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Countering Air Terrorism

Stanisław Zajas *

Introduction

Air terrorism is an international phenomenon, and one that is not at all new to the global scene: the first example of a politically-motivated jetliner hijacking happened in July 1968, and the first bomb attack on board a plane occurred in May 1949. Until 1967, the number of terrorist attacks directed against civilian aviation was minimal. From 1967–77, however, the frequency of these terrorist attacks increased rapidly. The highest numbers of terrorist acts against civilian airliners was recorded in the years 1977–86. The current annual frequency of such events represents a decrease of about half from the high-water mark in the early 1980s, but the potential effects of contemporary air terrorism attacks are more dramatic and tragic. Terrorists' targets in such operations are passenger planes, airports, or airline offices. The events of 11 September 2001 have shown that terrorists can suddenly strike against key facilities—private buildings, government properties, military installations, etc.—in any place on earth. The destruction of symbolic objects can weaken the confidence of citizens in a nation's government, because the state is not able to secure the safety of their own people. And the attacks of 9/11 also proved that at least some terrorists will not hesitate to use jetliners as “human missiles” to accomplish their aims.

On the other hand, civilian aviation is a target of special importance for terrorists, given the global impact of such attacks. Every terrorist event in the air focuses the attention of the world through news coverage and around-the-clock publicity. The most exceptionally effective examples of terrorist acts against aviation targets (from the terrorists' point of view) involve hijacked jetliners with passengers on board. After attacks of 9/11, U.S. President George W. Bush declared the start of a “global war on terror.” More than seven years later, the fight against terror is not finished, and the anticipated results have not been accomplished. The ongoing round of terrorist attacks in Iraq, Afghanistan, and the Middle East constitute a daily reality in those regions. Even now, after eight years of dedicated intelligence and military counter-terrorist activity, it is very difficult to detect and to identify terrorists, and it is often impossible to blame concrete persons and organizations for attacks that occur.

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The terrorist threat to aviation exists especially in places where there are high levels of travel-related activity, especially in airports and during flights. The concrete objects that could be at risk include elements of airport infrastructure, passenger aircraft on the ground, and planes taking off and landing, as well as threats to aircraft during flights.

Air strips and runways—particularly those in big airports—are sites of dense concentration of air travel activities, involving both people and freight. Although airfield operations should be adequately secured and defended, various dangers still exist at most airports. Terrorists are still potentially able to bring various hazardous materials on board aircraft that could be used to detonate it, either to kill passengers and crew or to destroy airport infrastructure. Terrorists could also hijack passenger planes to use them as missiles to stage air attacks on high-impact targets, such as nuclear power plants, parliament buildings, or major airport terminals. But large passenger airliners are not the only targets that are at risk. Hijackers could potentially take over light civilian aircraft for use in suicide assaults to ram jetliners during take-off or landing. It could also be possible for terrorists to use various types of military means (rocket-propelled grenades, surface-to-air missiles, etc.) to damage or destroy airport facilities or aircraft.

Such a wide spectrum of terrorist threats has forced political leaders around the world to undertake strict security precautions. These safety measures are aimed at protecting airports and planes (and, ultimately, at protecting human life). It should also be presumed that terrorists would be able to carry out such attacks not only against civilian airports, but also against military ones. Military airfields could draw specific attention because of the costly, highly sophisticated military equipment and combat and transport aircraft located on the ground.

Taking into consideration all these assumptions, my intent in this essay is to find answers to three questions related to terrorism against aviation targets:

1. What is air terrorism?
2. What are the legal aspects that should be considered in the fight against air terrorism?
3. What kind of organizational and technological means and measures are important in combating air terrorism?

The Essence of Air Terrorism

Fear is one of the main characteristics of terrorism. The desired effect of terrorist activities is to create a state of shocking uncertainty in a specific community. Terrorism is about using violence against innocent people and about spreading information in order to generate fear. In most cases, the victims of terrorist acts are completely accidental; by their nature, terrorist acts are seemingly random, rather than targeted against specific individual targets. Terrorism is described as a form

of irrational violence, because the people who plan these events can be so fanatical that their behavior becomes completely detached from common sense norms. However, terrorist acts always have clear and precise goals. Terrorist activities are characterized by specific conspiratorial planning practices and by various modes of action. But it is often very hard to find the root sources of this phenomenon.

