpoints, (c) assist interactivity between researcher and participants, and (d) interpretation of data and maintaining design flexibility. Furthermore, the intent of qualitative research is to enable the researcher to enter the world of the issue being studied and implies an emphasis on description and discovery.

The Research Sample

A purposeful sample procedure was used by the researcher. Purposeful sampling yields insights and in-depth understanding and not necessarily empirical generalizations (Patton, 2002). The researcher sought to locate professional experts actively working in the field of aviation security. Some of the participants were known to the researcher and some were obtained by a snowball sampling strategy. According to Patton (2002) snowballing or chain sampling is “. . . people who know people who know people who know what cases are information rich, that is, good examples for study, good interview participants” (p. 243).

The research sample included ten individuals from the aviation security field. Each participant was interviewed and selected based on their professional knowledge concerning aviation security and their involvement and participation within this environment. Purposeful sampling allowed for sampling across various locations within the United States and in other countries. In qualitative research the focus is in depth on relatively small samples. According to Patton (2002) small samples vary and can even be single cases. Patton (2002) states, “I recommend that qualitative sampling designs specify minimum samples based on expected reasonable coverage of the phenomenon given the purpose of the study and stakeholder interest” (p. 246).

Although the participants were all involved in the field of aviation security there were demographic differences among them. These differences included: (a) which sector of aviation security they were employed or associated, (b) nationality, and (c) length of experience in the field. Table 1 is an illustration of the participant sample.

Table 1

Participants by Sector					
Participant	Aviation	Security	Government	Private	Academia
1	X	X	X		
2	X	X	X		
3	X	X		X	
4	X	X		X	
5	X	X	X		
6	X	X			X
7	X	X			X
8	X	X	X		
9	X	X	X		
10	X	X	X		

Validity and Reliability

This study was designed to glean information from aviation security professionals concerning the critical needs for a Master of Science degree in Aviation Security Management, and to develop conclusions based on the findings of the research. The interview questions were intended to achieve the following:

1. Garner specific information about the qualifications of the interviewee.
2. Determine knowledge demands, skill sets, and pedagogy for graduate students seeking employment in the aviation security environment.
3. Determine if academia can assist in fulfilling these demands and skill sets.

In order to determine if the research is reliable and valid the researcher turns to canons for good research practice. The terms validity, reliability, objectivity, and generalizability were couched in quantitative research, and was the benchmark used to appraise a qualitative study. Qualitative researchers borrowed these terms for their purposes (Marshall and Rossman, 2011).

As postmodern trends of research emerged these standards were challenged. The researcher illustrated earlier Lincoln and Guba (1985) defined a new paradigm for qualitative research. Marshall and Rossman (2011) define this as a critical moment in the development of qualitative methodology. Furthermore, (Corbin and Strauss, 2007) said this about questioning validity,

The notion of judging the quality of research seemed so clear before the postmodernist and constructionist thinking pointed out the fallacies of some of our ways. Now I wonder, if findings are constructions and truth a 'mirage' aren't evaluative criteria also constructions and therefore subject to debate? (p. 297).

Lincoln and Guba (1985) provided modern terms for qualitative reliability, such as credibility, dependability, confirmability, and transferability. Lincoln and Guba (1985) used these terms to focus on the design stage of qualitative research, and by doing so the researcher states from the onset of the study their intentions for the implementation of the research. This procedure demonstrates how the design of the study will likely make certain the data will be credible (Marshall and Rossman, 2011).

The issues of validity and reliability are usually at the forefront of discussion in qualitative research. Validity of findings generally happens throughout the research. According to Creswell (2003) the validity issue in qualitative research does not have the

same implication as in quantitative research, and it is not a companion of reliability. Validity [credibility, dependability] in qualitative research is concerned with how well the evidence of the research represented the reality of the situation being studied, (Bloomberg and Volpe, 2008). Validity is considered one of the strengths of qualitative research.

Methodology

The findings of this research disclosed data that can be used to apply the critical needs desired by the aviation industry to academic learning, which if utilized could assist the student and benefit the aviation industry in achieving their goals.

When the researcher first approaches qualitative research and the collection of all of the essential components needed for the research has been completed the design and purpose of the study should be made clear. In applied research the researcher is led by the findings and understandings of basic research. Applications of basic theory and disciplinary knowledge of real-world problems are tested (Patton, 2002).

In the applied research methodology the researcher is able to bring his or her personal insights into any recommendations that emerge because of the closeness of the researcher to the field of study. Moreover, societal concerns usually begat new fields, which are usually interdisciplinary. This gives meaning to the adage universities have departments and society has problems. These interdisciplinary societal fields have problems rather than departments (Patton, 2002). Applied researchers are typically wrestling with the understanding of a significant societal problem.

For this research the use of triangulation was utilized to add to its validity or credibility. The aviation security professionals came from three basic categories, in that,

some were from consulting businesses in the private sector, some were from the actual practice of aviation security in the governmental sector, and finally some were from academia who authored text books in the field or were teaching professionals engaged in homeland security and military affairs. Additionally, research regarding current trends in aviation security was checked against the opinions of those interviewed for further validation of the data.

Method of Data Collection

The primary research methodology was applied research using a method of participant interviews from structured questionnaires, which were designed to answer the research questions. According to Crotty (2010) to understand the research process it must be founded on direction and stability. A “scaffolding” as the researcher builds his study (p. 2). This scaffolding provides an effective way of obtaining meaning and truth of the subject under study.

In qualitative research, as described by Patton (2002) a minimal number of participants were utilized. The participants were interviewed one-on-one using open-ended interview questions. The participants were chosen based on the knowledge each had concerning aviation security and their involvement in this discipline. Each participant was encouraged to disclose their perspective on the critical needs that should be employed for a Master of Science degree in aviation security. This data could then be applied to existing curriculum and pedagogy to provide for a vigorous course of study in aviation security.

Interview questions were drafted and tested prior to the interviews of the participants. Practice interviews on three persons who had knowledge of the issues of

aviation security were conducted by the researcher to determine if the questions would produce the desired result. Once the interview questions were refined and tested, the actual interview process was scheduled for the participants.

The participants received a letter stating the purpose of the research and to establish an appointment time of their convenience for the interview. They were made aware of an approximate time needed to complete the interview, and the interview questions that would be asked by the researcher. Additionally, a document of confidentiality was also provided, which explained that their identities would be confidential, including their respective employer or entity they represent professionally. They were also informed the interview process would be recorded for accuracy regarding the analysis of the data. The participants were advised that the recorded interviews and all identifiable data would be destroyed one year from the time of IRB approval of the research, and the destruction of the data would be documented by the researcher. A consent form was signed and returned to the researcher prior to the actual interview. Four participants were interviewed in person, three participants were interviewed using Skype, and three participants were interviewed by telephone.

A verbatim transcription of the interviews was completed by the researcher after conducting the interviews. Each person interviewed was assigned a participant number for identification. Any comments, which tended to identify the participant, were not included in the study.

Instrumentation

An interview protocol guide was developed as suggested by Patton (2002). Certain interviewees were known by the researcher and others were developed using a

snowballing sampling. A recording procedure was established, the interview questionnaire and consent forms were published and the time constraints met the predicted expectations.

A total of three instruments were employed for this study. The first was an open-ended interview questionnaire, which consisted of 11 questions provided in Appendix D. The second was the consent form approved by the IRB for use in this study provided in Appendix B. The third was a participatory letter provided in Appendix C, which was sent to each interviewee explaining the research study and it provided the interviewee with contact information of the researcher should they have any questions concerning the study either before or after the interview. Each participant was advised they could see a copy of their individual transcribed interview for consideration prior to publication. Two participants asked for and received a copy of the verbatim transcription for their review and content correctness.

Analysis of the Data

The data analysis was conducted using NVivo 10, a computerized software program designed for use in qualitative research. The digital recordings of the interviews were transcribed and exported into the NVivo 10 program for coding. A code list was determined and each interview was appraised in detail using the appropriate code linked to the text in the transcriptions. After completion of the coding of the transcribed interviews specific data from these files were extracted and reports were then generated, which catalogued these data. From the data specific recommendations as to knowledge demands, skill sets, pedagogy, and critical content were then created by the researcher. A comparison of these reports was triangulated to identify similarities

and agreement among the participants. Those areas where triangulation was the greatest were noted for maximum consideration. A comparison of past research and literature in the field of aviation security was examined for credibility.

In the final phase of the analysis process these data were interpreted. Accurate interpretation was obtained by observation of the connection between disciplines, common themes, and relationships, which identified critical needs for a Master of Science degree in Aviation Security Management. Special attention was given to those areas of data that the participants agreed upon or had similar meaning.

Relationships and interdisciplinary findings among the disciplines were observed to determine intersections of similar interest for further consideration. Also noted were areas of dissimilarity among participants. The participant's responses that had similar meaning or were similar topics were given a percentage ranking of agreement among all of the participants. For example, (30%) or (80%) were either in agreement or were similar.

CHAPTER IV

FINDINGS

The purpose of this qualitative study is to conduct detailed personal interviews with aviation security professionals in both the private and governmental sectors to determine knowledge demands and essential professional skill sets needed for employment in the aviation security environment.

Aviation security experts across a broad spectrum of professional disciplines can provide a rich source of data for graduate course work to meet the desired knowledge demands and skill sets sought by the aviation security industry.

This chapter contains the findings from the data collected from the transcribed interviews of the participants. The findings for this study resulted in over 200 pages of transcribed interviews from ten aviation security professionals whose areas of responsibility ranged from the U.S. government, foreign government, private and academic sectors of aviation security, and related fields. The participants were purposefully selected based on their professional knowledge of aviation security and their positions within their places of employment. The participants were individuals who actually worked or participated in the practice of aviation security and were not necessarily in executive positions within their respective firms or employment sectors.

The study was designed to focus on the critical needs, which should be incorporated into existing curriculum for aviation security management specifically for a Master of Science degree in Aviation Security Management. Each participant in this study

provided their own unique perspective of the issues in aviation security management from a real-world or pragmatic point of view.

The validity or credibility of these findings is found within the information richness of the selected participants and the analytical capabilities of the researcher rather than the size of the sample. The data extracted from the interviews comes from a field of participants who were highly acclaimed in the area of aviation security and illuminated the critical needs for inclusion in a graduate degree in aviation security management. Table 2 is a “snap-shot” of each participants qualifications and experience of specific issues being investigated by the researcher. The data in Table 2 was extracted from the first three interview questions of the questionnaire, which asked each participants career history, educational level, professional training, and overall experiences involving aviation security.

Each participant had extensive knowledge of the inner workings and application of aviation security practices from a pragmatic approach. According to Patton (2002) the very essence of qualitative research is its candidness and the close contact the researcher has with the issue being investigated and in-depth interviewing.

Table 2

Participants Qualifications and Experience

<u>Participant</u>	<u>Sectors</u>	<u>Experience</u>
1	Aviation Security, Dignitary Protection, Law Enforcement.	Participant 1 works in aviation security and has over 20-years of experience in law enforcement, and conducts several training classes annually in aviation security. Participant 1 is currently completing a graduate degree in Aviation Education.

2	Aviation Security, former Military Officer.	Participant 2 supervises a field office and has been conferred with several graduate degrees, and considered ABD in doctoral studies. This participant possesses extensive experience in aviation security and has been active in the development of aviation security policies and procedures.
3	Aviation Security, Explosives Detection.	Participant 3 designs and builds explosive detection equipment in the private sector for civil airports and for the Department of Defense for military operations on an international basis. Holds a graduate degree in forensic and analytical chemistry from a European university and has been conferred with a Ph.D. from an American university. This participant travels abroad extensively consulting on aviation security issues in explosives.
4	Aviation and Aviation Security Consulting.	Participant 4 has developed many aviation and aviation security consulting companies. Internationally renowned aviation security expert. Former police officer in Europe with extensive law enforcement experience in transportation security. Has published several articles in aviation and aviation security. Co-Authored a text book in aviation security management. Has appeared on numerous documentaries concerning aviation security, and has served as a consultant to private corporations, the U.S. government, and foreign governments on the issues of aviation security and safety. Has been conferred with a graduate degree and is completing a Ph.D.
5	Aviation Security, Diplomatic	Participant 5 has over 20 years of

	and Homeland Security. Former military.	experience in aviation security, diplomatic and national defense sectors in a foreign country. Participant 5 now works in a security consulting company conducting training classes on an international level on terrorism and aviation security. Developed graduate studies abroad for a major university in security measures.
6	Higher Education, Former Private Businessman.	Participant 6 has a Ph.D. and teaches at a major American university. Has authored many text books in aviation security and aviation security management.
7	Higher Education Military University	Participant 7 has a Ph.D. from a European university in International Relations with an emphasis in aviation security. Has been imbedded with the military in theater overseas conducting research. Has been recognized as an aviation security expert worldwide and teaches graduate classes in terrorism and aviation security for the military department.
8	Military Experience in Aviation, Worked Internationally in Aviation Security with Experience in ICAO Writing Policies.	Participant 8 has in excess of 20 years of experience in the U.S. military in aviation. Experience includes AWACS operations and air traffic control. Has worked internationally in ICAO. Has worked specifically in aviation security pre September 11, 2001. Has conducted many classes at the federal level in aviation security and works in a position involving homeland security. Holds a Bachelor degree in aviation from a U.S. university.

9	Military and Special Operations, Law Enforcement Federally and Locally, Aviation Security Domestically and Internationally.	Participant 9 is a retired Special Forces Commander with extensive experience worldwide. Participant 9 holds a graduate degree in terrorism. The thesis work was in aviation security. Participant 9 worked at the federal level in aviation security pre September 11, 2001. Has extensive experience in law enforcement. Has been recognized as an aviation security expert and has appeared in many televised documentaries on aviation security. Has extensive experience in "Red Operations" testing aviation security domestically and abroad.
10	Aviation Security, Military, Law Enforcement	Participant 10 is currently working in the field of aviation security. Has been conferred with a graduate degree in security administration. Has served in two branches of the military and was a law enforcement investigator in the military. Has extensive experience in aviation security on a worldwide level and has conducted numerous "Red Operations" in aviation security. Has testified as an expert witness before Congress on the events of September 11, 2001. Has been recognized as a leading expert internationally in aviation security and has appeared in televised documentaries on aviation security.

