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Terrorism and General Aviation

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Introduction

Terrorism today is a complex phenomenon. Threats planned by al Qaeda, inspired by the Islamic State of Iraq and Syria (ISIS), organized by revolutionaries, or conducted by lone wolves associated with a number of single-issue groups dominate the news. By its nature, terrorism has ranged from attacks with knives, bombs, firearms, vehicles and the evolving technologies of the day. In the past fifty years, aircraft and terrorism have been frequently linked. Understanding the threat of terrorism and the emerging targets of terrorism is a vital component of public sociology.

Since the Palestine Liberation Organization (PLO) hijacking of airliners in 1968 (Saenz 2016), aviation has been a focal point for domestic and international terrorism. Initially, these acts were designed to free prisoners held by a host country or they were for ransom to fund further political goals and terrorism. In some cases, such as the infamous D.B. Copper affair, it was purely for profit as a criminal act. However, with the 1988 bombing of Pan Am Flight 103 over Lockerbie, Scotland, direct attacks on aviation as surrogate targets for an enemy emerged. This escalation of aviation terrorism eventually resulted in the use of captured airliners as weapons of significant and symbolic destruction and the tragic events of September 11, 2001. Thus, in just over 50 years, aviation became an increasing fertile and frequent environment for terrorism.

The evolution of aviation terrorism has been marked by not only a greater loss of lives, but also significant economic and political consequences. In response to these threats, aircraft have been modified to strengthen cockpits and cockpit doors, rear loading stairways have been removed and anti-missile defenses have been incorporated in some high-profile planes. Cockpit personnel have been armed and undercover security personnel, specifically U.S. Air Marshalls, are now commonplace on many commercial carriers. Operating policies and training have been adjusted, or in some cases, completely re-engineered to address potential threats. On the ground, airport security has been improved with greater perimeter security, worker, passenger and cargo/baggage screening. In addition, new and more complex security protocols have been mandated by the Department of Homeland Security (DHS), the Transportation Security Agency (TSA), the Federal Aviation Administration (FAA) and a number of international organizations, in response to increasingly sophisticated or innovative tactics or technologies employed by practitioners of terrorism. However, the reactive nature of counterterrorism in commercial aviation creates an ongoing dilemma between security and significant economic and social/legal costs to a society.

The terrorist attacks of 9/11/2001 were designed not only to inflict massive casualties and damage the targets selected, but also to symbolically challenge a nation and its sense of international superiority (Matusitz 2015). In addition, this attack was designed to damage both global security and the U.S. economy (Price and Forrest 2009). Just as a result of this one event, the aviation industry experienced a direct loss of \$330 million per day, not including the losses to related industries (Kumar et. al. 2003, 2).

In response to terrorist threats to commercial aviation, numerous federal and international agencies and organizations seek to address the flaws and weaknesses within the field of aviation security. However, as the industry increases security and hardens the environment in response to terrorist threats, the asymmetrical nature of terrorism encourages its practitioners to seek alternative targets. As the pendulum of prevention has increased within the field of commercial aviation, the field of general aviation (GA) may become the next environment for terrorist activity.

The Aviation Environment

Since 1903, the U.S. has been at the forefront aviation. From the first manned, powered flight by the Wright brothers to the advanced flying weaponry of today, America has been fascinated with flight. This fascination has led to a rapid and continuous expansion of airports and airfields, as well as a national air system that is both flexible and surprisingly available to the general public.

The U.S. supports the greatest number of airports in the world. Roughly half of the world's airports and nearly two-thirds of the world's busiest airports reside within U.S. borders. There are over 19,000 landing areas in the U.S., spanning the range of grass landing strips, helipads, seaplane bases, and the more traditional paved runways (Wensveen 2016, 139). The overriding majority of these landing areas are privately owned. Of the 19,000+ landing areas, only about one-fourth are open for public use. Ownership of public use airfields generally falls into one of two categories: 1) direct government ownership (municipal, county, or state), or 2) independent public authorities (whose members are often public officials or appointed by local governing bodies).

