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TERRORISM AND THE THREAT TO CIVIL AVIATION

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TERRORISM AND THE THREAT TO

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By

William Alva Crenshaw

A Dissertation Presented in Partial Fulfillment
of the Requirements for the Degree
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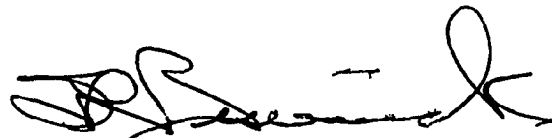the requirements for the degree of
Doctor of Philosophy

TERRORISM AND THE THREAT TO
CIVIL AVIATION

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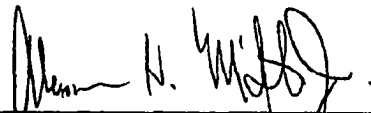 Studies (Interim)

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Abstract of a doctoral dissertation at the University of
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A case study is presented of the threat of terrorism upon
civil aviation and the response generated to that threat by
governments,   the   air   transport   industry,   and the general
public.   In   addition   to   the   impact   of   "conventional
terrorism,"   the   cumulative   impact   of related incidents of
violence, all of which individually may not be intentional
acts by the perpetrators to "terrorize" a larger, indirect
victim group, is identified as a potential and significant
influence upon the perception of the terrorist threat by a
nation, a society, or segments thereof. The perception of
the threat by the indirect victim, as distinct from the
validity of that perception, is further explained as a key
determinant as to the extent to which terrorism "works"
against that group and one to which further research by
scholars in the field should be directed.

On a global scale, terrorism has exerted a greater impact upon civil aviation than any other major industry. Nor has any other industry group matched the response of civil aviation to the terrorist threat. The political and social costs in developing and maintaining comprehensive security programs against hijackings and other violent actions against the air transport system have been extensive; the economic costs have been staggering.

Domestic and international threats traditionally have developed along different lines. Fugitives, disgruntled immigrants, and mentally unstable individuals have represented the principal domestic threat to date, but organized political terrorist groups, primarily Middle Eastern in origin, have posed the major threat to international travel. A limited capability for accurately detecting explosives represents a critical vulnerability and is a primary objective for improving existing protection programs. American aircraft, ground facilities, and passengers on national and foreign aircraft repeatedly have been direct victims of international terrorist attack and continue to confront a higher than average risk. The potential for serious incidents against civil aviation within the United States by organized political terrorists is increasing.

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CHAPTER I

INTRODUCTION

Terrorism is not a recent phenomenon, but the explosive growth of terroristic violence over the past several decades has left a dramatic imprint upon the life style of most of the world's population. We are constantly reminded of the threat posed in the course of ordinary daily activities. Of grave concern is that terrorism appears virtually certain to exert an even more intense and pervasive influence in our future unless current trends unexpectedly are reversed.

There is no precise and all-inclusive definition of "terrorism." The subject is open to broad interpretation depending upon one's particular point of view. Some observers describe terrorism in terms limited to politically motivated violence. This is not unexpected. After all, organized terrorist groups operating either within a state or internationally, most especially those originating in the Middle East, hold center stage in the theatre of fear.

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Fortunately, terrorists have not appeared particularly innovative as a whole. Violence has escalated rapidly both in scope and intensity in past years, but the process generally has been one of copying and improving upon various successful tactics. Such tactics obviously are readily adaptable by others and are unrestricted by geographical boundaries or motivational limitations.

This transfer process has been speeded by the provision of material support, training, and physical support among terrorist organizations and by state sponsors, such as Cuba, Libya, Syria, and Iran. The Soviet Union and Eastern European countries have been involved both directly and indirectly. State-sponsored terrorism constitutes a continuing and increasing threat to international peace and security. As disclosures of Syrian and Iranian involvement in recent terrorist incidents have revealed, such backing is all too readily available.