The data from the interviews was transcribed and imported into Nvivo 10 for analysis. Nvivo 10 is software that supports qualitative and mixed methods of research. Nvivo 10 allows the researcher to collect, organize and analyze content from interviews, discussions, or audio data. The data analysis was a process of coding and categorizing to identify emerging themes and perspectives. The themes, which emerged from this

research, provided a rich resource in establishing the critical needs for a Master of Science degree in Aviation Security Management. Additionally, the participant's perspectives on this subject provided a clear picture of their individual opinions of the U.S. aviation security system.

The findings of this research answered the research questions, which guided this study. The findings of this study are prefaced by the interview questions followed by the results of the interview data. Several themes became evident within the data. The framework of these data provided for a detailed examination of the critical needs for a Master of Science degree in Aviation Security Management. These data were then placed into nodes or categories as they emerged from the analysis. From the three major themes of data 14 subthemes emerged, which are illustrated in Table 3. Table 3 Major Themes and Subthemes

Major Theme	Subthemes
Knowledge demands and skill sets	Critical thinking, Leadership, Airport Environment, Terrorism, Risk Management, Behavioral Profiling, Aviation Law,
Teaching Methods	Guest Lecture, Field Trips, Case Studies, Practical Methods
Pedagogy	Pragmatic Approach, Opinions of the pragmatic approach would or would not fulfill employment requirements

For immersion in the data, the interviews were immediately transcribed verbatim by the researcher. A data saturation point of no new discovery of themes was reached

by the seventh interview. After coding and categorizing the participant data using Nvivo10, matrix cells were created to analyze the responses of the participants.

The purpose of the first three interview questions was to gain insight of the participants experience and lived experiences in aviation security (See table 2). The remaining eight questions were designed to probe the aviation security issues, and address the research questions. The research questions are:

- What are the basic knowledge demands and essential professional skill sets needed for employment within the aviation security environment? Can higher education successfully fulfill these demands and skill sets?
- What are the best teaching practices that need to be implemented by higher education faculty to ensure the student meets these employment requirements in the aviation security environment?
- Would a pragmatic approach to a Master of Science degree in Aviation Security fulfill these employment requirements in the aviation security environment?

These findings are presented and accompanied by the interview questions starting from question one in the aviation security issues section as follows:

Interview question 1. Question one was designed to determine if the participants based on his/her knowledge and experience in the aviation security industry was aware if the employment qualifications for the aviation security industry had changed from what they were prior to September 11, 2001.

Five of the ten participants (50%), agreed the employment qualifications have changed, three of the participants agreed they have not seen a change in the

requirements, and two of the participants had no knowledge of the employment requirements. The two participants who did not know the employment qualifications were not in a professional position to know what the employment qualifications specified either before or after the events of September 11, 2001.

The five participants who knew that employment qualifications had changed cited professionalism, background, and a trend to not hire persons exclusively from either a military or a law enforcement background as a few examples of change. One of these five participants said the changes in the employment qualifications have worsened citing the Federal government only looked for persons to service a dysfunctional bureaucracy.

Interview question 2. The second interview question was designed to discover the knowledge demands a prospective employee should possess for employment in the aviation security sector. All of the participant's responses (100%) were similar or very close in their description of the knowledge demands required to be effective in aviation security. These responses included: a good knowledge of the technology and the aviation environment, economic issues, historical knowledge of aviation security and terrorism, risk management, and knowledge of the law and the code of Federal regulations.

Aviation security can be applied to many areas of the aviation industry. Governmental and private sectors specifically have their own knowledge demands. Each of the participants recognized and discussed the differences and cautioned that the recommended knowledge demands are wide-ranging and should be applicable to aviation security from a broad perspective regardless of the sector. The discussions regarding this topic seemed to generate a feeling of protecting individual areas of

responsibility or “turf.” The participants would elicit a sense importance of one sector over another based on their individual perspectives.

Interview question 3. The third interview question provided insight for what professional skill sets a prospective employee should possess for employment in the aviation security industry today. All of the participant’s responses (100%) identified the same areas considered essential as skill sets. These were observational skills, leadership skills, risk management skills, interview skills, critical thinking skills, and communication and writing skills; were all considered essential for a good aviation security manager. The top recommended skill sets were leadership and critical thinking. Leadership garnered 70% of the coded references as an essential skill set, which was followed closely by critical thinking with 60% of the coded references as an essential skill.

Interview question 4. The fourth interview question was designed to determine if a university or college graduate program could assist in fulfilling the knowledge demands and professional skill sets discussed in questions two and three for employment in today’s aviation security environment. Nine of the participants (90%), responded in the affirmative, and one participant responded in the negative.

The participant who thought a graduate program could not provide these knowledge demands and skills sets seemed to hedge the response. The negative response was based on providing a graduate degree to regulatory officials. A college education would be more applicable in an undergraduate program and not at the graduate level. The participant demonstrated a noticeable pause in thought after answering the question. The participant continued by noting a Master of Science in

Aviation Security Management would not be applicable for entry level or front line personnel. The participant then said for the operations side of aviation security at a management level, academia could provide the education needed to assist with the knowledge demands and skill sets at the graduate level. Lastly, the participant suggested the Master of Science in Aviation Security Management could be structured similarly to a traditional Master of Business Administration (MBA).

Interview question 5. The fifth interview question further explored the knowledge demands and skills sets in questions two and three. The question asked the participants to articulate their thoughts on the critical content areas associated with aviation security that must be addressed by academia to meet the demands and skill sets from a practical approach for employment in the aviation security environment. The critical content areas did overlap with most categories as suggested in questions two and three regarding knowledge demands and skill sets.

Two new categories emerged from this interview question. They are behavioral profiling and having an overall knowledge of the airport environment. The latter was also described as a systems approach. Behavioral profiling was seen as a tool to focus on identifying the behaviors of a terrorist and not that of a criminal. The participants were careful to qualify the differences of behavioral profiling from racial profiling.

Interview question 6. Interview question six determined, from the participant's point of view, the best teaching practices, which should be implemented by academia to ensure the desired employment requirements are sufficient for today's aviation security environment. All of the participants shared the same idea that to be effective in teaching

aviation security conventional classroom procedures, the traditional lecture is ineffective.

The recommended methods of teaching aviation security management in a graduate program were real-world cases studies, in-depth field studies at an airport and other areas associated with the aviation industry. Additionally, provide students with guest lecturers from various professional disciplines in aviation security management. Teaching aviation security management on-line was also discouraged by the participants. All of the participants indicated higher learning institutions need to teach from a practical approach and not from a theoretical approach in the discipline of aviation security management. The participants stated that all educational content needs to be real when applied to aviation security in a pragmatic sense.

Interview question 7. The seventh interview question probed the participants opinions of educating aviation security managers on a “back-to-basics” (pragmatic approach) in aviation security in areas such as investigative techniques, intelligence gathering, and emergency response might better prepare a prospective employee in today's aviation security environment.

Nine of the participants (90%) overwhelming said a back-to-basics approach is crucial and necessary. However, one participant expressed that this approach would not benefit aviation security. The negative explanation was explained that basics such as investigative techniques and intelligence gathering had no application in the aviation security industry.

Two participants, both foreign nationals, in the aviation security management sector who agreed a back-to-basics model was necessary cautioned against teaching

intelligence gathering. One caveat was most aviation related businesses look to the Federal government for intelligence. The second cautioned intelligence from a covert perspective is not necessary; however, it would be beneficial to analyze open source intelligence to determine how it may affect the aviation security environment.

Interview question 8. The eighth and final interview question was asked to solicit information from the participants regarding universities or colleges in the U.S. who offered a graduate degree in aviation security management.

All of the participants (100%) indicated they were not aware of any U.S. universities or colleges offering a graduate degree in aviation security management. But, most of the participants indicated they were aware of universities or colleges offering individual course work on the subject. One participant, a professor at a U.S. university, offered to provide a supporting role if the researcher decided to implement the program. Another participant, actively working in the aviation security sector, thought a robust graduate program on aviation security management would be a good way to institute change in an otherwise broken system.

Evaluation and Analysis of Findings

The research questions addressed by this study were based on the central question of determining the basic knowledge demands and essential professional skill sets needed for employment within the aviation security environment, and can higher education successfully fulfill these demands and skills sets? To answer all of the research questions they will be sectioned into the relevant themes listed in Table 3. Each theme will then be evaluated as it relates to the participants' responses as aviation security experts.

Knowledge demands and skill sets. This major theme is from the research questions related to knowledge demands, skill sets, role of the university, and critical content areas needed for employment in aviation security management. The emerging themes as illustrated in Table 3 address the central issue of the first research question. The participant's responses represent an amalgam of topics, which should be taught at a graduate level to better prepare an applicant for employment in the aviation security environment.

The number of subthemes related to knowledge demands and skill sets was seven, which the participants considered crucial to what should be included in a graduate program for aviation security management. The following is an evaluation of each subtheme.

Behavioral Profiling

The technique of behavioral profiling was cited as a knowledge demand and skill set considered important to effective aviation security. Seven of the participants (70%) cited behavioral profiling as critical for inclusion as a course of study in a graduate program. Behavioral profiling in the U.S. aviation security system has been somewhat ignored or not employed properly. As one participant stated,

The only thing that ever had me concerned about getting caught when I was doing red team stuff, was a human being that was actually looking for the terrorist profiles and that is where the entire focus should be – is looking for the people and not spending billions and billions of dollars on technology, which some kid – a freshman in high school can figure his way to get around. That is the single

biggest flaw in security – aviation security (Participant 10, Interview response, June 4, 2012).

The participant expressed the view that the behavioral profiling practice employed in the U.S. is being done incorrectly. What was discussed during this portion of the interview were the differences between the U.S. procedure known as Screening of Passengers by Observation Technique (SPOT), which is utilized by trained TSA employees referred to as Behavioral Detection Officers (BDOs), and the Israeli behavioral pattern recognition (BPR) procedure. The U.S. method was not being performed from the perspective of looking for a terrorist. As noted in participant 10's response,

Their focus is wrong. It's determined by political correctness and you know, some of these other negative traits that they have – what we need to do is train people to actually look for the what the terrorists may be and that's a big difference between SPOT and what the Israelis are doing. But in my opinion, it's something we can and should do. It would be cheaper than what we're doing now. It would increase the passenger flow, you know, past a screening checkpoint or whatever (Participant 10, Interview response, June 4, 2012).

The culture in America has made the use of this technique difficult, and its use could be interpreted as racial bias by U.S. security authorities. All of the participants who responded to the notion of behavioral profiling agreed it does work when employed properly. As stated by one of the participants in the response concerning behavioral profiling,

The Israelis have no problem with profiling. If we didn't call it that over here I think it would really work (Participant 3, Interview response, April 4, 2012).

The practice of behavioral profiling was noted in the response of a participant when talking about knowledge demands for a Master of Science degree in Aviation Security Management. The comments were in the context of making a differentiation between nervous behavior as it may relate to the fear of flying, and the nervous tendencies exhibited by a person intending to do harm. As cited in his response,

But they need to be able to recognize a threat object and also probably have enough of an understanding of human nature to understand why is this person in front of me nervous? Are they nervous because of – they pose a threat or are they nervous because they hate to fly? (Participant 7, Interview Response, May 4, 2012).

Another participant sharing the same concern about profiling and the need to use the technique commented that people using behavioral profiling need to understand why people act nervous at the airport. As noted in this response,

I would also have a course on the behavioral side. Everyone's talking about the need to have behavioral detection that could be another side to the course. Body language and why people – people get nervous and how it shows. A course on body language would be a nice thing to put in there (Participant 5, Interview Response, April 12, 2012).

The practice of behavioral profiling is a learned process. One of the participants who cited this as means for detecting terrorists also included a caveat. The caveat concerns the difficulty of teaching this practice in a classroom setting. Behavioral

profiling is a practice, which requires a more hands-on technique. An introduction to this method was suggested as a course offering. This was acknowledged by one of the participants,

That's a really tough skill set to learn in a class room. I mean I see that in our own SPOT program. They go through training and they learn certain behaviors that they watch for. But until I actually do it, it's a really tough thing. I mean we all profile whether we realize it or not. If you go into the 7-11 to get money out of an ATM and everybody there doesn't look like you, not the same skin color or whatever, doesn't speak the same language you'd be more nervous than you would in an environment where you are all the same. That's profiling – we all do it. You know – we've made profiling as a dirty word and I don't think it is. I think you should be. I think we ought to be profiling actions, you know, and those behaviors . . . but I think an introduction to it would be useful (Participant 1, Interview Response, March 30, 2012).

Risk Management

Risk management was a subtheme, which emerged from the major theme of knowledge demands and skill sets in addressing the knowledge demands and skill sets needed for a Master of Science degree in Aviation Security Management. The participants were asked directly about knowledge demands and six of the participants (60%) included risk management as a critical need. Those participants who included risk management as a critical element expressed excitement and enthusiasm in articulating its importance in an aviation security management graduate program. The participants indicated risk management was at the core of any degree program related

to homeland security and aviation security, and it was the heart of any security discipline. As indicated by one of the participants responses,

It's very difficult to be proactive in the security domain. Very difficult to get the budgets to do it but you have to try and think what's the next step. What will – what may they throw at us next which – now I'm talking about management and policy and senior people and you got to look for people – you need a certain degree of creativity and you need – you need good management skills. I think you need risk management skills. Risk management is critical. I think one of the core competencies for any security professional. And I would think it's one of the key or core elements of any degree in homeland security should be risk management . . . but risk management has to be a central one because it's relevant for all areas of security not only aviation and it's probably the heart of all security. Probably is – like saying we're not security managers, we're really risk managers (Participant 5, Interview Response, April 12, 2012).