Currently terrorism has many variants around the world, and the wide range of terrorist acts that different groups carry out have the potential to affect any person, organization, or even a whole country. In general, terrorism is a widely condemned method of fighting. Terrorist activities are illegal, and are prosecuted by law in all states in the world (with certain exceptions, such as some states—especially in the Middle East—that are condemned by the world community as sponsors and promoters of terrorism). Many extremist and separatist groups around the world are engaged in one form or another of violent struggle, often with the support of local populations, but terrorism is a very specific form of violence. Terrorist acts can take on various forms, but they always include an element of violence in order to generate a calculated state of fear.

The fight against terrorist organizations is an extremely difficult effort. Most terrorist groups are extremely well organized, and consist of only a few members, with many groups having adopted a “cell” structure, so that no one person is privy to the operations of the entire movement. The clandestine nature of the terrorist effort, the acceptance of terrorist movements by some local populations, and the difficulties connected with identifying the sources of terrorist financing present huge problems in combating terrorism. Counter-terrorist activities are very hard to conduct, because some terrorist organizations also have legal, legitimate public wings. In some cases, some populations could view terrorist methods as the most effective tools to achieve their strategic, political aims. Sometimes it can also be highly problematic and time-consuming to prosecute drastic terrorist acts using the provisions of the law (instead of via military action).

One specific type of terrorism, which is identified by its object of destruction rather than by its ideological motivation or organizational structure, is air terrorism, which takes as its target aviation, which includes aircraft, air infrastructure, and human resources related to air traffic. However, this specific approach to air terrorism is primarily concerned with perceived outcomes in the areas of national and international safety. Hijackings of civilian aircraft and attacks on airports, airline offices, and planes are the key elements of the fixed “landscape of violence” in aviation terrorism at present.

Statistics clearly indicate that aircraft present ideal objects for terrorist attack. The reasons are:

- Hijacking an airplane is one of the most effective means for terrorists to achieve their intended goals

- The “benefits” to terrorists of hijacking aircraft are very attractive for the hijackers, because the risk to the perpetrators is quite low in comparison with the danger to the passengers and crew of the plane
- There is no need for significant financial or technological resources (as was seen in the case of the 9/11 attacks)
- Passenger airplanes are incredibly costly items; aside from the potential loss of human life, most countries would hope to avoid the loss of such an expensive craft
- In cases of airliner crashes, it is virtually certain that every person on board will perish; the death of the perpetrators in such a manner guarantees them anonymity, thus increasing public fear
- Every act of air terrorism is widely broadcast by the global media, which is the main goal of the terrorists.

Hijackers can use simple weapons on board jetliners in ways that can bear tragic consequences for the safety of all passengers. The possible effects of weapon usage on board of jetliner include the elimination of essential crew members, so that safe operation of the aircraft is no longer possible; starting a fire; causing damage to the fuselage, which could result in a sudden cabin decompression (and potential disintegration of the aircraft); and damage to aircraft systems and installations.

Even small changes in flight direction constitute extreme dangers for air safety. As a result of dramatic alterations in course, aircraft can be completely destroyed, and people on board could be killed. (We also cannot exclude damages on the ground.)

Illegal seizure of aircraft can result in huge financial losses for air carriers. In addition, the risk of a crash as a result of an illegal seizure of an airplane generates additional financial risks for the owners of the aircraft, including costs connected with financial liabilities for passengers and freight. Another crucial point is that frequent cases of aircraft hijacking can undermine public confidence in the safety of air travel, which could trigger severe effects for certain airlines and other firms due to decline in passenger travel and freight shipment. The high frequency of aircraft seizures can also increase the likelihood that some passengers might find themselves in situations where they are rerouted to the territories of other states, some of which may be unfriendly to nationals of certain foreign countries because of political or religious reasons. Those unexpected situations have the potential to provoke serious international political crises.