An added concern is that recent and on-going technological developments in communications, weaponry, and travel greatly facilitate the launching of dramatic and violent attacks even by individuals or very small groups acting with or without substantial backing. The detection and interdiction of such obscure potential attackers becomes

increasingly difficult for intelligence and law enforcement elements.

But precedents also abound in which political terrorists have copied and improved upon successful actions carried out either by common criminals or mentally unstable persons. This has worked as well in the reverse; on occasion, common criminals and unstable persons have masqueraded as political terrorists in committing violent crimes.

It is important for general understanding and effective response to the terrorist threat that research in the field of terrorism address the threat of terroristic violence generated outside of a political or ideological context by those individuals who, driven by a desire to commit violence for real or perceived grievances, do not fit into the conventional terrorist mold. Essential to this premise, the cumulative impact of such incidents (which individually may or may not consistently demonstrate a deliberate intent by the perpetrator to influence a target audience beyond the immediate or direct victims) may play a significant role in molding the perception of the terrorist threat by the larger group, whether governments, the general public, specific industries, or a combination thereof.

The principal theoretical contribution of this research to the field is in underscoring the importance of the perception by the larger, indirect victim group of the "terrorist" threat. In the author's opinion, this represents one of the most critical and least developed gaps in the study of terrorism to date.

Statistically, the number of direct victims of terrorism is small compared to the human toll resulting from natural disasters and accidents. But it is the fear of repetitive violence, the threat of terrorism, that has prompted individuals, businesses, and governments to accept significant restrictive measures and to implement elaborate protective programs, many of which only a few years before would have been considered unacceptable to the general public or extremely difficult to undertake from economic or political considerations. As it has developed, the political and psychological costs of terrorism have been extensive. The economic costs of terrorism have been staggering.

A case study of the threat of terrorism to civil aviation, and the response generated to that threat, is presented in support of this thesis. The selection of civil aviation is especially appropriate in view of the numerous domestic

and international incidents of terroristic violence directed against commercial aircraft, ground facilities, and passengers in the past and the latter's potential as targets of future terrorist attacks. In no other major industry group is the impact of modern terrorism more apparent on a global scale as that which affects civil aviation.

Despite the fact that terrorist attacks directed against air travel represent but a small percentage of the total terrorist incidents committed, there appears an almost unique quality about civil aviation which, at least temporarily, galvanizes public attention upon an aerial hijacking much more than does violence created in a more static environment. Terrorism aims to terrorize and a hijack or other attack against civil aircraft or ground facility consistently has proven to be an effective means for generating mass impact and attracting wide media coverage.

This was vividly demonstrated by the June 1985 hijacking of TWA Flight 847 when passengers and crew were held hostage almost two weeks in Lebanon. The same level of concern concentrated upon the passengers and crew of that flight clearly was not evident at the time in the case of other

American hostages who had been held for extended periods in that country.

There are additional factors which attract terrorists to civil aviation as a target. Within the international context, airlines (including both aircraft and related ground facilities) are relatively accessible and vulnerable symbolic targets of their respective countries which present a lower risk to the terrorist than would an attack within the home country. El Al Airlines (Israel), Pan American and Trans World Airlines repeatedly have been direct victims of terrorist attack as surrogate targets.

On an industry-wide basis, the scope and intensity of preventive and reactive measures taken by or for civil aviation to address that security threat is unmatched by any other single group of private or governmental enterprises. This extensive reaction by domestic and international government agencies, the air travel industry, and the general public has resulted directly from their respective perceptions of the threat. Legitimate questions can be raised if the response to the perceived threat was appropriate, in retrospect, to the actual threat. The tendency to over-react is strong in responding to such an emotional issue as terrorism.

Most measures employed to protect civil aviation have narrowed the latitude of the terrorist to choose the type, time, and site of attack, or at the least have substantially raised the risk to the attacker. Other protective or responsive programs have met with less qualified success sometimes despite their high cost. Indeed, one of the more pressing domestic security challenges is to determine the most effective and acceptable response or preventive measures to counter organized terrorist violence, of the nature more characteristic of late to the Middle East and Europe, if and when such incidents occur in the United States. Certainly, under such a scenario, civil aviation would be a likely target.