The participant further related how important risk management was as it applied to employment in aviation security management. The practice of risk management is used when making assessments of airports and airlines, and risk management tools were a part of daily work life. The participant further expressed the importance of risk management as an academic competency, which should be utilized. As noted in the following response,

I do it all the time. When I go and do a survey – an assessment on an airport or an airline, and I use risk assessment tools to evaluate the whole situation. That – it's the best method to use. Risk management methodology was developed first

in the military that's for military use. It works best in security operations and of course, then it was adapted into the chemical industry for protecting safety, first it was used for safety and then started being used for security but no doubt about it, it's a core competency academically. So academic competence for security and aviation security indeed (Participant 5, Interview Response, April 12, 2012).

In a discussion with one of the participants concerning the skill sets needed for employment in the aviation security management industry the need for contingency planning emerged. Contingency planning was referred to as a strong professional skill set, which was translated by the participant as a means to mitigate the threat of terrorism as being a risk management approach. The participant explained a proper education in risk management in the aviation industry provides a new perspective of the environment. As illustrated in the following response,

So I would then say that contingency planning is a strong professional skill, and then you might even wrap around that, the overall description of risk management. I think possibly one of the most valuable elements of my postgraduate diploma with Loughborough was Risk Management. It was a very good unit and if it's delivered well, then what it does is it allows you to see the environment that you're working in from a different perspective than your past training was given with. You have to take into account that you work for government department, a business of some description, a few though, public entities such as the airports not always completely privately owned, and then the airlines – you know here are the organizations that are private corporations ostensibly and yet are heavily regulated by international and national government

laws. And so, you kind of often, in a situation where you cannot win so to speak with any one of those parties but your ability to render a risk management knowledge approach, to guide them towards solutions that they might not have thought of I think is very, very valuable (Participant 4, Interview Response, April 15, 2012).

The participant also explained how the job of a security manager is vital to informing the management staff of an aviation company in the event of a disaster, such as the event of Pan Am 103 over Lockerbie, Scotland in 1988. The participant pointed out how bad communications were in those days and this deficiency was noted in the President's Commission report about Pan Am 103. As noted in this response,

I'm naturally attached to this kind of thing because you can imagine can't you if you're an aviation security manager working for an airline, and there's a crash and fatalities and the airline in past form shoot yourself in the foot by failing to advise people who are urgently inquiring about what's happened to their families not, releasing information coming out with no comment. Fortunately, those days appear to have dissipated but it used to be quite bad when airlines didn't communicate and some of the knowledge that came out of the President's Commission on Pan AM 103 dealt with that area – directly with that area of the way in which airlines manage that. Now, the aviation security manager is on the periphery of that not in the center of that because that's a task undertaken by other departments in the airline . . . (Participant 4, Interview Response, April 15, 2012).

The concept of a risk based management approach was also noted by one of the participants actively working in aviation security management. The aviation security industry has come to realize the importance of a risk management approach and concentrate on looking for the person who is considered a higher risk. As stated in this response,

Mr. Pistol's efforts at screening for intent, risk based security we're off on another good path here I really believe that. I'm not just saying it but I do truly believe that this is the right thing to do. Mr. Pistol has this vision of risk based security and frankly I think it's the right one because you say I'm – you say I'm not going to screen and scrutinize most people getting on an airplane. I'm not going to scrutinize them very hard, and I'm going to focus all my resources on who I think is higher risk (Participant 2, Interview Response, March 30, 2012).

Leadership in Aviation Security Management

Leadership skills were a topic discussed by eight of the participants (80%) as being essential to being a good aviation security manager. Various segments of what was considered essential to leadership as it applies to aviation security were discussed among the participants. Some examples of these qualities are, but not limited to: being a leader of people and not manage them, being a good mentor, being able to accept negative criticism from your subordinates and remain open minded, and the education in leadership should be from a multi-disciplinary approach. The following from one of the participants illustrates the concept of leading and not managing,

Today in this country we have no leadership. I will give you my – I don't know if you ever heard of a woman called Amazing Grace Hopper? A little old lady who

was a mathematician was the Navy's first female admiral. She grabbed the Navy kicking and screaming a number of years ago into the computer age and her quote said "you lead people, you manage things." Yeah, So I think leadership – you need to know – you need to be able to manage a budget. But you need to not manage your people – you need to be able to lead them, be open with them, discuss things so I think absolutely, that's to me a sign of almost any organization, military police, civilian agencies, business (Participant 9, May 26, 2012).

When discussing the concept of a leader or manager the quality of being able to take constructive criticism and remain open minded was highlighted. This was a point made when the interview question was posited in the need for critical content areas for academia to teach for employment in aviation security management. As illustrated by one of the participants,

One of the biggest things is particularly if you're in management, is you have to be open minded and not react like most people do when they're confronted with something negative. Nobody wants to be told that they made a mistake or something that they're doing is wrong or bad or however you want to phrase it. You need to look at certain information – it goes back to the red team thing. When a real red team actually tells you that a security system you have is a joke then rather than take it out on the red team, or get a new one that's more contained, is look at the information objectively and make changes to it as you can and so open mindedness and I'm not sure, a strong self-ego where you're

not intimidated by this type of stuff which most managers are now (Participant 10, Interview Response, May 26, 2012).

When questioning one of the participants in regards to skill sets in aviation security management, the need for good mentoring and guidance to subordinate employees was discussed and emphasized as a one skill set, which should be incorporated into a graduate degree in aviation security management. As described by this participant,

The demonstration of your knowledge as a mentor and guide. That is the ability to create the perception of being a responsible supporter of the management organizations without necessarily being that 'yes' man that I spoke of earlier (Participant 4, Interview Response, April 15, 2012).

A leader in aviation security management will have a knowledge base grounded in certain essential management principals. An emphasis on understanding the customer base in areas of customer relations, customer service, and related management concepts was suggested by one participant in describing skill sets as an essential component in a graduate program in aviation security management. As illustrated in this participant's interview,

I think part of the security background would also be an understanding of customer relations, customer service, some kind of a management course; basic management. I don't know what you guys are doing in your program. At Kent they had the - you take a management course, you take an airport management, you take an aviation management. That teaches about customers and

stakeholders and different constituencies (Participant 6, Interview Response, April 30, 2012).

Furthermore, the participant noted the importance of having an aviation security management program as multi-disciplinary as possible. The participant felt this would allow the student to better appreciate the supply side of aviation security. The multi-disciplinary approach was further defined as including a knowledge base of terrorism, political science, and an understanding of data management, as noted in this interview,

And to get them to understand who are our customers, who are our suppliers, understand the supply chain and supply of aviation security. . . . if you're going to be practical make it as multi-disciplinary as possible. I think the solution is its multi-disciplinary. These people need to have certainly a security background, but they also need a context, which would be probably political science/history - about the history of terrorism, the political dimensions of it. And . . . a technology course as well, data management course. Again, you know, these could be intro at the graduate level but a data management, data analytics, data privacy, something about data. Get these people a flavor of all the different components of what a leader in TSA would be doing (Participant 6, Interview Response, April 30, 2012).

From the perspective of general management principles one participant noted a student needs to be knowledgeable of general management practices. As this participant commented a prospective employee in aviation security management should have an understanding of the basic structure of management for line functions. These included human resource management, administrative procedures, scheduling

requirements, and learning to budget, to mention a few. As acknowledged in the following response,

Okay, but we haven't talked too much about operations management. Here you're talking about – managing the screening line of business. We have HR requirements, we have admin requirements. You need to know how to do budgets. You have scheduling requirements to do. These are leadership and management positions that are required to manage this whole operation. And of course, there's an academic requirement for that (Participant 2, Interview Response, March 30, 2012).

Critical Thinking

Critical thinking skills were addressed by six of the participants (60%) in their interview responses to questions addressing the central research question of the basic knowledge demands and professional skill sets needed for employment in aviation security management, and higher education successfully fulfilling these demands. The need for critical thinking skills was disclosed in discussions of what an aviation security manager must be capable of doing in performing his or her daily tasks.

The skills concerning critical thinking ranged from being able to see the big picture, thinking in depth about your responsibilities, a heightening of threat awareness, thinking about the next step, and having a broader understanding of risk and threat. As acknowledged by one participants response,

But if you really think about your job, most of this stuff can be prevented as far as crime and I took that as a lesson towards terrorism as you need people that can actually think about their job. Don't just look at it as big ego thing or whatever –

authoritarian thing. And you can actually, kind of like Sherlock Holmes – mentally figure – find a solution to a lot of these problems and – and anyway this goes into the skill sets (Participant 10, Interview Response, June 4, 2012).

In the application of critical thinking skills it was illustrated by one of the participants as having an employee who can focus on a problem, perhaps at a checkpoint or similar situation, who can think beyond the problem before them. Being able to conceptualize that this problem may actually be a part of a larger circumstance or can the employee make the connection. In probing further about essential professional skills an employee in aviation security management should possess, the participant responded,

You want people who can see the bigger picture. And, some of these things get into an academic kind of program - a bigger picture. So, I have managers that are faced with a problem at a checkpoint and they deal with that problem and then they forget that there's – there might be a bigger circle there that they need to worry about. They're so focused on this guy has a bad ID and let's take care of this guy. Wait a minute – there's bigger circumstances here. Can you see the bigger circumstances? Can you make a connection? (Participant 2, Interview Response, March 30, 2012)

In further consideration of this theme, another participant elaborated when discussing the required knowledge demands a prospective employee should possess for employment in aviation security management was having the ability to think and be able to change your focus of the problem, and be able to evolve with the continuing threat of terrorism in aviation security, as this participant stated,

It sounds kind of obvious but one is to be able to think. Because your– your threat is always changing and because the Intel's always changing, you've got to have that flexibility to keep changing your response (Participant 3, Interview Response, April 4, 2012).

This participant further elaborated about thinking beyond what you are being told about a problem, and having the ability to resolve the problem. An aviation security manager must be able to resolve problems. As the participant stated,

It's an analytical thing, a critical thing and to be able to take a problem and resolve it. If I go meet the customer and they tell me that – it doesn't even have to be aviation security but just in security business in general – they'll tell you they may or may not tell you what the intelligence is, in terms of what kinds of threats they're looking for. They might tell you the operational environment they want to work in. They might tell you what kind of explosives they think they might be facing. Who the enemy is. Who the bad guys could be. So then you have to start asking about potential weak spots in their infrastructure or tactics as well. It's not just we sell explosives detectors but that even just from the screening and the checkpoint perspective, that's such a small part of the picture because you have to start talking with them with the concept of operations and tactics as well (Participant 3, Interview Response, April 4, 2012).

The participant further illustrated that an employee in the aviation security industry needs to be able to understand the overall context of the environment and continually monitor the evolution of the threats. He also stated critical thinking was an important strength, as noted in the following response,

The Master's degree, particularly if you're going to do it in aviation security – it would give you the overall context that you're operating in and then focusing on some very specific threats and understanding how it's evolved, why it's evolving and potentially where the threats are metastasizing toward. My strength is critical thinking or the flexibility in the field and so what I do is I take what I'm given from people with other strengths and then run forward with it and so I think in this industry, critical thinking is a great strength (Participant 3, Interview Response, April 4, 2012).

Terrorism

In addressing the knowledge demands, skill sets, and critical content areas, a reoccurring subtheme is terrorism. Among many of the areas discussed, terrorism was noted as a critical need for a Master of Science Degree in Aviation Security Management. Terrorism was cited by seven of the participants (70%) as a major content area for academia. As noted in the following response,

I think you need a background in terrorism because I think you need to understand what the threat is really about, what the history of that threat against aviation is. You go back to the 1930s – the first hijacking of a plane in the world to 9/11 and there's a huge volume of history in aviation terrorism and it changes, and so I think we need to understand where it came from and where it's headed and where that threat starts to evolve (Participant 1, Interview Response, March 30, 2012).

This same participant further elaborated about the necessity of understanding terrorism by pointing out how close to home it has and can become. In this response to

a back to basics approach being beneficial to prepare a student for a career in aviation security management; illustrating the fact terrorism can occur almost anywhere. As noted in the following response,

All you got to do is drive downtown Oklahoma City to realize that people can die in terrorism acts in the Midwest and we need to be in front of that and we do that by education. We do that by teaching our people the basic skill sets they need to do to try to prevent those attacks. Because we see Al Qaeda repeat a lot of the similar type attacks. We see Hezbollah do a lot of the same kind of things so that's valuable information for us. We need to be students of our profession I think (Participant 1, Interview Response, March 30, 2012).

When asked directly about terrorism one participant's response was approached not only from the historical context of terrorism, but to examine the phenomenon from case studies to determine the evolution of the terrorist attack as it relates to aviation. As noted in this response,

Although I talk about this being a reactionary industry, I think there's a lot of lessons to be learnt from what the industry has faced. Certainly one of the first things I did when I got into this kind of field is I started looking at case studies – just looking at history? What is the evolution of the terrorist attack using the aviation industry? You can look at Pan Am 103 that was plastic explosives stuffed inside electronics so it was x-rayed but it wasn't identifiable because it was early days (Participant 3, Interview Response, April 4, 2012).

Acquiring the knowledge of the aspects of terrorism from countermeasures used in mitigation practices to the history of terrorism, and why aircraft are an attractive target

is important for a potential employee to know, and was mentioned by one of the participants, as illustrated in this response,

Well, I think it's great what you guys are doing in Oklahoma City. I think having knowledge of counterterrorism, history of terrorism, why do these guys do what they do? Why do they have a fetish for airplanes? I think that would be important stuff to know too (Participant 6, Interview Response, April 30, 2012).

Another participant responded by suggesting a blending of the history of aviation terrorism, in juxtaposition to a history of aviation security. This illustrates the way governments have responded to terrorist's attacks, by developing security for attacks as they unfold, and not anticipating what the next event may look like. As noted in the following response,

What I think the areas they need to know is history of aviation terrorism. And also, a parallel history of aviation security. In other words, how aviation security has developed in response to events which have happened in aviation terrorism. It's usually gone that way action response. Not the other way around unfortunately, but that's the way it's gone (Participant 5, Interview Response, April 12, 2012).