The Federal Aviation Administration (FAA) has established four general categories of airports in the National Plan of Integrated Airport Systems (NPIAS). *Commercial Service* airports are public facilities which offer scheduled service (such as Delta Air Lines) and enplane nearly 2.2 million passengers per day (FAA 2016). There are approximately 500 such

airports in the United States. *Cargo Service* airports provide air transportation of cargo only. Airports may be both a commercial and cargo service airport. *Reliever* airports are general aviation airports which are located in major metropolitan areas and have the capacity to off-load commercial flight in times of distress. Finally, *General Aviation* airports neither receive commercial service nor meet the Reliever airport criteria.

In addressing the threat of terrorism against public transportation, the United States has committed a majority of its resources to aviation (Fagin 2006). The Department of Homeland Security and the Transportation Safety Administration has, since 9/11, worked diligently to improve security or to “harden” commercial airports against terrorist threats. Whereas al Qaeda has continued efforts to disrupt commercial air service world-wide, other groups, such as ISIS has directed or inspired its “soldiers” to attack the individuals or “softer” targets (Clemons 2010). One such potential softer target within the field of aviation security is general aviation (GA).

General aviation airports represent the second largest category of airports and operate on a daily basis throughout the United States. There are nearly 5,300 community airports in the U.S. which accommodate almost a quarter of a million aircraft representing 77% of all air traffic (Carafano 2007, 1). Aside from the large metropolitan commercial airports, these municipal airports are easily recognizable to the local citizenry. While many have unique facilities and structures, nearly all have paved and lighted runways and taxiways, as well as some form of services provided to the aviators who use them. A typical general aviation airport contains at least one paved runway of around 5,000 ft. in length, a “terminal” building, fueling services (including fixed fuel tanks), lighting, communication radios, navigational aids, and less frequently, a control tower manned by FAA Air Traffic Controllers. On the whole, while GA airports are capable of receiving and launching a wide range of aircraft, GA airports are not considered terribly sophisticated operations (Bragdon 2008). In addition, general aviation is a vibrant and expanding industry. It supports nearly 1.3 million jobs, which represents just over 1 percent of U.S.GDP (Carafano 2007, 1).

Security Status at General Aviation Airports

Since its inception, the Transportation Security Agency has provided significant and valuable direction to the nation’s large, commercial-use airports. The combination of perimeter barriers, security, and screening have become commonplace. While frequently considered a nuisance by passengers, these security measures are increasingly tolerated and have resulted in a higher level of security and safety at these large airports. The

same however, cannot be said about security at the remaining airfields around the nation. In 2004, the TSA acknowledged that less attention had been paid to security at GA airports and with help of a GA working group, issued TSA Information Publication A-0002 "Security Guidelines for General Aviation Airport Operators and Users".

In many ways, the guidelines recommended in this document mirrored those at major airports by targeting access, perimeter fencing, fuel storage, signage, vehicle gate control, and lighting. Additional recommendations centered on pilot training at these airports, noting that the 9/11 hijackings were perpetrated by pilots trained at small airport facilities.

Of note however, is the lack of mandate for any of these guidelines. IP A-0002 clearly states that these guidelines are recommendations for improving security at GA airports and are not regulatory in nature (TSA 2004, iii). The absence of mandates and regulations leave many experts uneasy (Goldberg 2011). One of the principle concerns resulting from the events of September 11, 2011 was the use of aircraft as offensive weapons. The combination of size, range and fuel capacity of commercial airliners provided terrorists with a destructive force, capable of being delivered from within the U.S., to nearly anywhere in the host country and well beyond (e.g. the Gulfstream G-V, has a range of over 6,500 miles). Today's corporate jets, most of which operate from General Aviation airports, have similar characteristics as commercial airliners, but need much less runway length to takeoff or land, making them prime candidates for future attacks. Due to the lack of regulation revolving around GA security, these corporate jets are often readily accessible to the public. Incredibly one can frequently walk directly from their car in the parking lot, through the "terminal" and onto a corporate jet with little, to no, scrutiny. With a limited number of the nearly 19,000 GA airports being staffed by either TSA or Customs agents, the general-aviation industry is, for all intents and purposes, self-regulated.