Apart from the risks posed by possible terrorist attacks on airborne aircraft, air terrorism includes the threats to general aviation on the ground, including airports, airfield infrastructure, aircraft on runways, etc. The terrorist threat to an airport

comprises any possible event that could potentially cause direct damage to an airfield, air terminal, or other properties. All of these potential attacks could also result in significant human casualties and financial losses.

Air terrorism exists in various forms. It can encompass many activities: air piracy, or hijacking; bomb attacks against planes and other aviation objects; attacks against aircraft and aviation infrastructure with military weapons; and the seizure of jetliners for use as “manned missiles” against either ground or air targets.

But other kinds of air terrorism have been recorded as well. Some of these include terrorists taking hostages and barricading themselves inside airports or airline offices. Other forms of air terrorism include setting airplanes or other objects of aviation infrastructure on fire, conducting sabotage during maintenance operations, or shipping explosives by air cargo.

The analysis of hijacking attacks in particular leads to the conclusion that escape from a particular country could be another important motive of such acts (as in cases where a hijacker forces the crew of an aircraft to alter the direction of a flight in order to land in another state). A second common reason for aircraft hijacking is extortion, where hijackers essentially hold a plane and its passengers for ransom. The fulfillment of these demands depends completely on the governments, not on the crew members of individual aircraft. Some acts of air piracy are carried out by individuals wanting to protest against the policy of particular country. These hijackers don’t always make any additional demands. And there are some rare cases of hijackings that have been conducted by mentally unstable individuals. In these examples, the hijackers’ demands are not clear, and can be downright bizarre.

Legal Aspects of Combating Air Terrorism

In order to counter air terrorism, the world community has strived to create rational and commonly accepted judicial processes and technical regulations. These anti-terror procedures are updated as a result of previous terrorist attacks, in order to prevent similar events from occurring in the future.

The threat posed by global terrorist groups to civilian aviation has caused the international community to exclude some groups of terrorist crimes from the judicial category of political crimes. The world community recognizes this group of illegal acts as common crimes, which are to be prosecuted by criminal law.

The first regulations connected with exclusions from the political privileges that exist in international law (in particular, the right of asylum) were included in the 1963 *Convention on Offences and Certain Other Acts Committed on Board Aircraft*, commonly known as the “Aircraft Convention.” This document was endorsed on 14 September 1963 in Tokyo. Its main assumptions were developed and supplemented in two international acts: the 1970 *Convention for the Suppression of Unlawful Seizure of Aircraft* (the “Unlawful Seizure Convention”), signed on

16 December 1970 in The Hague; and the 1971 *Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation* (“Civil Aviation Convention”), ratified on 23 September 1971 in Montreal. The conventions focus on counter-terrorist actions on board aircraft. These international acts do not include any provisions referring to the use of aircraft as missiles to destroy targets on the ground.

However, airports were and still are the main venues through which terrorists could infiltrate aircraft in order to commit a terrorist attack. The conventions refer to the antiterrorist measures used on board airplanes, but the provisions should also preclude terrorist acts carried out in airports and on airfields. The implementation of the provisions of these conventions has resulted in diminishing the number of planes that are hijacked annually.

But these international regulations have not fully eliminated the threats against aviation. The International Civilian Aviation Organization (ICAO) plays an important role in current counter-terrorist operations, primarily through elaborating and finalizing the appendixes and recommendations to existing conventions. One example of such activity is Annex 17 to the Chicago Convention, implemented on 22 March 1979. This document outlines the basic standards of air terrorism prevention efforts. According to this appendix, every country acceding to the document should establish procedures to prevent against any illegal attempt to bring on board any aircraft any hazardous devices, materials, or weapons that could be used to carry out a terrorist attack. The list of items forbidden on board has been elaborated to include guns; swords and their dummies; ammunition; grenades; flammable, caustic, or toxic compounds; and gaseous substances under low or high pressure.