In a discussion of the practical or pragmatic approach to aviation security management, one participant illustrated the need for understanding the threats to the aviation industry from a non-state threats approach. These would include terrorists groups and criminal groups. As noted in this response,

Then, depending on what you're trying to accomplish, you're probably going to want something on threats to the industry. Understanding the contemporary

security environment, particularly non-state threats to the industry, terrorist groups, criminal groups, things like that. Then you probably – you might want then some regional studies type things (Participant 7, Interview Response, May 4, 2012).

The final response on this issue was raised within the discussion of terrorism by one of the participants. It centered on understanding how a terrorist behaves. A very simple illustration of terrorist behavior was explained by one of the participants. Aviation security managers should understand and educate themselves on terrorist's behaviors as a means to prevent or deter a terrorist attack on the aviation industry. As noted from this response,

The one thing I learned about terrorism is the terrorists are like water. They follow the path of least resistance. And if you as a red team member or a security professional can understand how this path of least resistance goes, then as a security professional you can figure out a way to block that path and make them go somewhere else or make them not try at all. It's a major effort trying to get people to think like that (Participant 10, Interview Response, June 4, 2012).

Airport Environment

The subtheme of the airport environment or a "systems approach," as described by one participant, emerged from the major theme of knowledge demands and skill sets. Seven of the participants (70%) commented on this subtheme when questioned about knowledge demands, and skill sets, as essential knowledge for an aviation security manager. In these discussions the idea put forth was providing an education in the overall operations of the airport landscape. That is seeing the "big picture" of the

airport environment and how it functions. A potential employee needs to learn each component, and how these individual components affect or could affect aviation security management. The participants who addressed this issue strongly encouraged the need for an aviation security manager to fully grasp how each link-in-the-chain is a vital area to understand in an effort to better prepare the student to make sound security decisions.

One of the participants offered a suggestion to supplement the approach to a Master of Science degree in Aviation Security Management based off a business management model; furthermore, it was suggested that it be applied to the overall airport environment, as noted in the following response,

One of my degrees in business management so you always do the case studies on such and such in this area. Or you do an exercise in the CEO, CFO or something like that or you could do the same thing in an aviation security environment. . . there's probably a dozen things I can think of where you would take that business – the business model and apply it to an aviation security environment (Participant 2, Interview Response, March 30, 2012).

One participant described the airport environment by saying it is necessary to understand the airport landscape and how the different entities, which comprise the airport environment feed into security. This was discussed in the context of field trips and the further development of a course, as noted in this response,

It's – critical content areas. There are so many different tenants that feed into security I think it's best to look at the umbrella of how that covers everything and suggest what is the basic set of the industry. Have the FSD at the airport – (Facility and Security Director) show you a day in the life of an airport. That

speaks volumes. To get access to see what gets screened. To see where the baggage goes. (Participant 3, Interview Response, April 4, 2012).

In a discussion with a participant concerning the desired knowledge demands a prospective employee should possess for employment in today's aviation security environment, the notion of a systems approach or an understanding of the airport environment was articulated. The response covered many areas of the airport landscape starting with the terminal area, security areas, tarmac, types of airplanes, fuel trucks, and retail entities, and the front or entrance to the airport terminal. The participant would train new employees to become familiar with these areas, and to constantly think as a terrorist and what would be appealing as a target for an attack.

The philosophy was to think like a terrorist from a tactical standpoint and to break down the airport environment into manageable segments for a security evaluation. The emphasis was in order to accomplish this task; you must understand the component parts of the airport. As acknowledged in the following response,

It's not a fashionable term anymore but I still like the term, systems approach.

And when we had young agents come to Houston I would take them out and try to give them my version of this. Let me give you an example . . . they'd first get the overview of the FAA . . . We'd go out we'd walk the ramps and we'd talk about airplanes, the danger areas – the identifiers – this is a 757, this is a 737, fuel trucks, catering . . . I'd take them out in front of the airport and said, we're going to limit our system - inner system to basically where you enter the airport . . . you've got the approaches to the airport, you've got parking garages, you've got where you drive up on the curb and we'd go out and start walking through the

easement . . . I said I want you to think like a terrorist . . . what could a terrorist do, what does a terrorist want to do (Participant 9, Interview Response, May 26, 2012).

Another participant when asked directly the question regarding a practical approach and the critical content areas associated with aviation security, the topic of the overall knowledge of the aviation industry was again emphasized. Additionally the participant stated this view as “cross-disciplinary activities,” as noted in this response,

Then one other thing I would say on this subject Jon and that is, I'm very keen on cross-disciplinary activities. That anybody undertaking a security course should where possible and where feasible and relevant, participate in an aviation industry course. And so that there's a cross over and also it would be very wise to bring people in in the other direction whether they are students, tutors, lecturers, professors, all the above, blend them over – have a cross over area in which there's interaction that goes on during the planned course in which you know that you're not entirely engrossed on the one hand in the discipline of security and on the other hand in the discipline of running aviation (Participant 4, Interview Response, April 15, 2012).

One participant expressed their views when asked about the critical content areas that must be addressed by academia as an operational understanding of what it is an aviation security manager is actually protecting. The airport environment was described as complex in this response,

You do need a technical – well technical is not the right word – you need an operational understanding of what it is you're trying to protect in the aviation

environment and that can be accomplished. The complexity of the airport environment can be accomplished in an academic environment with some field work and stuff like that too (Participant 10, Interview Response, June 4, 2012).

In a discussion concerning critical content areas and essential skill sets needed for employment in the aviation security environment, the need for protecting a terminal flight sitting on the tarmac and the crew's safety when staying overnight at lodging facilities on airport property was raised by the participant. This was a natural segue to being familiar with the overall airport environment as an aviation security manager.

The topic of protecting aircraft and flight crews pertains more to the private industries concerns when making decisions as an airline or charter company in this regard. The participant voiced both an international perspective and a U.S. perspective, as in the following illustration of the participant's thoughts,

They've got to remember how are they protecting that aircraft when it's sitting on the ground out at the airport when it's overnight. How are we protecting their crews when the crews have to stay? So they've got a much kind of broader understanding. For example, one of the people from one of the Asian carriers I work with was worried about IEDs. They said could IEDs be used against our people going to a hotel? Whether they're being intentionally targeted or not, what are the things that we need to understand about our overall operating environment that could put us at direct or indirect risk?

If it is primarily a U.S. audience then what I would do is give sort of the U.S. approach both legally and security wise, answering basic questions: How are airports structured and governed? How is the industry structure governed?

Who has responsibility for what (Participant 7, Interview Response, May 4, 2012).

The last response on this topic from a participant provided validity to the previous statements given about the notion of an overall perspective of the airport environment, as noted in this response referring to not only the airport environment, but if a security manager is employed by the Transportation Security Administration your duties also include navigable water ways and other forms of interstate transportation,

You would have the ability to based on – because the transportation industry is always going on 24-7. You've got the ability to link up and do a lot of hands on stuff. Either what's going on at the airport or what's going out at the cargo facility, hazardous materials and even broadening out into the different things that are going like the Kerr McClellan - and again I'm kind of dragging in other transportation modes here, but it's like the locking dam on the Kerr McClellan, that system down here why do we need security down there – okay let's go down and look at this thing. See how it operates (Participant 8, May 10, 2012).

Aviation Law

The subtheme of law and how it applies to aviation security emerged from the major theme of knowledge demands and skill sets. Five of the participants (50%) stressed the importance of having a working knowledge of the law as it pertains to the field of aviation security management. An aviation security manager must be familiar with the legal issues in order to provide a legal and ethical aviation security program, and make decisions that will not jeopardize the integrity of their company. The broader perspective of associated entities working together in the aviation environment was

tangentially referenced as well. In questioning one participant about the critical content areas associated with aviation security, the first response to the question was the law, as acknowledged in the following response,

I think the law. Definitely the law. ATSA, Aviation Transportation Security Act that creates TSA and defines our authority not only in passenger screening but air marshals and lots of other – and ground transportation. I think you have to have that background to understand how we operate and why we operate and I think those are key. I think the Homeland Security act of 2002 is another really good example of - you have to understand where you have legal authority or where that authority comes from and that drives everything that we do. So I think you need that background (Participant 1, Interview Response, March 30, 2012).

Another participant alluded to having knowledge of law as it pertains to aviation security, as noted in this response,

Because this touches on so many different issues and I think if you're practicing aviation security there's a legal component. There ought to be a law class (Participant 6, Interview Response, April 30, 2012).

This reference to a law class was again stressed by the same participant when answering the question of a “back to basics” or a pragmatic approach to aviation security such as investigative techniques; intelligence gathering and emergency response, better prepare a prospective employee for employment in today’s aviation security environment? As acknowledged in this response,

You know time for all different courses on law, emergency management, intelligence, investigation. You know, give them a whole spectrum (Participant 6, Interview Response, April 30, 2012).

To provide for a foundational level of operations in aviation security management, an aviation security manager needs to have an understanding of international law. As one participant noted,

I would also think is here you might then – you probably need to know this as your professional anyway but understanding international aviation law. Not that you're going to be a lawyer but that you understand what the regulations say so that some industries have what they call a compliance officer but essentially that if you are in security, what is it that you're supposed to be doing (Participant 7, Interview Response, May 4, 2012).

Additionally, the same participant described the need to understand the governing bodies associated with the aviation industry, and the regulations promulgated from these entities and the associated aviation laws,

So an understanding of ICAO, IATA and some of the regional bodies. How do they work, how do they function, what's their mission? Two then, aviation laws in the broader sense of the term, but then very specifically coming into law, okay what are the security conventions? What do they cover, what are they trying to address? Strengths and weaknesses of them, how are they applied. So I think those would be a couple of areas (Participant 7, Interview Response, May 4, 2012).

The final response from a participant indicated to being versed in the law as it pertains to aviation security management and understanding how it can affect a person's rights,

The challenge between the security part of it versus the civil liberties part of it and the ability to do certain things, your freedoms versus being always locked down and secured and stuff like that. Where do you kind of mesh all that together, where it makes sense (Participant 8, Interview Response, May 10, 2012).

The Role of the University in Aviation Security Management

The final subtheme, which emerged from the major theme of knowledge demands and skill sets, was addressed by all of the participants. Nine of the participants (90%) agreed that a college or university graduate program can assist in fulfilling the desired knowledge demands and skill sets needed for employment in today's aviation security environment.

One participant stated a college or university graduate program would not assist regarding this question. However, when the participant answered the question the participant demonstrated a noticeable pause in thought, and elaborated further, but left this researcher feeling ambiguous about the answer. The response to this question was illustrated by saying the following,

So we talked already a little bit about that on the regulatory side. I think that could be – that could be farmed out to academic – academia. This five-week course, 200 contact hours and you can teach probably the skill sets. You could – would it be a Master's degree program? Doesn't sound like it. I don't know if you expand

it that much into a full-fledged Master's degree. I doubt it – my personal opinion is probably not.

The participant paused at this point and gave the question some thought and further explained,

So, I don't know if that's Master's degree program or not. Operations management, I believe that – you could set up an academic program at the Master's degree level with a focus on aviation security where we talk about all those skill sets that I just talked about in an aviation security environment that – it would be you have Master's degree in business management. You could have a Master's degree that teaches many of the same things but from an aviation security perspective (Participant 2, Interview Response, March 30, 2012)

The remainder of the participants agreed a college or university could assist in fulfilling the desired knowledge demands and skill sets needed for employment in today's aviation security environment. The following are brief summaries of their responses:

I do, yes, based on those things we've already talked about. You have classes in the law, intelligence and terrorism and those kinds of things. The economics and those kinds of things. I'm looking for people who know something about their field (Participant 1, Interview Response, March 30, 2012).

Can it assist? Absolutely. Because well – most of the people we hire here have a graduate degree (Participant 3, Interview Response, April 4, 2012).

Heartily – yes. I think that the way that we approach this though, is to break it down into research, and course work. That is you might create

postgraduate pathway courses (Participant 4, Interview Response, April 15, 2012).

Well, first it depends on what level we're talking about. If we're talking management level, definitely yes. But certainly for the managerial level to learn how to think in academic manner and analyze things and make the right approach would definitely be advantageous (Participant 5, Interview Response, April 12, 2012).

I've thought about that question. That to me is one of your most important questions and I've thought about that a lot since you sent it to me last week. Absolutely a graduate program could and would fill the demands but the issue is, would TSA be even of the knowledge or the awareness or the desire to learn more or/and to understand more about people coming out with a graduate degree. But yes, I think a graduate program would do a whole lot in terms of transitioning TSA to the more professional work force. Everybody talks about it – but hasn't happened yet. And I think that would start with a grad program. Absolutely (Participant 6, Interview Response, April 30, 2012).

The following participant gave a lengthy answer to this issue. The response was given with a caveat; does the industry need a graduate degree? He emphasized further research into the aviation industry may be necessary to answer the question. From the perspective of this study the participant still answered in the affirmative, as acknowledged in the response,

Just a standard academic answer. Depends on what you're going for. I don't think if you want just skill sets a Masters programs will do that for you.

Because that's not what a master's program is supposed to be doing. A Master's program is supposed to give you a deep, better understanding of sort of literature in a field and an understanding of that field or discipline. Most Masters programs – if they're designed for anything they're designed to be a screening program for Ph.D. programs, but if they're not, that you have an understanding of a particular body of literature and knowledge that then you can hopefully take out into whatever profession you're going into and use that. So that you can understand what's going on in your field. That I think you can do (Participant 7, Interview Response, May 4, 2012).

This participant did articulate their final thoughts about this research by indicating a desire to be a part of the project in the future, and would like to provide support, in the closing remarks,

It'd be interesting in finding out and if you decide to go forward with setting something up because I'd be very interested in supporting this (Participant 7, Interview Response, May 4, 2012).

Absolutely, I think so. I have a lot of time in the training world as well. I was an instructor in air traffic control school, an instructor out at AWACS and I was Ops Officer of the Technical Training Squadron . . . (Participant 8, Interview Response, May 10, 2012).