To better illustrate this condition, the Georgia Airports Association (GAA) recently conducted a survey of the ninety-one (91) airfields in the state of Georgia that have paved runways of 5,000 feet or longer. A series of security-related questions were posed to the airport leadership teams, including the types and size of aircraft utilizing the field, the presence of perimeter fencing, the use of passenger screening techniques and the use of baggage screening processes. Sixteen (n=16) of the 91 airports responded, for a response rate of nearly 18%. The results of the survey support TSA's concern over General Aviation airport security. Ninety-four percent (94%) of the respondents indicated that mid-sized to large corporate jets operate at their particular airport, while less than half (44%) of those same airports instituted airfield perimeter fencing. In addition,

those same airports reported that only 7% (1 out of sixteen) utilized passenger and/or baggage screening (GAA Survey 2016).

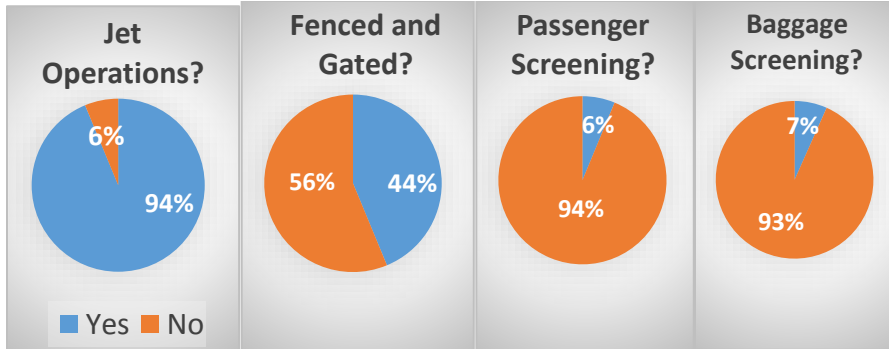


Figure 1 – GAA Regional Airport Security Survey (2016)

In its 2004 report to the House of Representatives subcommittee on Homeland Security, the General Accounting Office was critical of the current state of security at General Aviation airports. The GAO report indicated that it believed increased federal oversight of security measures at GA airports was sorely needed. Their findings at that time noted “TSA and other federal agencies have not conducted an overall systematic assessment of threats to, or vulnerabilities of, general aviation to determine how to better prepare against terrorist threats” (GAO 2004, 3). Additionally, the GAO found that following the events of September 11, 2001, the TSA had “primarily focused on strengthening the security of commercial aviation and meeting associated congressional mandates” (GAO 2004, 24), leaving “general aviation managers and aircraft owners [to] determine what security measures they will use to protect their assets” (GAO 2004, 47). Finally, the GAO noted that funding any security measures undertaken by GA airports has been significantly inconsistent. In an audit of 31 general aviation airports, the GAO found that in one case an airport manager had spent less than \$25 on security measures while another spent \$3 million. Nearly a third of the GA respondents reported that improvement funds came directly out of airport revenues, while only 20% indicated that they had access to federal grant money to pay for these improvements (GAO 2004, 47).