In conducting research for this study, the author relied extensively upon interviews with executives of the Federal Aviation Administration, the Air Transport Association, and the Airline Pilots Association, in addition to representatives of airlines, airport operating authorities, and law enforcement agencies. Interviews also were conducted with various leading scholars in the field. Additional statistical and general data were drawn from multiple printed sources, including newspapers, general and trade magazines and reports, and government publications.

A survey of published material on terrorism provided the basis for the theoretical discussion, but the author also drew upon long-term personal exposure to the subject as a military intelligence officer and as a security advisor to various multinational companies. This background provided an unusual vantage point from assignments, among others, as military attache to a country experiencing endemic terrorism, as a special assistant to the Director of the Defense intelligence Agency, and more recently, directly concerned with the terrorist threat to the private sector.

Chapter II, entitled "Terrorism-A Question of Definition," addresses various definitions of terrorism, ranging from those limited to political terrorism to others which would also incorporate individuals or groups motivated by broader reasons as potential perpetrators of terroristic violence. In this chapter, the author addresses the concept of a cumulative impact of "unintentional" as well as deliberate terrorism upon the perception of the threat by the larger or indirect target group, whether governments, the general public, or industry.

Chapter III contains a discussion of the threat to civil aviation. Arranged chronologically for convenience of presentation, examples are provided wherein political

terrorists have adopted and perfected violent tactics initially carried out by fugitives, political refugees, and unbalanced persons. The chapter contains various references to the transfer of the threat to softer targets as protective measures around initial targets are increased and comments upon the impact of the "copy-cat" phenomenon as a factor influencing the frequency and timing of incidents against civil aviation. Within the United States, few of the recorded attacks against civil aircraft or ground facilities were perpetrated by conventional terrorists but the cumulative impact of two major waves of hijackings and other forms of attack or threats thereof provided the stimuli for a massive protective program. In recent years, the principal threat has evolved internationally, primarily in the Middle East and Western Europe, but U. S.-registered aircraft and American citizens confront a higher than average risk of terrorist attack against civil aviation in that area.

Chapter IV addresses the response by governmental agencies, the civil air transportation and related industries, and the general public to the perceived threat to civil aviation and comments on the relative effectiveness of key aspects of protective programs. In support of the author's thesis, the perception of the threat and response to hijackings and related crimes against civil aviation

within the United States have not been markedly different from that likely resulting from a more conventional terrorist threat. Indeed, revised security programs originating from the more diffused threat in the late 1960s and early 1970s today provide primary protection against terrorist threats to international civil aviation.

As hijackings to Cuba from the United States have diminished in recent years,· to become overshadowed by dramatic hijackings, bombings, and assaults upon airport terminals in the Middle East and Western Europe, Americans have looked with growing apprehension upon the risks of international air travel. The threat of terrorism, as perceived by the traveling public, was the direct cause of a sharp decline in tourist travel and, to a lesser extent, commercial travel to European and Mediterranean countries following particularly vicious terrorist attacks in 1984 and 1985. This had severe economic implications for those airlines which depend heavily on routes in the affected area and ripple effects were felt throughout the entire tourist industry.

In "Considerations For The Future," Chapter V assesses, among other points, the potential for the development within the United States of the type of violent political terrorist activity which has affected parts of the Middle

East and Western Europe in recent years. Although such development cannot be accurately forecast, there exists a high probability, should it occur, that civil aviation would be a primary target. Security programs in effect provide a level of protection against hijack or bombs on board aircraft but they cannot guarantee that such attempts would be thwarted. The limited availability of safe havens, even for refueling, remains a positive factor in the defense against organized hijacking attempts. This logically would place the greatest risk on long-range aircraft departing for distant international destinations.

Airport terminals emerge as a particularly vulnerable target. Repeated attacks against such facilities, most likely by bombs, could seriously disrupt the entire transportation system. This threat, currently potential rather than actual, requires serious consideration and contingency preparation to ensure a timely and appropriate response should it become manifest.