I'll say that from my opinion, a fact, absolutely. But conditional upon what the course is, who's teaching it, course design, and selectivity of – selecting the students. You may not have to be classified but I know the military farm a lot of very sensitive projects and studies out in the civilian world to major universities

so there's some vehicle to do this and that's what you have to find. (Participant 9, Interview Response, May 26, 2012).

The final response from a participant who summed up the issue very simply in their response,

Yeah absolutely, yes. I'm a very strong proponent for education (Participant 10, June 4, 2012).

Teaching Practices

The findings gleaned from the interview questions addressed the second research question, which asked what are the best teaching practices that need to be implemented by higher education faculty to ensure the student meets these employment requirements in the aviation security environment?

All of the participants (100%) responded to this question. Their responses cover four aspects of best teaching practices. A practical approach and conducting field trips elicited the majority of participant responses in order to be most effective in teaching aviation security management. Each of these two categories received (50%) of the participant's responses. The remaining categories the participants thought were important for best teaching practices were case studies, where (40%) felt this method should be utilized, and the use of guest lecturers (30%) encouraged this method.

The general feeling conveyed by the participants was one of ensuring academia would teach courses in aviation security management at a practical level. The comments made by the participants emphasized the connection to what is being taught applies to what they would really be doing, and avoid a philosophical approach. The overall thought was one of "keep it real."

Practical methods. Those participants who responded to the notion of practical methods of teaching practices stressed keeping the courses connected to the “field” and grounded in what an aviation security manager does in this profession, as one participant noted,

... well it's got to be linked to the fields. One of the problems - academia – sometimes it's not connected enough to the field or the front line and so when it comes to security you can read all these academic articles by someone that talks about aviation security, but someone who understands aviation security can read say – the guy knows academia but he doesn't really understand aviation security so really got to have the right – you better have a course like that, it's got to be linked with an airport or a security vendor or someone who can tie into the field and so that they get the same so it's not too disconnected so it actually fits into what's actually being done on the ground (Participant 5, Interview Response, April 12, 2012).

The challenge presented to academia is to teach course material that has a close tie to what is really occurring in the field. Most of what comes out of colleges and universities seems to be theoretical, and it is difficult for the student to see the actual application of a particular course to their related field of interest after they graduate and start a career. Academia needs to be able translate what comes out of the classroom to a real world practical application, as noted by one of the participants,

I think we need to teach practically. I think a lot of academia is theoretical. It's not how you translate that classroom knowledge into real world practical application in my mind is key. I think to do a couple of years in a Master's program and get a

cool piece of paper to hang on the wall but is there really anything practical in here that's going to help me do my job better? And I see that as the challenge in academia from what I've seen so far in my program. That there really is a need to tie those things to somebody's actual use. Teach me how to - teach me about passenger screening technologies so that I have a working knowledge of that. So when I come and interview with you, you can say, well I know when Advanced Imaging Technology (AIT) does this and this is the theory behind it and this is what it should be looking for and this is the controversial for and against. But I think that's one of the big problems I've seen - that we don't try to stay in practical application. In my mind I think that's key, I really do (Participant 1, Interview Response, March 30, 2012).

Academia needs to teach in a manner whereby the student does not just sit in a classroom and digest lectures. Most of what is taught in this fashion may soon be forgotten and the course material has no value in educating the student for how he or she can apply this knowledge to a career in aviation security management, as acknowledged by one participant,

I guess I've always been a big advocate of the more practical you can make it of course is better. If you just expect people to sit there and listen it's in one ear out the other (Participant 3, Interview response, April 4, 2012).

In consideration of teaching a graduate course in aviation security management traditional methods of educating are not exciting and stimulating to today's students. Students tend to get bogged down in routine procedures in lectures, tests, and papers

and their minds are not being stimulated to think creatively and become involved with the learning process. As one participant's view of class room teaching was stated,

I'm going to use my own experiences. I went to all the elementary, grammar school so forth. Went and got my bachelors and now it's time to go get my Masters. And it wasn't a whole lot different from the fifth grade, and the seventh grade. Go to class, we get assignments, we have tests, we have papers, we have projects and except for one class in graduate school . . . but this was life in graduate school. We didn't really have tests, we didn't do papers, we read, we sat there and discussed things and we had a lot of free flow so you know, you're allowed – if we want to do things in security or any really good - we need to have brains expand and get ideas. We are so constrained and constricted on traditional American school methods – I think we lose a lot of innovation (Participant 9, Interview Response, May 26, 2012).

Field trips. In keeping with the idea of making graduate course work more relevant, field trips were discussed by (50%) of the participants when directly asked about best teaching practices. Field trips were suggested as one method of keeping the course work meaningful by demonstrating in a real way how what you are learning applies to aviation security management. This example is used in today's courts when many times juries are taken from the courtroom to the scene of the crime to see for themselves what is being discussed. It gives the juror a better feel for the situation. Incorporating field trips into your teaching practice would have this same outcome.

Taking students to the airport to immerse them into the environment in the various ways a person wanting to commit intentional and unwarranted attacks on the

aviation industry can be evaluated first hand. A student can see first-hand the everyday procedures occurring at a security checkpoint, Security Identification Display Areas (SIDA), or other areas supporting the airport, as noted in one participant's comment,

You go to the airport you walk through, you just look at things. For instance, one of the things I talk about is the checkpoint. Quick, simple, cheap and easy fixes and use of cardboard, duct tape, stick, string procedure. If I was a terrorist – you're a cop. I'm a military guy. If I can sit and survey and observe a target I can find a way to defeat it. And even today these assholes leave the damn security checkpoints open. A year ago I was – they brought me back up to Toronto – and on the way I was in Chicago O'Hare. I walked into the back of the checkpoint – I was literally on the side of it – I sat there and ate a sandwich and figured out two ways to get bombs through the checkpoint and they weren't going to catch it cause I could watch it (Participant 9, Interview Response, May 26, 2012).

Field trips afford the student the opportunity to be creative when considering methods of security measures when the actual workings of airport operations are underway and viewed in person. The value afforded by this opportunity cannot be duplicated in a classroom setting. The participant's responses were interpreted as a practical method to make real sense of how security measures are implemented and what the actual application of these methods looks like.

Case studies. Case studies at the graduate level in aviation security management were raised by four of the participants (40%) as a best teaching practice. Case studies provide the student various perspectives of the problems associated with aviation security management. Case studies offer a window of which to view complex

problems and provide the student a mental picture of how something went wrong and what can be done to correct future problems.

The importance of conducting a case study correctly was also gleaned from the participants responses. Case studies should always be presented from the correct reference point as many case studies are not conducted from the correct point-of-view. Case studies should bring out the issues being researched. As acknowledged in one participant's response,

And I think some of that – this field – it is case studies to – and case study is sort of while everybody loves case studies very few people do it right. And what the case study should be doing is illuminating the points that you're trying to make. Don't – and too many people just throw out the case study and assume that people understand what it means. Don't. Make sure that the points that you're – that the case study's trying to emphasize – and it's not just the facts of the case – and, that are important. It's what the messages ... (Participant 7, Interview Response, May 4, 2012).

The participant went on to explain case studies are mostly utilized at a graduate level. Case studies typically point out basic elements that do not exist in the facts of a particular issue, and should promote a robust discussion of the topic. As noted in the following response,

Certainly a case study has to be done and at a graduate level it's now almost become a requirement that case studies – people expect it. But simply having a case study that you can use often times you'll be very familiar with the phrase, objection your honor assumes facts are not in evidence. And I think more and

more we're finding that even if the instructor is using the case study properly the assumption that the students are going to know the basic facts and discuss it, isn't true – or is not true enough (Participant 7, Interview Response, May 4, 2012).

Case studies should be used as a tool to evaluate incidents, which have occurred and have an understanding of what the implications may be for the aviation security manager. As one participant stated,

I understand it as being able to do case studies, looking at things that have happened, and understanding what the implications are for aviation security (Participant 5, Interview Response, April 12, 2012).

In support of this participant's response, another participant touched on the same reason for using case studies as a best teaching practice. As noted in this response,

On a regulatory side it's going to be pretty straightforward. You're going to go to the Code of Federal Regulations (CFR's) and – but on operations management side aviation security related case studies. Scenario driven practical exercises I think scenario driven exercises, case studies, we've all done case studies in our academic work. There's so many case studies available from an aviation security standpoint and you know you bring in a case study like that it brings in a lot of different pieces of the aviation security problem (Participant 2, Interview Response, March 30, 2012).

Guest lecture. Guest lectures were discussed regarding best teaching practices by three of the participants or (30%) as an alternative method of effective teaching. Multiple days of lecture in a 16-week course can cause students to become bored, and

a guest lecture can enhance the learning atmosphere and generate more enthusiasm among students. The concept of using people who work in the industry to teach specialty areas within the overall context of a course would be very beneficial. As illustrated in one of the participant's response,

I would see this as either you bring in – you would design a program around - maybe make it a Saturday program? Where you would have a lot of people Saturday MBAs like we have. You would do like four Saturdays in a row would be your law class and bring in one of the big hitters from around the country in aviation security law and have them teach that course and then have a person who understands the intelligence. Have them come in and teach four classes. And, build the program there. I think if you made it 16 weeks and they take three classes a semester and they do that for two years I think it's not as robust and as interesting and compelling and ultimately fruitful for them and the government is something like that. That's a best case, wishful thinking (Participant 6, Interview Response, April 30, 2012).

Offering guest lectures to the students also provides a means for the students to have an open discussion with the people actually working in the field of aviation security management. Offering view points from the various segments of the aviation industry can provide for a rich source of information. As illustrated by one participant,

Rather than having three lectures a week for a semester with the same person, try to have different people come in, have a TSA screener come in one day. Have an airline manager come in. Airlines have all their own security operations. Have the airport come and give you their perspective, then have the airline come

and give you their perspective because I guarantee the airport and the airline are not going to see things the same way because the airlines keep having more and more restrictions placed on them (Participant 3, Interview Response, April 4, 2012).

One participant noted the importance of having guest lecturers to supplement a graduate program. Using guest lecturers who work in the discipline to provide a balance in the discipline being studied. As illustrated in the following response,

We've had to play with this since the 1970s but you don't have a really deep bench of people who can - almost nobody who can do both but certainly very few who at least on the academic side who can give you the context and then you have folks like yourselves who, obviously you're doing the academic side too but have the professionals who can come in and that's one of the things that we were looking to do actually with a couple of the training courses and then hopefully degree tracks that we're going to set up in Singapore. That you'd have the mix, the egghead talk about this is what it looks like and then you have the real person come in and say okay this is what it actually looks like. And do the tag team type effort so that you'd actually get the full – hopefully the full spectrum (Participant 7, Interview Response, May 4, 2012).

A pragmatic approach. The third and final research question, would a pragmatic approach to a Master of Science degree in Aviation Security fulfill these employment requirements in the aviation security environment was addressed by all of the participants. When asked if a pragmatic approach to aviation security management

would better prepare a prospective employee for employment in today's aviation security environment, nine of the participants (90%) responded positively.

Providing a pragmatic approach to the aviation security management graduate program provides for a better understanding of the security field. Regardless of a person's specific job function in the aviation security field possessing knowledge in overlapping spheres of disciplines or a multi-disciplinary approach is beneficial. Most of the categories discussed, such as investigative techniques, emergency response, and intelligence gathering were considered essential course work to include in a graduate program in aviation security management; however, two participants (20%) recommended not including intelligence gathering for an aviation security manager.

Intelligence gathering is a field typically done in the governmental sector. The assumption from this is that most aviation security managers are working in the private sector. The corporations, which employ these managers look to the government sectors for intelligence needs.

The role of academia to provide this knowledge will become important when the current workforce retires. A large turnover in the aviation security workforce is anticipated in the near future. In a majority of the opinions offered by the participants the notion of a pragmatic approach was supported, as noted in the following response,

For somebody that wants to be a federal security director at some point, they need that kind of background and we've been very fortunate to have people who have military and law enforcement background so they have that skill set. But as TSA grows and we get farther away those kinds of people who came in to the organization. In ten years we won't have that. We'll have people that have been

Federal Air Marshals. We will have people that have kind of come up in the administrative side of the house and regulatory side of the house and they won't necessarily have crisis management skill sets that people - guys like myself have. To send me an applicant who has some knowledge of that – I think that's really important (Participant 1, Interview Response, March 30, 2012).

As a means of a multi-disciplinary perspective having knowledge from a pragmatic point-of-view is beneficial and attractive to an employer. The ability for a person who has specialized in one discipline to possess knowledge in another discipline assists him/her in their conceptual skills. An aviation security manager would have a well-rounded knowledge base to support their decisions on aviation security problems. As noted from one participant,

I can't see how it wouldn't. I can't see how any of that would be a bad thing. It is a question of is it necessary? Do we have a lot of people who work here with a forensic background or who have taken some course in forensics; absolutely? Is it useful for us? You know, they know trace well and so much of screening is trace detection, it's useful. That's a very useful thing to know (Participant 3, Interview Response, April 4, 2012).

An aviation security manager may not be an investigator or have the best investigative skills; however, they will need to have a base knowledge of investigative techniques to effectively lead investigators in the future. Depending on the problem facing an aviation security manager, knowing the best course of action is dependent on that manager knowing the basics to better inform superiors in times of crisis. As acknowledged by one participant,

I reckon that each one has its own particular value and but I would isolate intelligence gathering for a moment and say I would recommend you take that out of an operational security approach . . . don't turn out security professionals for intelligence gathering because the business that they're in is not interested. It expects to go to government or to credible sources . . . you could end up with the good ole jack-of-all-trades, master of none. Investigative techniques – I would say yes, very valid. But, I do see that investigation is probably a sub culture team without you know, denigrating investigation. What I'm saying is that the security leaders of the future will not of themselves be investigators but they will lead good investigation or capability (Participant 4, Interview Response, April 15, 2012).