After the attacks on the World Trade Center and the Pentagon in September 2001, the leaders of NATO issued a set of recommendations to deal with this new terrorist threat. According to the NATO codification, a plane seized by hijackers is to be dubbed as “Renegade.” In accordance with arrangements settled by NATO, each member of the Alliance should put in place adequate operational procedures. The draft of an SACT NATO concept of counter-terrorism action states that, in the face of a threat of possible usage of a civilian jetliner as a “manned missile,” every NATO member should deal with this attack according to its own national law. When a situation that activates the “Renegade” classification occurs on the territory of any NATO member, it puts into operation the Allied system NATI-NADS to monitor the situation. In cases of necessity, this system could abet particular national actions to counter the terrorist danger. The solution of how to expand legislation against terrorist attacks to cover the usage of passenger jets as missiles depends on the national legal regulations of each NATO member. The ultimate decision to shoot down a passenger aircraft that has been hijacked by terrorists belongs to the prerogatives of national authorities, and would depend on the potential threat posed to a nation’s security. Decisions undertaken by the compe-

tent representative to destroy a jetliner in a situation such as that outlined above should be in line with national law. It should be emphasized that such an extreme solution—shooting down a passenger jet with innocent people on board in a case of possible terrorist attack—would most likely not be accepted by the public, as such a step is contradictory to the fundamental human rights to life and freedom. It has to be added that international law does not offer any more precise guidance for how to deal with cases where terrorists are planning to use a hijacked plane as a weapon.

Organizational and Technological Aspects of Combating Air Terrorism

Countering air terrorism demands not only the implementation of new legal measures; it also calls for the creation of new organizational and technological solutions to combat this new terrorist danger within the civilian aviation infrastructure. When planning counter-terrorist actions in the aviation context, the conclusions drawn from analyses of fundamental terrorist threats should be taken into consideration. These counter-measures should affect: the manning of all air operations, both civilian and military; the management of airport customers; and aviation infrastructure. Indeed, all operations related to air traffic should be accounted for in these measures. The basic site for most actions against air terrorism is an airport, because it is the place where almost all activities connected with aviation are executed.

Analyses and assessments related to the topic of air terrorism indicate that an understanding of the hierarchy of means of creating terror in the world aviation is necessary. The list of potential terrorist means are as follows:

- Use of explosives
- Use of portable anti-aircraft missile systems to destroy aircraft during take-off and landing
- Use of grenade launchers and small arms to destroy planes and airfield infrastructure
- Use of hijacked airliners in terrorist attacks to demolish key infrastructure elements or to destroy aircraft during landing, taxiing or take-off
- Use of land-mounted anti-aircraft mines
- Cyber-terrorism.

Technical solutions designed to augment the security of airports and aircraft against terrorist threats refer to two basic aspects: preventing unauthorized incursion on sensitive areas of airfields, and intercepting illegal actions against air-planes. Various technical systems are used to counter the terrorist threat in airports, such as alarm systems designed to prevent unauthorized access to runways

or aircraft, and systems protecting airplanes against fire or other attempts to damage them during any phase of operation.

These technical systems play a key role in supporting the process of detecting unauthorized access to or illegal interference with airports and aircraft. The following technical systems are of particular significance:

- Airfield area and aircraft access supervision systems
- Systems preventing unauthorized access and assault attempts
- Systems protecting aircraft parking areas
- Cargo, mail, and courier parcel supervision systems
- Air crew, passenger, and freight safety checking systems
- Personnel safety checking systems
- Systems to control the fabrication of ID cards and passes
- Optical monitor systems (TV supervision systems)
- Systems to detect nuclear, biological, or chemical agents.

These systems are all effective in their own area, but for maximum effectiveness to be achieved, integration of these various systems is necessary. In order to ensure effective safety management, the following technical systems should be integrated: airfield area and aircraft access supervision systems, ID card and pass control systems, optical monitor systems, and systems preventing unauthorized access.

One of the main dilemmas regarding airport security is determining the optimal level of integration of security systems, in order to ensure the speed and uniformity of protective actions (an advantage of a high level of integration). These airport safety systems should themselves be protected against terrorist attacks. On the technical level, airport safety systems often rely on automatic systems of data processing, such as automatic identity registry through biometric readers or individual coding; automatic threat analyses (e.g., face analysis systems that are part of the software of digital security TV systems, or abandoned luggage supervision systems, monitoring of incorrectly parked vehicles, etc.); and automatic multilevel checking of registered luggage, including a risk management system.