CHAPTER II

TERRORISM-A QUESTION OF DEFINITION

One of the controversies surrounding the study of terrorism
lies in the effort to accurately define what constitutes
"terrorism." In a research guide on political terrorism,
Alex Schmid tabulated over 109 definitions of terrorism
which were advanced between 1936 and 1981.[1] Other
definitions have been drafted since. Not unexpectedly, the
definitions reflect widely divergent points of view and
many, although containing elements of common agreement,
appear limited in varying degree or are too specific to
adequately address terrorism on a general level which this
dramatic issue demands.

This controversy is well recognized by leading authorities
in the field and there appears little chance that a
satisfactory and universally acceptable definition will
emerge in the near future. One of the more widely
published authors on the subject, Yonah Alexander
acknowledges that "terrorism has evaded a universally
acceptable definition."[2] J. Bower Bell also notes that
"there is no satisfactory political definition of terror

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nor common academic consensus as to the definition."[3]
Paul Wilkinson provides one explanation for the difficulty
in reaching consensus in suggesting that a central problem
in defining terrorism lies in its subjective nature.

There are areas of common ground, of course, in describing
terrorism. Walter Lequeur observes that "most experts
agree that terrorism is the use or threat of violence, a
method of combat or a strategy to achieve certain goals,
that its aim is to induce a state of fear in the victim,
that it is ruthless and does not conform to humanitarian
norms, and that publicity is an essential factor in
terrorist strategy."[4]

Classical terrorism is obviously linked to political
violence and many scholars and experts in the field
restrict their definition of terrorism to politically-
motivated violence. Among this school of thought, Richard
Shultz and Stephen Sloan state that "political terrorism
may be defined as the threat and/or use of extranormal
forms of political violence, in varying degrees, with the
objective of achieving certain political objectives/
goals."[5]

A key distinction also is made by many experts between the
actual victims of a terrorist attack and the intended or

target audience. Jordan Paust emphasizes this in defining terrorism as "a form of violent strategy, a form of coercion utilized to alter the freedom of others." Terrorism involves the use or threat of violence against a secondary target in order to communicate a threat to the primary target for purposes of coercing the primary target into granting a particular political outcome.[6] Shultz and Sloan acknowledge that "such action (threat and/or use of extranormal forms of political violence) generally is intended to influence the behavior and attitudes of certain targeted groups much wider than the immediate victims."[7]

Also focusing on politically-motivated violence, Ernest Evans defines terrorism "as a strategy whereby violence is used to produce certain effects in a group of people so as to attain some political ends. . . One of the effects of such a strategy is fear."[8] Edward Mickolus describes international terrorism as "the use, or threat of use, of anxiety-inducing extranormal violence for political purposes by any individual or group, whether acting for, or in opposition to, established governmental authority, when such action is intended to influence the attitudes and behavior of a target group wider than the immediate victims and when, through the nationality or foreign ties of its perpetrators, its location, the nature of its institutional or human victims, or the mechanics of its resolution, its

ramifications transcend national boundaries.[9] In a narrow definition, Benjamin Netanyahu cites the victim factor in specifying the "willful and calculated" choice of innocents as targets. Terrorism is defined by him as "the deliberate and systematic murder, maiming, and menacing of the innocent to inspire fear for political ends."[10]

Some definitions appear keyed to the sources responsible for terroristic violence. This approach is exemplified in the U. S. Department of Defense description which specifies a revolutionary organization as the perpetrator of terroristic acts. Under that definition, actions carried out by such groups for direct or immediate political object- ives, such as hijackings for ransom, can be typed as terrorism. Specifically, DOD Directive 2000.12 defines terrorism as "the unlawful use of threatened force or violence by a revolutionary organization against individuals or property, with the intention of coercing or intimidating governments or societies, often for political or ideological purposes."[11] The DOD definition is not clear as to acts committed by a political terrorist group which on the surface do not appear directly politically- motivated. The 1981 assault on an armored money transport truck in Upper New York by members of a Puerto Rican terrorist group is an example of such a violent action apparently designed to build the group's "war chest" rather

than making a revolutionary "statement." Similar actions carried out by organized criminal elements or individuals driven by other motivations would not be considered as committing a terrorist act according to this definition.