In a graduate program in aviation security management, the advantage to a pragmatic approach provides leverage in tactical and operational levels of aviation security. Having an understanding of the basic principles associated with investigative techniques is essential to educating a well-rounded aviation security manager, as one participant illustrated in this response,

I certainly would agree with you to a large extent that there are certain things that we just have to do and having an understanding I think particularly if you're talking a Master's degree, having an understanding of sort of what everybody does in the environment and how they work so that you can better leverage on that because ultimately the Master's degree in looking at this, is designed to get somebody who is going to be, sort of operational strategic level, rather than operational tactical level, and understanding operations and who's doing what

and why and then trying to leverage on that is extremely valuable and I think that, you've got a very strong point there (Participant 7, Interview Response, May 4, 2012).

Without a pragmatic approach you run the risk of failure. The pragmatic or basic approach centers the student in being practical and real in the aviation security environment. It is a foundational level upon which you build your knowledge storehouse. The basics can be an area often overlooked when considering an education in aviation security management. As acknowledged by one participant,

Anybody that gets away from the basics in any endeavor be it military operation, security operations, police operations, marriage, is going to fail. You will fail. So, the basics – my answer – you got to go and I'd like to say back to the basics, but I'm afraid so many of them – like in the FAA – never did the basics. So if you will get the basics you know, in all these different disciplines – I mean the real basics not the little game playing stuff – make it practical, make it real, so listen to the students – does this make sense to you? The basics are so fundamental I forget to talk about them sometimes but you're getting on top of all those issues (Participant 9, Interview Response, May 26, 2012).

A pragmatic approach is considered crucial to avoid making mistakes and producing a better equipped employee. It focuses the student on critical areas under consideration for effective aviation security management. As one participant noted in this response,

I would say back to the basics is crucial . . . the mistakes they make now is they have all this high tech equipment and all this other kind of junk . . . we have

numerous layers of security and the bad guy has to get through this and the likelihood of doing this is so unlikely it's all a bunch of nonsense. The back to the basics is focusing on the three main things I said before. One is understand what you're trying to protect. You need to have a good working knowledge of that. (2) You have to understand the security systems . . . how the security personnel react with that equipment as well as understand how a bunch of terrorists will react with that equipment and how to get by it and then what was the third thing? Understanding – something about the enemy basically intelligence evaluation of – evaluation of intelligence information on terrorism . . . But if you actually focus on those three items, you can run your system much more efficiently, much better as far as being a deterrent and you'd certainly stay within the Constitution . . . So at least generally I would say the back to the basics is absolutely crucial (Participant 10, Interview Response, June 4, 2012).

One participant said a back to basics approach would not be useful in the aviation security environment. A security manager in the aviation security sector has no use for the basic techniques asked in the interview question. The intelligence provided to aviation security comes from a different government source. As expressed in these comments to the interview question,

Not too much. Especially intelligence gathering, not a problem - it's provided to us. We're not out gathering intelligence. There's not too much that – the investigative technique. No - Intelligence gathering – no. Emergency response? I don't know how you train that. You probably can – again I'm looking more to operations management in part of this but I don't – in today's aviation

environment we don't do intelligence gathering so much. There are some investigative techniques that are taught in the regulatory course . . . (Participant 2, Interview Response, March 30, 2012).

CHAPTER V

Conclusions and Recommendations

Introduction

The purpose of this qualitative study is to conduct detailed personal interviews with aviation security professionals in both the private and governmental sectors to determine knowledge demands and essential professional skill sets needed for employment in the aviation security environment. The following research questions were answered by this qualitative study:

1. What are the basic knowledge demands and essential professional skill sets needed for employment within the aviation security environment? Can higher education successfully fulfill these demands and skill sets?
2. What are the best teaching practices that need to be implemented by higher education faculty to ensure the student meets these employment requirements in the aviation security environment?
3. Would a pragmatic approach to a Master of Science degree in Aviation Security fulfill these employment requirements in the aviation security environment?

The validity and reliability of this qualitative study were explained in Chapter 3, and triangulation was recognized as the method for measuring the study's validity [dependability] and reliability. In order to bolster the validity [dependability] of this study the conclusions were based on agreement from three or more participants on any one issue.

Conclusions

The following conclusions illustrate what the interviewed aviation security professionals recommended based on the research questions. Three major themes existed from the research questions, (knowledge demands and skill sets, teaching methods, and pedagogy). The following research question was answered by the participant interviews regarding the major theme of knowledge demands and skill sets:

1. What are the basic knowledge demands and essential professional skill sets needed for employment within the aviation security environment? Can higher education successfully fulfill these demands and skill sets?

Knowledge demands and skill sets

Seven subthemes emerged from this first major theme (leadership, terrorism, airport environment, behavioral profiling, risk management, critical thinking, and aviation law.

Leadership. The majority of the participants (80%) stressed the importance of leadership in the role of an aviation security manager. Leadership was highly recommended by the participants as an essential skill needed for today's aviation security manager. Being an effective leader is a crucial aspect in implementing a vision plan. A leader must have the ability to sell the vision and have “buy-in” from subordinates or it will fail. Aviation security management is a discipline, which stands apart from other leadership models; therefore, good business leaders do not necessarily make good aviation security leaders as stated by participant 5 when it was explained that some aviation companies make the mistake of placing security managers in

positions they are not qualified to serve; therefore, the concept of leadership should be taught from the perspective of an aviation security professional.

Terrorism. The subject of terrorism was recommended by (70%) of the participants as a course topic which should be taught in a graduate program. Aviation security managers must have a thorough understanding of terrorism from its historical beginnings as a means of asymmetrical warfare to the current trends in terrorism from a global perspective. Participant 5 suggested teaching the historical perspective of aviation terrorism in juxtaposition to the history of aviation security to show how aviation security developed in response to these events.

Most all attacks on the aviation industry are classified as acts of terrorism. Teaching students to think as a terrorist and how a terrorist may strike was supported by the responding participants. Aviation security managers and law enforcement agencies often talk about the term “Red Teaming.” Red teaming is organizing a team of persons who conceive ways to attack a given target from the perspective of a terrorist in order to test the effectiveness of a security plan. Offering a “Red Team” approach as a component to a terrorism course is a very practical and effective method of educating the aviation security manager.

The airport environment. The participants agreed understanding every aspect of the airport environment and how each component of the airport interacts with each other in the daily operations of an airport is crucial. A terrorist will often strike at the weakest link of a chain as noted by Schneier (2003). These links in the chain are referred to as holes placed in a barrier to allow authorized access by trusted persons. Each entity of the airport including the terminal, parking garages, hotels and

restaurants, tarmac, hangar areas, airport operations area (AOA) and flight schools, are links in the chain. Effective aviation security management is better achieved when the security manager learns how best to protect the holes in the barrier and how to defend against intentional and unwarranted attacks.

Behavioral profiling. The skill of behavioral profiling is an essential skill to be learned and acquired over time as an aviation security manager. According to the participants, understanding behavioral profiling was an important topic for the graduate student to study. The method of behavioral profiling is a methodology of recognizing behavior patterns of suspicious activities of individuals. The Israeli model is actually referred to as racial profiling; however, behavioral profiling is less controversial and could be a more productive and cost effective way of securing U.S. aviation. Instead of looking at and treating everyone as a terrorist this method would allow security professionals to focus on finding a terrorist. Participant 10 noted the method utilized by TSA, referred to as the Screening of Passengers by Observation Techniques (SPOT) program is not being utilized correctly by the agency. The TSA uses persons known as Behavioral Detection Officers (BDOs) to perform this method; however, they are not necessarily looking for the behaviors of a terrorist. They have been trained to detect suspicious activity which yields numerous arrests of criminals perpetrating crimes on the traveling public and not persons intending to commit acts of terrorism. BDOs should be trained in the identification of terrorist activity and to understand the differences in the two behaviors.

Risk management. Six responding participants recommended this topic. Aviation security managers should have a comprehensive understanding of risk

management, as it is considered the foundational building block of any security system. Risk management with aviation security considers two elements: (1) the likelihood of a threat, and (2) the consequences of a successful attack. Aviation security managers must be able to decipher the differences between threat and risk. According to the participants of this study, risk management is a critical competency which should be taught in a Master of Science degree in Aviation Security Management. Moreover, it should be part of the fabric of each aviation security decision process. Risk management is a proactive approach to aviation security and lessens the need to be reactive when performed correctly.

Critical thinking. Sixty percent of the participants of this study emphasized the need for aviation security managers to be critical thinkers. Critical thinking is a process used in many areas associated with aviation security, for example analyzing intelligence data closely correlates with the risk management process. Critical thinking plays an important role in conducting counter security measures, such as the method described by the participants as “Red Teaming.”

Another part of critical thinking is the ability of the aviation security manager to think globally. Aviation and terrorism is not uniquely confined to the U.S., but it is a global phenomenon. Participant 4 explained the fact the U.S. tends to approach aviation security from a point of introspection, and not connecting to the rest of the world. Aviation security decisions in the U.S. are axiomatic among law makers and those associated with implementing aviation security procedures. As the U.S. system of security comes into contact with global systems unexpected results can occur. Aviation security decisions need to be made with this thought in mind. These unexpected results,

or as Bruce Schneier (2003) calls them “emergent properties” or “unintended consequences” will have an adverse effect on a security system (p. 49).

Aviation security law. Aviation security law was recommended by five (50%) of the participants. The code of criminal law, in particular aviation security law, is a vital competency of aviation security management. An aviation security manager is protecting the assets of their company and must know what methods of security are legal to provide further protection of their company from litigation as a result of an illegal act on the part of the companies employees. Many legal opinions emerge from wrongful actions of law enforcement and other entities involved in the security process in the protection of society. An aviation security manager must act within the scope of law as it relates to their duties. Including aviation security law in a Master of Science degree in Aviation Security Management is essential and should be a part of the continuing education process throughout the life of an aviation security manager.

The role of the university. From the data supported by the response of the participants it is reasonable to conclude that academia can fulfill the knowledge demands and skill sets needed for employment in the aviation security management industry. The majority of the participants (90%) agreed a Master’s degree in Aviation Security Management would be beneficial for employment in the aviation security management sector.

As discussed in the review of the literature, few universities or colleges offer a graduate degree or course work in the aviation security management field. A search of U.S. universities and colleges revealed only one university offered a Master of Science degree in Aviation Safety and Security. Reference Appendix E.

Teaching Methods

The following research question was answered by the participant interviews concerning this theme:

2. What are the best teaching practices that need to be implemented by higher education faculty to ensure the student meets these employment requirements in the aviation security environment?

Four subthemes (guest lecture, case studies, field trips, and practical methods) emerged from this major theme based on the participant's interviews.

Guest lectures. The desired course work in aviation security management should be delivered not only in traditional classroom instruction format, but in the form of guest lectures. The participants of this study recommended using guest lecturers as frequently needed to focus on the true meaning of each course. Using professionals working in the field of aviation security management illustrates the real-world experiences of the information being taught in the classroom. Participant 7 described guest lecturers as professors of practice, which brings home the importance and practical use of the information being taught. Participant 6 suggested actually building course work based on guest lecturers that are experts in a particular field of study would make course work much more robust, interesting, and fruitful.

Case studies. Graduate course work in aviation security management should be supplemented by the use of case studies. Case studies bolster lectures and provide a practical emphasis to the issues, as well as foster and improve critical thinking skills of the student of aviation security management. Case studies will provide for a more detailed global view of the aviation security problem. There are few disciplines, which

are more of a global nature than aviation and the aviation security management profession. Case studies can focus the importance of international issues related to aviation security management and lessens the tendency in the U.S. for introspection. Students need to be prepared to work in an environment from an international perspective.

Practical methods. The practical method keeps the courses connected to the “field” and grounded in what an aviation security manager does in this profession. Practical methods educates students with what is really occurring in the aviation industry. The practical method limits theoretical and political leanings and focuses on how the material being presented will benefit the student in the real-world. Teaching practically and keeping the material focused on the work will promote innovation. As participant 9 said that the traditional American school methods are constraining.

Field trips. Field trips are another effective method of course instruction. Based on the participant’s comments of actually visiting aviation facilities and understanding how all of the individual components of the system interact with each other. In addition, field trips are necessary for employing “Red Team” concepts for determining weak points and testing existing security measures in the aviation environment. Furthermore, conducting a personal site visit to an aviation facility, security facility, or terminal areas will provide a clearer picture of the environment being studied and protected by security professionals. Combining these four types of teaching methods provides the graduate student a diverse and rich environment for learning aviation security management procedures.

Pedagogy

The subtheme, a pragmatic approach would or would not fulfill employment requirements, emerged from this major theme based on the participant's interviews. The following interview question was answered by the participant interviews regarding this theme:

3. Would a pragmatic approach to a Master of Science degree in Aviation Security fulfill these employment requirements in the aviation security environment?

The concept of a pragmatic or a back-to-basics approach in the field of aviation security management was overwhelmingly (90%) supported by the participants. This approach defines the course work "as real" when applied to the aviation security management environment. Participant 1 noted the student has to know how this course work relates and how the information being taught should be applied to the daily work of an aviation security manager. Participant 7 believed educating students, particularly at a graduate level, provides leverage in an operational level of aviation security management. Participant 10 emphasized a back-to-basics approach was crucial for an effective graduate program in aviation security management.

The primary reason to incorporate a pragmatic approach in a Master of Science degree in Aviation Security is to keep theoretical concepts at a distance and avoid political leanings in the educational process. Furthermore, this approach would assist in fulfilling employment requirements in the aviation security environment because the pragmatic approach is necessary to educate today's aviation security managers.

Recommendations

The findings of this study related the importance of teaching the knowledge demands and skill sets that aviation security management professionals are seeking from applicants applying for employment in the aviation security environment. Additionally, the methods of teaching and the approach to teaching are emphasized. The participants of this study agreed a university or college would assist in fulfilling the knowledge demands and skill sets they require for employment.

The following is the researcher's recommendation's for a Master of Science degree in Aviation Security Management and are based on the findings and interpretations of the participant's interview statements. The knowledge demands and skill sets identified for the Master's Degree are those expressed by the aviation security professionals from their lived experiences in this discipline and are considered the fundamentals needed for employment in the aviation security management industry.