While Information Publication A-0002 has remained the backbone of guidelines for security at GA airports, the TSA has recognized that operations, technology, and potential threats have evolved since 2004 and as a result, has proposed revising the current set of aviation regulations to enhance security at GA airports. The proposed rule change impacts various

parts of 49 CFR and is known as the “Large Aircraft Security Plan (LASP)” proposal. This proposal was submitted for public comment via the Federal Register in 2008 and would require aircraft weighing over 12,500 lbs. to undergo some of the same security checks that have up until now, been reserved for large commercial aircraft. In addition, certain GA airports, specifically those designated as “Reliever” airports or those operating regularly scheduled service, would be required to meet several security requirements associated with large “Commercial Service” airports. The majority of the proposed security checks center on the aircraft itself; in particular, who has authorized access to the cockpit, cabin and cargo area. The regulation would also require operators to verify that passengers are not on the “No Fly” and/or “Selectee” portions of the federal government’s consolidated terrorist watch list. Airport impact is much less, focusing attention on training for certain personnel and record-keeping. The TSA believes that these measures will minimize the vulnerability of aircraft being used as weapons.

The negative reaction from a large portion of the GA industry to this NPRM was swift and loud, particularly from industry associations (National Business Aviation Association and General Aviation Manufacturing Association), as well as aircraft owners and flight crews. The primary criticism of the proposed CFR changes involved cost v. benefit and government intrusion into private aviation practices. To many industry followers, business aviation, a significant user of GA airports, is being hurt by the additional security recommended by TSA. Business aviation “is struggling to cope with new federal agencies indifferent to its needs while attempting to maintain operational commitments to serve customers efficiently” (Phillips 2002). The National Business Aviation Association (NBAA) believes that voluntary action, including closer coordination between local airport managers, not government intervention, is the best course of action for GA airports when it comes to security measures (NBAA 2008).

The NBAA has taken a particularly strong stance against the NPRM proposal. The association has actively worked towards reducing the effect that the TSA policies have on general aviation (Wynbrandt 2011) and has been lobbying Congress for relief (Lowe 2013). In response to the criticism of TSA autonomy and concern by the greater GA community, Congress passed House Bill H.R. 1204 “Aviation Security Stakeholder Participation Act of 2013”, which permanently established the Aviation Security Advisory Committee and formally structured a general aviation sub-committee. The sub-committee has already provided the TSA with recommendations for revising the 2004 Security Guideline document as well as provided

recommendations for revising the NPRM. The recommendations included raising the definition of a “large aircraft” from 12,500 lbs. to 25,000-30,000 lbs., reducing the impacted GA airports. The TSA confirmed that the new SNPRM will focus its attention on aircraft and not small airports (Lowe 2010).

SWOT Analysis (Strengths, Weaknesses, Opportunities, and Threats)

A SWOT analysis of the current state of security at General Aviation airports indicates that a number of issues and actions related to potential terrorist threats require consideration.

Strengths – The strength of the current state of security at GA airports emanates from the flexibility afforded by the TSA in IP A-0002 by only providing recommendations as opposed to regulations. This allows each airport and its operators to customize their security measures to better meet their specific threats. In this case “one-size does not fit all”. Funds and effort can be used more effectively and efficiently using this approach.

Weaknesses – The primary weaknesses of the current state stems from the lack of significant regulation and mandate. Notwithstanding the benefits of flexibility and customization, reality often dictates that where there is no mandate (and little funding), organizations tend to “speak louder than they act”. In other words, while these airports and their operators may take security discussions seriously, when it comes time for execution, other directives often get higher priority. As a result, very few appear to be taking a strong position in favor of the TSA guidelines.

Opportunities – The opportunities to improve the security situation are only limited by imagination and funding. Since the advent of security measures, perpetrators have continued to be creative and “hit where the enemy isn’t”. If terrorists can think of new ways around current security measures, security experts can stay one step ahead provided they are thinking “outside the box. Again, funding rises to the forefront of this concern. Additionally, should the LASP or its derivative become law, it will add a level of security by mitigating the threat of terrorists using corporate jets as weapons (although certainly does not eliminate the possibility).