The U. S. Department of State prefers to define terrorism as "premeditated, politically motivated violence perpetrated against non-combatant targets by subnational groups or clandestine state agents, usually intended to influence an audience."[12] In this version, the element of intent to coerce or intimidate the larger audience, while important, is not preeminent for a finding of a violent act as terroristic, although it specifies that the violence be politically motivated. The external orientation of the State Department and, for that matter, the Department of Defense, is reflected in their respective definitions of terrorism.

Of the military services, the Army has been more directly exposed to the issue of terrorism and counter-terrorism. Resulting in part from this experience, the Department of the Army offers a more expansive definition than the Departments of Defense and State in describing terrorism as the "calculated use of violence or the threat of violence to attain goals political, religious, or ideological in

nature. This is done through intimidation, coercion, or instilling fear. Terrorism involves a criminal act that is often symbolic in nature and intended to influence an audience beyond the immediate victims."[13]

Expectedly, the Federal Bureau of Investigation reflects a broad domestic perspective in defining terrorism as "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 futherance of political or social objectives."[14] The Bureau rules out common criminal acts from consideration as terrorism, whether committed by organized political terrorists or by other groups or individuals. The Bureau specifically identifies the seizure of aircraft for fugitive flight or for purposes of extortion as a common crime.

Neil Livingstone notes that terrorism, when used in a political context, usually "represents a calculated series of actions designed to intimidate and sow fear throughout a target population in an effort to produce a pervasive atmosphere of insecurity, a widespread condition of anxiety."[15] By his definition, Livingstone allows an opening for terrorism not restricted to a purely political context. David Fromkin writes that "terrorism is violence used in order to create fear; but it is aimed at creating

fear in order that the fear, in turn, will lead somebody else-not the terrorist-to embark on some quite different program of action that will accomplish whatever it is that the terrorist really desires."[16] Consistent with this definition, organized crime (such as the Mafia) or mentally-unbalanced persons may commit acts of violence which could be described as terroristic in nature.

The line between terrorism and common criminality is a fine one which has complicated reaching a consensus definition of terrorism. Laqueur contends that the contribution of criminology to the study of terrorism has been neglected so far but that is in this direction that some advance seems most likely.[17] Indeed, there is growing interest in the field of criminology on the subject.

At issue is if similar acts of violence should be treated differently if motivated by political, social, or economic reasons. Wilkinson cautions "in attempting to determine whether a specific action (or series of actions) is terroristic or not, the scholar should be aware that he is making a value judgement about the perpetrators of that alleged act."[18] Grant Wardlaw observes that "attempts at definition often are predicated on the assumption that some classes of political violence are justifiable whereas others are not."[19]

This is obvious in the resolution defining terrorism and adopted by the United Nations on 9 December 1985 after many years of debate. The difficulty of reaching consensus among such a diverse group is evident by the generality of the definition and the time required to reach even that point. One of the most ambiguous and least useful definitions in the author's opinion, the international body defines terrorism as "acts . . . in all its forms which endanger or take innocent lives, jeopardize fundamental freedoms, and seriously impair the dignity of human beings."[20]

The motivation of perpetrators of violent acts thus become a key issue. Several prominent definitions are based upon this motivational distinction. Jeane J. Kirkpatrick follows this approach in stating that ". . . terrorism differs from simple crime, which can also be defined as unauthorized violence against people who are not at war. The difference lies not in the act itself but in the terrorist's understanding, however vague, of what he is doing. The terrorist's motive is political in a way that a criminal is not."[21]