Master of Science in Aviation Security Management

The Master of Science in Aviation Security Management is designed to provide graduate students an education in the practical methods of effective aviation security management. The Master of Science in Aviation Security Management is an important process in the professionalization of aviation security management. The academic rigor experienced by the graduate student will refine their skills in the areas of leadership, terrorism, the airport environment, behavioral profiling, aviation security law, risk management, and critical thinking.

Core Requirements:

Aviation Security core: 9 hours

- Countermeasures in Aviation Security

- Foundations of Terrorism
- Aviation Security Law

The core requirements ensure the student will study areas which are deemed as the foundation of this graduate degree. The corner stone of aviation security management is established on the analysis of security countermeasures in aviation security; furthermore, it is at the heart of any security program. Analysis of countermeasures is a tool used when making risk assessments at airports, airlines, cargo transport, or any of the associated entities pertaining to the aviation industry.

Countermeasures in aviation security. This course is a risk-based approach to aviation security. This approach is used as a tool for contingency planning and is a strong professional skill. The countermeasures course will enable the aviation security manager to assist leadership teams with viable solutions to problems.

The course content will be taught from a combination of classroom instruction and field trips. The lectures will define the philosophy of risk analysis and how it applies to aviation security management. In this course the student will identify areas of vulnerability, such as personnel and facilities, and learn how to assess these vulnerabilities.

The field trips will immerse the student in the aviation environment to experience the landscape and the ancillary components of aviation security management. The field trip will involve the following: a detailed on-site observation of the terminal areas, parking areas, restaurants and hotels, flight schools, cargo facilities, catering facilities, and hangar areas. The students, under the supervision of the course instructor and the security official of the airport facility will learn how each segment of the airport relates to

the overall operation of the airport environment. The students will observe at length the activities of security personnel and other authorized personnel working at the airport. Participant 9 said all that needed to be done was to watch the security operations at a TSA checkpoint to determine how to get a weapon through without being detected. Terrorists use the same technique to determine the weak spots in a system.

The student will use the knowledge gleaned from the classroom instruction and apply this knowledge in the field exercise. These individual components of the airport will be examined and the student can determine the weak points in the infrastructure of the airport. A countermeasure security plan can be formulated to determine what assets are being protected and the risks to those assets in order to analyze the efficacy of the security countermeasures. The student will be able to demonstrate the ability to determine the strengths and weaknesses of the security countermeasures in a written risk analysis plan of the countermeasures prepared from the site visit for presentation to the class and explain their findings.

Foundations of terrorism. Understanding terrorism is the key to formulating mitigation plans and remaining ahead of the threats to the aviation environment. This course will teach the student how aviation security management developed in juxtaposition to the history and rise of terrorism. The course will illustrate the government's response to terrorism from a reactive perspective and how failure to anticipate the problem from a proactive approach is detrimental. The course will be taught by classroom instruction, professional guest lecturers, and case studies. The classroom instruction will inform the students of the chronology of events which

occurred and the countermeasures that were developed in aviation security management to mitigate the risks of intentional attacks to the aviation industry.

Guest lecturers will enhance the course topic from the lived experience of the aviation security professional. Guest lecturers from the U.S. aviation security system and guest lecturers from the international security sector will be used and they will provide information from their individual perspectives. These guest lecturers will describe the effects terrorism has had on the aviation industry and what countermeasures were used to mitigate the risks. This will provide the students with a rich resource of factual data from the professionals who are working in the field of aviation security management.

The case studies will come from documented incidents of terrorism on a global level. The data used for the case study will be from video documentation of the events as they occurred, written documentation of the events, such as after action reports (AAR's) or other disaster response documents in order to inform the students of the facts of the incident. The students will then research the incident in order to come to a reasonable conclusion of how the event occurred, what countermeasures were or were not effective, and what might be done to mitigate future threats.

Aviation security law. Knowing aviation security law is a core requirement of aviation security management. The understanding of the law as it relates to aviation security is crucial in order to plan and perform security operations and remain in the legal constraints of the law. Having this knowledge reduces the likelihood of litigious actions against an aviation security manager's organization. The course will be taught by professional guest lecturers in criminal and aviation security law.

The aviation law course will cover not only U.S. law, but will teach the aspects of international legal and regulatory issues of the law. An example of International issues of law and regulations will include the International Civil Aviation Organization (ICAO) and Annex 17 to the Chicago Convention and the International Air Transport Association (IATA).

Research Requirements

The research requirements in the Master of Science in Aviation Security Management are designed to offer the student the tools needed to conduct effective research. Universities in the U.S. either require a thesis or a creative component or offer extra course work in lieu of a thesis. Based on the participant's emphasis on the knowledge demands and skill sets, especially in the area of critical thinking skills, the researcher recommends the Master of Science in Aviation Security Management require a thesis.

Core research requirements: 6 hours minimum

- Guided Readings in Research
- Capstone in Aerospace Research

Program Emphasis

Program emphasis courses are offered to provide the student areas of interest to focus their study. The courses available cover a broad field of study related to aviation security management. The recommended emphasis courses are:

Program emphasis 15 hours:

- Information Communications Technology
- Open Source Intelligence Analysis

- Aviation Security Technology
- Behavioral Profiling
- Covert Testing of Security Countermeasures
- Leadership in Aviation Security Management
- Air Cargo Security Countermeasures
- Terrorism in Aviation
- Contingency Planning for Critical Incidents

The above described program emphasis courses are based on the participant's recommendations for a Master of Science degree in Aviation Security Management. These courses will be offered in accordance with the recommended teaching methods described by the research participants. The following is a description of the program emphasis courses and how they will be taught:

Information communications technology. This course involves familiarizing the aviation security manager with the various types of communication media on-board aircraft. The course prepares the student to be aware of how specific communication technology devices on-board aircraft perform, the device purpose, and capabilities. Additionally, the hardware and software products being used in today's aircraft play a vital role in the operational aspects of the aircraft. It is important for the student to understand the security risks associated with this technology.

The advances in technology are developing at a rapid pace and understanding their capabilities will aid the aviation security manager in making sound security decisions in determining the unintended consequences of advanced technology. The class will be taught by classroom instruction and professional guest lecturers

knowledgeable in this area of expertise combined with a field trip to an aviation technology institute, such as the L3 Corporation. The professional guest lecturer will provide in-depth detail of how communication technology works onboard aircraft and the implications it may have on aviation security.

The field trip will allow the student the opportunity to observe a demonstration of and visually inspect the communication media and learn the operational aspects of the latest technology and the effects on aviation security.

Open source intelligence analysis. Open source intelligence analysis is a practical topic that provides knowledge to the student in relevant matters of aviation security management. The student will learn where to collect intelligence, methods of intelligence collection, and how intelligence is analyzed. Through classroom instruction students will search open source data available on the internet, magazines, newspapers, governmental, and non-governmental organizations (NGO). The student will learn data mining techniques for raw intelligence and convert raw intelligence to actionable intelligence from the data to make aviation security determinations.

This course will address critical thinking skills recommended by the interviewed participants. The secret intelligence produced by governmental agencies is not accessible to most aviation security managers and it usually does not provide any more information than what can be gleaned from open sources. The open sources of intelligence available to the public are rich with details concerning terrorism and current events occurring in the world. Participant 10, when performing “Red Teaming” operations, catalogued open source material and was able to supply the team with valuable intelligence reports that contained more actionable intelligence than did “top

secret” intelligence reports. The class will be taught by classroom instruction and guest lecturers specialized in the field of intelligence analysis. Depending on the availability of the guest lecturer it may be necessary to conduct the guest lecture via Skype or other means of distance learning.

Aviation security technology. The student will study the current technologies associated with aviation security management used to identify threat items, such as the Advanced Imaging Technology (AIT), magnetometers, X-ray, and explosive detection systems (EDS). Participant 1 stressed the importance of staying on top of the technology associated with aviation security management. Additionally, the course will explore emerging technologies in aviation security, such as retinal scanning for future trends in aviation security countermeasures.

This course will be taught by a combination of classroom instruction and field trips to learn how the equipment performs. Classroom instruction will include the nomenclature associated with the various threat detection equipment and how to recognize threat images or alerts indicated by the security equipment. Additionally, the student will learn what triggers an alert and the causes of active and passive failures of the security technology. A passive failure is when a security system fails to take action when it should. An active failure occurs when the system takes action when nothing has occurred (Schneier, 2003). The field trip, under the supervision of the course instructor and the security agent responsible for the site visited, will involve observing how the various technologies associated with screening passengers at TSA checkpoints perform. The student will observe the various types of threat detection equipment that is in use at the checkpoint. The technologies used for passenger screening can be viewed

to teach threat object detection methods and when hand wand procedures are appropriate. Additionally, the student can observe and learn the threat detection capabilities of X-ray scanning of carry-on luggage and the technology for trace explosives detection of passengers and luggage.

Behavioral profiling. The procedure of behavioral profiling is one which requires extensive field training. The course is not designed to make a student a behavioral profiling expert, but will be taught as an introduction to the practice of behavioral profiling. Participant 10 said the only thing that could detect an attempt to smuggle weapons onboard an aircraft while conducting “Red Team” operations was someone who could effectively profile for terrorists behaviors. Additionally, behavioral profiling will be compared and contrasted to the Israeli practice of racial profiling.

The course will be taught by classroom instruction, guest lecturers, and a practical exercise involving the use of behavioral detection techniques and case studies of terrorist behaviors. The sources of information for the case studies will come from video documentation of terrorist behaviors, which have been observed prior to an attack and written documentation of terrorist attacks and these data are used by aviation security managers to teach behavioral profiling techniques. A practical exercise using video recordings of actual terrorist’s behaviors prior to an attack will be conducted by analyzing the video events to apply the behavioral profiling techniques learned in the course. The guest lecturers will be experts from the U.S. aviation security sectors and International officials trained in behavioral profiling. Distance learning technology, such as Skype will be used to accommodate out-of-state or International lecturers.

Covert testing of aviation security countermeasures. The course is designed to examine various methods of testing aviation security countermeasures. The data from these tests can be used to mitigate aviation security vulnerabilities in the commercial aviation system. This method of aviation security testing is also known as “Red Teaming.” A red team researches and observes an airport or aviation related entity and decides where and how security can be breached, such as at a passenger checkpoint. According to one of the participants Red team members working for the U.S. government were successful in over 90% of their attempts to breach security at major airports worldwide. The Red team method is a highly effective procedure for testing aviation security countermeasures.

The course is practical and involves critical thinking skills. The course will be taught by the use of guest lecturers skilled in this technique in concert with practical field trip exercises to conduct mock covert testing procedures at an aviation facility. The classroom lecture will lay the foundation and the methods of covert testing. This will include historical documentation of past testing procedures and the results of the covert testing and explain how the outcomes of the testing will improve and strengthen aviation security countermeasures.

The field trip will allow the students to form into teams of five or six persons. The teams will surveil an aviation facility under the supervision of the course instructor and the security agent for the site. The teams will determine likely methods for breaching security countermeasures at the facility. A practical mock exercise can be evaluated by the aviation security professional on site to determine the effectiveness of the Red team’s plans. The field trip will likely be conducted more than one time in the semester

to ensure the completeness of the assignment. Red teams will not necessarily concentrate on passenger screening checkpoints at airports, but will also probe public areas of passenger concentration or other segments of the airport operations area (AOA) for vulnerabilities. This type of aviation security planning provides an opportunity for the student to think like a terrorist as recommended by Participant 9.

Terrorism in aviation. This course is a supplement to foundations of terrorism. It is important for the student to understand the historical context of terrorism, what gave rise to this phenomenon, and why terrorist's acts are successful. The course on terrorism in aviation will provide an understanding of what the threat is really about and focus on why aviation is such a coveted target. Presenting the course on terrorism in the context of its beginnings through the events of September 11, 2001 will offer the student an overall picture of terrorism and its affects.

The course will be taught by classroom instruction and case studies of terrorism in aviation. The case studies come from archived written and video documentation either real or accurate reenacted depictions of known events.

Leadership in aviation security management. Leadership is a topic recommended by the majority (80%) of the interviewed participants. Leadership principals are essential in aviation security management. Learning leadership principals will teach the student the importance of setting organizational standards and corporate values. Leaders in the aviation security industry must instill common values and the expectations of their company in their subordinates to ensure success and promote the vision of the leader.

Leadership is a personal method of influencing a specific person or person's actions and is especially important in times of crisis. The course will be taught by classroom instruction and professional guest lecturers in the various theories of leadership and leadership styles from a multi-disciplinary approach.

Air cargo security countermeasures. Air cargo security is essential for aviation security management. The air cargo systems are part of the systems approach to securing an aviation facility and the aviation industry. The air cargo system is multi-faceted, complex, and is vulnerable to many security threats including placing explosives onboard aircraft, illegal shipments of contraband, and theft. The student will learn how to secure the supply side of goods being shipped by air. The student will learn the technology associated with securing air cargo and the facilities that store the shipments before they are loaded for transport, for example the industry wide consolidation of the known shipper program, cargo inspections, and the technology used to deter terrorist and criminal threats. This technology includes explosive detection systems, biometric identification systems, and other means of authenticating authorized personnel who have access to the secure cargo areas.

The course will be taught by classroom instruction, guest lecturers, and field trips to study the methods of securing air cargo from a terrorist attack. The classroom instruction will teach the student about the vast extent of the air cargo system to include freight, packages, and mail carried aboard passenger and air cargo aircraft. The field trip will involve the students visiting an air cargo facility. The student will learn and observe the methods of securing air cargo, such as blast resistant cargo containers and

aircraft hardening methods and what steps are necessary in mitigating the risks associated with air cargo shipments.

Contingency planning for critical incidents. Contingency planning involves learning how to plan for reacting to disastrous events. The Homeland Security Presidential Directive (HSPD)-5 is a document which the government produced to develop the National Incident Management System (NIMS). This system provides for a consistent approach for Federal, State, tribal, and local authorities, nongovernmental organizations (NGO's) and the private sector to prepare for and recover from domestic events of natural disasters or terrorists events as in September 11, 2001.