Threats - According to the GAO, several threats are real and current. Others are lying in wait for the airports’ next moves. The principal threat emanates from intelligence gathering and intelligence sharing among airports and

agencies. While the use of larger aircraft as a weapon is somewhat mitigated by security protocols, the possibility still exists that they will once again be a target for terrorists. Aircraft, regardless of size, can inflict significant damage if directed at appropriate targets. And a new threat exists, from Unmanned Aircraft Systems (or drones), as they can be easily launched from GA airports. It is now recognized that at most GA airports, there is currently little in the way of passenger or bag screening, virtually no limits to access of ramps or aircraft, limited perimeter fencing and - even more worrisome - very little funds available to alter this state (Price and Forrest 2013).

The threat of the use of general aviation airplanes as a weapon is obvious. However, there are a multitude of other potential threats associated with general aviation. As previously identified in conjunction with the 9/11 attacks, flight training of potential terrorists continues to exist even though Federal Regulations have increased the scrutiny of potential students (e-CFR 2008). In the past, general aviation frequently has been associated with smuggling. Potentially, the access and availability of general aviation may be an avenue for smuggling weapons, explosives or even terrorists (Price and Forrest 2013). In addition, targeting general aviation also would have significant economic impact on the business community which relies heavily on it for timely travel and delivery of time-sensitive materials. Across the nation, employment resulting from general aviation totaled over 1.1 million jobs in 2013, and contributed nearly \$219 billion to the nation's economy (PWC 2015). By making General Aviation airports potential targets for terrorist activities, broader and more expensive security measures would be required, threatening their economic viability while simultaneously producing the symbolic threat and presence of terrorists, spread throughout America.

Conclusions and Recommendations

Historically, aviation terrorism focused on commercial aviation. The visibility of previous attacks raised the level of social awareness and general concern. The public is reminded of the threat every time they enter a major airport and proceed through a number of layers of security. However, should a terrorist group decide to once again use aviation for their vehicle of terror, general aviation airports appear to be "soft targets" or prime candidates from which to launch their plans and impact the fabric of American society. The relative lack of security at this category of airports affords creative minds a number of opportunities from which to exploit terror as both a direct and indirect threat.

A renewed focus on several areas of concern could aid in remedying a significant portion of the current threat risk. Among the first and potentially most impactful solutions is to dictate and enforce perimeter fencing and gate control. As an added measure of security, GA airports or FBO operators should be required to designate a ramp security “officer” and provide that officer with passenger “screening” processes such as questioning anyone on the airport grounds as to their purpose. All employees and staff members with access to the airport grounds should be badged and badges should be visible at all times. Controlling access is not difficult or even moderately expensive, but practice at commercial airports has shown that it is effective.

Always an issue, funding for these programs could come directly from FAA grant funding. Each GA airport is entitled to a certain share of funding annually (around \$150,000). Should the FAA make these steps mandatory, each airport could use these funds to offset costs, and should that be insufficient, the FAA could augment funding by channeling funds designated for less important uses. Of course, that would require the FAA to give some level of priority to this concern.

In the past decade, academe has recognized the potential terrorist threat that exists with regard to the general aviation community. A number of institutions have developed training programs in GA airport security. For example, Waukesha County Technical College include the following topics in their security-related training programs:

- How to recognize GA aircraft and facilities that could be used for illegal purposes;
- How to apply crime prevention through environmental design concepts to GA airports;
- Establishing an Airport Watch Program;
- Establishing aircraft key control system;
- Antitheft devices for GA aircraft;
- Security signage and marking plans;
- How to orient local law enforcement personnel to airport environment and aircraft operations;
- Creation of an airport security committee;
- Creation of an emergency notification system;
- National Incident Management System fundamentals;
- How to create a business continuity plan;
- Developing intrusion detection, integrated security and CCTV systems;

- Troubleshooting airport security plans. (Price and Forrest 2013).

Aviation security is a risky venture. Since the early days of flying, it has enjoyed a mass appeal, which makes aviation a great venue for terror. Following the events of 9/11, the country took exceptional steps to reduce the security risks at commercial use airports. With that avenue limited, terrorists will almost certainly seek another route. To be sure that it doesn't begin at General Aviation airports, it is imperative that any threats associated with this category of airport be given priority, and subsequently minimized.

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