Eduardo Jimenez Arechaga makes a similar reference to intent on the part of the perpetrator as a distinctive element of a terrorist act. Drawing upon his experience

during the Tupamaru activity in Uruguay, Jimenez describes terrorism as acts which in themselves may be "classic forms of crime-murder, arson, the use of explosives-but which differ from classic criminal acts in that they are executed with the deliberate intention of causing panic, disorder, and terror within an organized society, in order to destroy social discipline, paralyze the forces of reaction of a society, and increase the misery and suffering of the community."[22]

A broader approach is taken by Charles Russell, Leon Baker, and Bowman Miller who define terrorism as "the threatened or actual use of force or violence to attain a political goal through fear, coercion, or intimidation." This definition is made more inclusive by the trio who explain that the word "political" is used in context to encompass the "entire range of social, economic, religious, ethnic, and government factors impacting on a body politic, stressing the notions of power and influence."[23] The definition covers a wider range of potential terrorists.

Bell also has a broad interpretation of terrorism in mind in categorizing multiple sources of terror. He includes psychotic, criminal, endemic, authorized, vigilante, and revolutionary elements as potential perpetrators of terroristic acts.[24] Frederick J. Hacker incorporates the

"non-political" terrorist in his description of terrorist types as "crusaders, criminals, and crazies." Terrorism, in Hacker's view, is "the manufacture and spread of fear by rebels, revolutionaries, and protesters."[25] Terror and terrorism "aim to frighten and, by frightening, to dominate and control." While observing his caution that not all violent acts are to be considered as terroristic, Hacker's description encompasses many of the attacks against civilization carried out by other than recognized political extremist groups as valid terrorist acts.

Nor does Yonah Alexander limit terrorism to political motivations alone. He states that "spectacular acts of terror have been planned and executed by subnational groups, including, on the one hand, marginal antisocial elements, conspiratorial adventurers, underground fanatics, religious enthusiasts, and racial bigots and, on the other, more institutionalized opposition movements such as banned political parties and paramilitary organizations."[26] Paul Wilkinson also provides a broad interpretation in distinguishing between four types of terrorism which he describes as criminal, psychic, war, and political.[27]

Brian Jenkins defines terrorism by "the quality of the acts, not by the identity of the perpetrators or the nature of their cause. All terrorist acts are crimes."[28] He

further states that terrorists may operate alone or as members of a group and he includes as motivational causes money or revenge as well as political objectives. A broad interpretation is also voiced by Yoram Dinstein who views terrorism as "any type of violence to instill fear in the victim or another audience. . . Not all terrorism is political."[29] Both interpretations incorporate various types of violent acts in "grey" definitional areas which confront civil aviation.

A workable description of terrorism is important to the conduct of an in-depth study of the terrorist threat to civil aviation. Many of the spectacular and violent attacks upon aircraft and ground facilities of commercial airlines fit neatly into the classical definitions of terrorism and there is little or no serious exception taken to their inclusion as terrorist actions. It is most important to note, nevertheless, that it was hijackings and other violent types of attacks carried out against civil aviation by common criminals and unstable individuals, and not primarily by political revolutionaries, that prompted the initial implementation of special security measures in the United States; measures which have been refined and adopted on an international scale as a primary defense against terrorist attacks upon civil aviation.

The instilling of fear in a broad audience beyond that of
the immediate victims of violent incidents is a definite
product of the cumulative hijackings and other violent acts
committed against civil aviation, both within the United
States and internationally, over the past several decades.
The creation of fear in a group broader than the actual
victims was the deliberate objective of many of these
attacks. In others, it was either a low priority conside-
ration or an unintentional by-product. This does not alter
the fact, whether deliberately or unintentionally imposed,
that the general public, the civil aviation industry, and
governments or governmental agencies perceived the threat
to the air travel system to be of major proportions and so
responded to that perception. Within the United States,
the cumulative impact of numerous "non-political terrorist
acts" has added significantly to the general perception of
the threat to civil aviation.