Additionally, the student will learn the Incident Command system (ICS), which is the foundational design for NIMS. The ICS is a standardized on-scene incident management concept. This will teach the student how responders adapt an integrated organizational structure to manage a single incident or multiple incidents without being involved in jurisdictional boundaries. The process teaches the student how to establish a manageable span of control.

The student will learn best practices for use by emergency management personnel in the event of a disaster. The aviation security manager will likely be involved in the initial phase of an air disaster and remain involved until the incident is resolved. Training response personnel is critical to the success of NIMS implementation. NIMS procedures will be conducted by table-top exercises in groups. A table-top exercise is a simulated disaster presented to a group of persons for consideration of an appropriate response to that disaster. The students can be divided into groups representing various segments of the government and private sector entities

that typically respond to a disaster, such as fire rescue personnel, police, and the Red Cross. After completing the table-top exercise the students will prepare an After Action Report (AAR) documenting their decisions on how a particular incident will be mitigated after the disaster. The findings of the student groups will be discussed for consideration of the plans efficacy.

Recommendations for Further Research

During the course of this study, the issues of global difficulties associated with aviation security management were raised by the participants. Specifically noted were the differences between U.S. policies and foreign states. The U.S. federal government has been criticized by foreign states for its inability to enforce effective aviation security management. Even though, the U.S. Federal government has spent billions of dollars on aviation security measures: the following should be considered for further research:

1. Why is the U.S. system of aviation security inherently passive in regards to aviation security countermeasures? Does the rule of law afforded by the U.S. Constitution restrict the actions of security and enforcement personnel? Furthermore, does the U.S. restrict its ability to effectively deal with aviation security matters because of concerns of political correctness when compared to the effective procedures used by a foreign nation, such as Israel which is not bound by constitutional law?

While the researcher interviewed the participants, the issue of the correct methods of behavioral profiling was discussed. Participant 10 said the TSA trains their Behavioral Detection Officers (BDOs) to look for suspicious behaviors. Suspicious behaviors may not fit the profile of a terrorist. TSA's current methods have assisted in

the capture of criminals, but have not captured a terrorist. In consideration of this, the following research is recommended.

2. The Transportation Security Administration uses the Screening of Passengers by Observation Techniques (SPOT) method for behavioral profiling. This U.S. system is based on a certain set of assumptions for suspicious behavior. Since the aviation industry is a global enterprise, are these assumptions of suspicious behaviors by TSA based on a global perspective of terrorist's behaviors or are they an introspective conclusion?

Further discussions regarding the participants in this study involved distance learning technologies; the use of Skype for accommodating international guest lecturers. When considering the need for distance learning capabilities the following, should be further researched and evaluated:

3. Identifying and securing external funding resources available to a university or college for distance learning capabilities using state-of-the-art high definition equipment in a classroom environment engaged in aviation security management course work delivered at a distance.

Summary

The purpose of this qualitative study was to conduct detailed personal interviews with aviation security professionals in the private and governmental sectors to determine knowledge demands and essential professional skill sets needed for employment in the aviation security environment. This research determined the best teaching practices and pedagogy needed to impart those knowledge demands and skills sets. The researcher was informed by a participant of this study that education

was the best way to bring about needed change and ensure professionalism in the aviation security management industry. The Master of Science degree recommended in this research will provide academic course work unlike any other aviation graduate degree program currently offered in the U.S. Academia will play a vital role in educating tomorrows aviation security managers and will enable them to stay ahead of an ever changing global environment and remain on the [cutting edge] of aviation security management.

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APPENDIX A
IRB APPROVAL FORM

Oklahoma State University Institutional Review Board

Date: Thursday, February 23, 2012

IRB Application No ED1245

Proposal Title: A Critical Needs Assessment for a Master of Science in Aviation Security: A
Qualitative Inquiry of Aviation Security Professionals

Reviewed and Exempt

Processed as:

Status Recommended by Reviewer(s): Approved Protocol Expires: 2/22/2013

Principal

Investigator(s):

Jon Michael Loffi	Timm Bliss
P.O. Box 1373	2104 Main Hall OSU Tulsa
Stillwater, OK 74076	Tulsa, OK 74106

The [FRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.


*I The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research: and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,



Shelia Kennison, Chair
Institutional Review Board

APPENDIX B
PARTICIPANT CONSENT FORM

CONSENT FORM

Project Title:

A CRITICAL NEEDS ASSESSMENT FOR A MASTER OF SCIENCE IN AVIATION SECURITY: A QUALITATIVE INQUIRY OF AVIATION SECURITY PROFESSIONALS

Investigator:

The investigator is completing the degree of Doctor of Education, Applied Educational Studies, Aviation and Space Specialization at Oklahoma State University. The investigator is also serving as an adjunct faculty member at Oklahoma State University main campus and the Tulsa, Oklahoma campus teaching undergraduate classes in aviation security. He is currently a Special Agent for the Oklahoma State Bureau of Investigation a position he has held for the past thirteen years.

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Email: tim.bliss@okstate.edu

Procedures:

You have been selected to participate in a research study because of your status as an aviation security/security expert. Interviews will be conducted between March 1, 2012, and July 31, 2012. The investigator will be interviewing several aviation security professionals from the government and private sectors, and will be contacting you to arrange a convenient interview time. The interview should last no more than one hour. In the event the interview should be interrupted or discontinued for any reason, it may be necessary to reschedule and conclude the interview at a later date.

The interview will include questions concerning your personal background, educational history, and your opinions on aviation security. With your permission an audio recording

will be made of the interview to aid the investigator in data capture and analysis of the interview. Audio recordings, transcriptions of the interviews, and interview notes will be assigned a number for identification. Once a number is assigned no other identifiers will be associated with the audio recordings, transcriptions, and interview notes.

When not being transcribed, analyzed, or otherwise used for the purposes of this study, and until their destruction, the audio recordings and interview notes will be maintained by the investigator and secured in a safe owned by the investigator.

The audio recordings will be transcribed and analyzed by the investigator. The Oklahoma State University Research Compliance Institutional Review Board has the authority to inspect consent records and data files to assure compliance with the approved procedures. Additionally, the investigator's faculty advisor and the investigator will have access to those audio recordings, interview notes, and transcribed interviews.

Once audio recordings have been transcribed and the data analyzed, all audio recordings and interview notes will be destroyed by shredding to protect confidentiality. A record of that destruction will be made by the investigator and countersigned by the investigator's faculty advisor. The record of the destruction will be maintained and secured in a safe owned by the investigator.

A copy of the final report of the study will be provided to you upon request prior to submission to the graduate college.

Risk of Participation:

There are no known risks associated with this study that are greater than those ordinarily encountered in daily life.

Benefits:

There are no direct benefits to the subjects of the interview. The subjects have a role in aviation security, and as such, it will provide a benefit to them by their contribution to the overall increase in the body of knowledge to academia, future graduate students, and the aviation security industry.

Confidentiality:

No foreseeable risks to the study subjects can be identified. The above described measures have been implemented by the investigator to ensure the confidentiality of

each subject, interview notes, and transcriptions. A copy of the final report of the study will be provided to you if you so wish prior to submission to the graduate college.

Contacts:

For information concerning this study you may contact Jon M. Loffi, at 27900 Lone Creek Trail, Stillwater, Oklahoma 74075, Email: jon.loffi@okstate.edu, telephone number 405.740.9367 or faculty advisor, Dr. Timm Bliss, Aviation and Space Education, 2104 Main Hall OSU-Tulsa, Email tim.b Bliss@okstate.edu, 918.594.8304. For information on subject's rights you may contact Ms. Beth McTernan, IRB Manager, University Research Compliance, 219 Cordell North, Stillwater, Oklahoma 74078, telephone 405.744.5700 or irb@okstate.edu.

Participant Rights:

Your participation in this research study is completely voluntary. You may discontinue your participation in this study at any time without reprisal or penalty. There are no known risks associated with your withdrawal from this study.

Signatures:

I have read and fully understand the consent form. I sign freely and voluntarily. A copy of this form has been given to me.

Signature of the Participant

Date

I certify that I have personally explained this document before requesting that the participant sign it.

Jon M. Loffi

Date

APPENDIX C
PARTICIPATION LETTER

PARTICIPATION LETTER

Dear Mr. /Ms. _____

I am currently working on a doctoral dissertation in the College of Education, Applied Studies Aviation and Space Education, Oklahoma State University, where I am conducting research that will use aviation security professional's opinions to assess the critical needs for a Master of Science in aviation security. You have been selected to participate in this research study by virtue of your status in the field of aviation security or security expertise. I will be interviewing a number of aviation security professionals in the government and private sectors to obtain their individual viewpoints on this issue. I greatly appreciate the opportunity to interview you, either in person or by telephone, sometime during the month of _____.

The purpose of this study is to conduct detailed personal interviews with aviation security or security experts in both the private and governmental sectors to determine knowledge demands and essential professional skillsets needed for employment in the aviation security environment. Each interviewee has the ability to provide respected opinions that will contribute to the practical needs and teaching methods in a Master of Science in aviation security. Your assistance as a member of the _____ sector will aid in identifying the demands, skill sets, and pedagogy needed for a Master of Science in aviation security.

Please find attached samples of the questions that will be used in the interview, which should last for approximately one hour. With your permission an audio tape will be made of the interview to aid in the data capture and analysis of the data. Transcriptions of the recordings and notes will be identified by number only. The Oklahoma State University Research Compliance Institutional Review Board has the authority to inspect consent records and data files to assure compliance with approved procedures. Once recordings are transcribed and the data analyzed, all recordings will be destroyed to protect confidentiality of the person being interviewed. A copy of the final report will be available to you if you so wish prior to submission to the graduate college. There are no known risks associated with this research that are greater than those ordinarily encountered in daily life.

I will contact you by telephone on (date) to answer any questions you may have and obtain permission to interview. Please feel free to contact me if you have any questions regarding this research study. I may be contacted at 405.740.9367.

Thank you in advance for your cooperation in this research study.

Sincerely,

Jon M. Loffi

APPENDIX D
INTERVIEW QUESTIONNAIRE

Interview Questionnaire

Information on Security Professional:

1. Describe your career history, specifically those areas associated with aviation security.
2. Describe your educational, professional training, and work related experiences dealing with aviation security.
3. Describe your overall experiences involving aviation security and how they have impacted/changed your professional view regarding aviation security.

Aviation Security Issues:

1. Have employment qualifications/requirements changed for the aviation security environment since September 11, 2001?
2. In your opinion, what are the desired knowledge demands a prospective employee should possess for employment in today's aviation security environment?
3. In your opinion, what are the essential professional skill sets a prospective employee should possess for employment in today's aviation security environment?
4. Do you believe a college/university graduate program can assist in fulfilling the desired knowledge demands and professional skill sets needed for employment in today's aviation security environment?
5. From a practical approach, what are the critical content areas associated with aviation security that must be addressed by academia to best meet the demands and skill sets needed for employment in the aviation security environment?

6. In your opinion, what are the best teaching practices that should be implemented by academia to ensure the desired employment requirements are sufficient for today's aviation security environment?
7. Would a "back to basics" (pragmatic) approach to aviation security such as investigative techniques, intelligence gathering, and emergency response better prepare a prospective employee for employment in today's aviation security environment?
8. Are you aware of any U.S. college or university offering a "cutting-edge" graduate program in Aviation Security that is fulfilling the employment needs of the aviation security environment?

APPENDIX E

MASTER OF SCIENCE

Middle Tennessee State University

MASTER OF SCIENCE
Middle Tennessee State University

MS in Aviation Administration Aviation Safety and Security Management

Concentration:

Required Core Courses (18 hours)

AERO 6120 Aviation History

AERO 6130 Aviation Safety Management

AERO 6150 Aviation Industries

AERO 6610 Introduction to Aerospace Research

AERO 6611 Applied Statistics in Aviation Research

AERO 6640 Thesis Research OR AERO 6441 Applied Research Capstone
Project

Required Courses (9 hours)

AERO 6310 Introduction to Aviation Security

AERO 6420 Aviation Safety Investigation OR **AERO 6320 Aviation Security II**

AERO 6430 Human Factors in Aviation

Electives (9 hours from the following)

AERO 6076 Selected Readings in Aerospace

AERO 6170 Scheduled Air Carrier Operations

AERO 6190 Airport Organizational Structures and Operational Activities

AERO 6220 Environmental Policy

AERO 6250 Aviation Policy and Planning

AERO 6350 General Aviation

ETIS 6010 Safety Planning

ETIS 6020 Safety Technology and Engineering

ETIS 6070 Anthropometric Factors in Accident Prevention

INFS 6610 Information Systems Management and Applications or INFS 6720 Knowledge Management.

VITA

Jon Michael Loffi

Candidate for the Degree of

Doctor of Education

Thesis: A CRITICAL NEEDS ASSESSMENT FOR A MASTER OF
SCIENCE IN AVIATION SECURITY MANAGEMENT: A QUALITATIVE
INQUIRY OF AVIATION SECURITY PROFESSIONALS

Major Field: Applied Educational Studies

Biographical:

Personal Data: Born Erie, Pennsylvania, the son of Mr. and Mrs.
Edward T. Loffi

Education:

Completed the requirements for the Doctor of Education in Applied
Educational Studies, Aviation and Space at Oklahoma State University,
Stillwater, Oklahoma/USA in December, 2012.

Completed the requirements for the Master of Science in Natural and
Applied Science at Oklahoma State University, Stillwater,
Oklahoma/USA in 2006.

Completed the requirements for the Bachelor of Arts in Liberal Studies at
the University of Oklahoma, Norman, Oklahoma/USA in 1998.

Experience: Assistant Professor, College of Education, Oklahoma State
University 2012 to present; Special Agent Oklahoma State
Bureau of Investigation 2010-2012, Agent in Charge Oklahoma
State Bureau of Investigation 2009-2010, Assistant Director
Oklahoma State Bureau of Investigation 2006-2009 Special Agent
Oklahoma State Bureau of Investigation 1999-2006; Retired
Lieutenant Oklahoma City Police Department 1972-1998.

Professional Memberships: The University Aviation Association