The efficient operation of an airport safety system can only exist in company with rigorous procedures for distributing accreditation documents (ID cards) enabling access to the designated zones of airfields. These documents should be produced by only one airport institution, which is solely responsible for safety issues. The main criterion of the accreditation process is verification of persons applying for jobs at airports. It requires special regulations entitling the airport security services to conduct those verification actions. Prevention of trespassing of the restricted area around the airfield is very important, as it reduces the possibility of

unauthorized seizure of an airplane during standing or taxiing on the ground. In general, the execution of preventive activities limits the probability that terrorist attacks will be successfully carried out. However, airport security services do not guarantee safety from terrorist action in all situations during all phases of aircraft operation.

The conclusions from most of the research related to airport safety confirm that the operations that are in place to check people entering designated airfield zones should include state-of-the-art control sensors (e.g., stationary metal detectors, mostly at gate facilities) and physical-chemical analysis devices to detect explosives.

The element of aircraft security systems designed to combat terrorist threats involves the assurance of safety while on board the actual airplane. One specially developed system comprises a camera placed in the passenger cabin, connected to a PC unit and screen monitor located in the crew cabin. The pictures from the camera are analyzed by special software that is designed to detect all suspicious passenger behavior (identifying potential terrorists in the process). The software system indicates such potentially dangerous behavior as standing for long periods during flight, moving among the seats, or sitting on the floor of the aircraft. Experts in the fields of counter-terrorism and aviation security elaborated the set of potentially dangerous behaviors. The system also includes a possibility to use facial recognition software, which could be used to identify wanted individuals.

Concerning specific technological counter-measures against attacks, the systems currently in use to prevent airplanes from being attacked by portable missile systems include flare launchers, aircraft laser defense systems, and ground (airport) laser systems to protect aircraft during take-off and landing.

Conclusions

Aviation targets must be still considered to be highly tempting objects for terrorists. Aircraft cannot be stopped in mid-air; thus, the final effects of terrorist attacks against aircraft are both highly destructive and extremely dramatic. Those airports and terminals that possess the most robust airfield infrastructure, and the highest quantity of people, freight, flammable materials, and maneuvering aircraft offer the richest targets for potential terrorist attacks.

Attackers could employ various methods. The first is to infiltrate an airfield, in order to put in place explosive materials or dangerous tools that could be used for terrorist attack on ground or in the air.

Terrorists could also attack aircraft that are taking off or landing using portable anti-aircraft missile systems. They could launch rockets from areas immediately adjacent to the protected airfield zones. Attackers can shell aircraft parked on the tarmac, and could also shoot projectiles onto terminal buildings, using diverse types of munitions. In peacetime the probability of such armed actions is minor,

since the transportation of weapons of any size near an airport would be likely to draw attention, but they cannot be precluded.

Terrorists can also attempt to hijack airplanes. A small civilian aircraft could be used either for a suicide mid-air collision, to ram a jetliner during take-off or landing, or it could be used to destroy an airport terminal, causing a huge number of fatalities and tremendous infrastructure damage. Terrorists could also hijack a large passenger plane with travelers on board in order to use it as a “manned missile” to destroy important civilian, military, or governmental targets on the ground.

Combating air terrorism requires the use of a wide range of organizational and technical efforts based on appropriate legislative solutions. While terrorist actions are very hard to predict, nevertheless there have been put in place universal international legal measures that are designed to help protect aviation from illegal interference. The organizational activities dealing with aviation security should also embrace prevention against terrorist assaults. Airfield safety systems should prevent infiltration of airfields, and should be designed to detect attempts to smuggle explosives or other hazardous materials into airplanes or terminal buildings. The technical elements of this safety system infrastructure have to allow for the monitoring of the overall situation on an entire airfield. This system should enable the complete control of people, cargo, maintenance supplies, etc. Such a comprehensive, integrated approach to aviation security will help to forecast the risk of terrorist attacks, and provides the best chance to adequately protect aircraft, both on the ground and in the air.

Finally, it is critical to have in place a set of clear and robust plans in order to respond to crisis situations in the air and on the ground, which must be supplemented by relevant training to learn the proper procedures for any counter-terrorist action.