In the author's opinion, one of the essential elements of
the terrorist equation that has not received adequate
attention by research to date is the perception of that
threat from the victim's viewpoint. It is, in the final
analysis, the potential victim's own perception of the
threat that drives him to take certain protective measures
deemed essential to reduce the threat to manageable

levels. The value or ability of terrorism to influence the actions of a victim group necessarily depends upon the threat of future violence; to kill a hostage, to stage another attack, etc. Some governments and societies, or segments thereof, appear more affected by similar terrorist threats than others. The same victim groups may be more or less vulnerable to terrorist threats at different times depending upon their relative sense of security. How the threat is perceived, perhaps even independently of the validity of that perception, is critical.

From the perspective of governments and the air transport industry, this has resulted in a massive and generally effective security response which continues to be refined and expanded. It is evident as well in the relative ease with which the general public has accepted impositions upon their privacy and time associated with air travel. This was particularly remarkable in the United States where concepts of personal privacy are more extensively entrenched than in many countries. The perception of the international threat to civil aviation, augmented by the hijacking of the ship <u>Achille Lauro</u> and scattered terrorist bombings in Western Europe, resulted in a sharp decline in tourist and, to a more limited extent, commercial travel in that area during 1985-86.

The current perception is that the threat of terrorism remains very substantial. According to a poll conducted earlier in 1986 by the New York Times and CBS News, more people named terrorism as the nation's biggest problem than any other single topic, even more than the state of the economy and unemployment.[30] The kidnapping of multiple hostages by Shi'ite groups in Lebanon in early 1987 has reinforced this perception.

This author defines terrorism as the generation and utilization of fear perpetrated by individuals or organized groups motivated by political, social, or purely criminal objectives. The impact of terroristic violence is not determined exclusively by the physical power of the perpetrator(s) to inflict that violence, however.

A central thesis of this dissertation is the following: the effectiveness of terrorism is directly related to the extent to which the indirect victim group perceives it as a threat and reacts according to that perception. The intent to instill fear among a larger indirect victim group is a deliberate objective in most but not necessarily all incidents perceived by such group as terroristic. The cumulative impact of individual incidents of "unintentional terrorism" may contribute to a popular perception of a heightened threat not greatly unlike that resulting from a

deliberate campaign of violence by political terrorist organizations.

NOTES

[1]Walter Laqueur. "Reflections On Terrorism." Foreign Affairs (Fall 1986):86.

[2]Yonah Alexander, ed., International Terrorism: National, Regional and Global Perspectives (New York: Praeger, 1976), p. 3.

[3]J. Bower Bell, Transnational Terror (Washington: American Enterprise Institute for Public Policy Research, 1975), p. 6.

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[8]Ernest Evans, Calling A Truce To Terror: The American Response To International Terrorism (Westport: Greenwood Press, 1979), p. 1.

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[10]Benjamin Netanyahu, Terrorism: How the West Can Win (New York: Farrar, Straus, and Giroux, 1986), p. 9.

[11]Neil C. Livingstone and Terrell Arnold, eds., Fighting Back: Winning the War Against Terrorism (Lexington, MA: D. C. Heath & Co., 1985), p. 194.

[12]William F. Beane, "Cleared For Takeoff" in Security (October 1986), p.49.

[13]Department of the Army Regulation 190-52.

[14]Livingstone and Arnold, Fighting Back: Winning the War Against Terrorism, p. 9.

[15]Neil C. Livingstone, <u>The War Against Terrorism</u>, (Lexington, MA: D. C. & Heath and Company, 1982), p. 4.

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[25]Frederick J. Hacker, <u>Crusaders, Criminals, Crazies: Terror And Terrorism In Our Time</u> (New York: W. W. Norton & Co., 1976), p. x-xi.

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CHAPTER III

THE THREAT TO CIVIL AVIATION

Attacks against civil aviation can be categorized as follows:

Hijackings
Bombings of aircraft
Attacks against aircraft in flight
Attacks against aircraft and support facilities on the
    ground
Bombings of terminals
Armed assaults against terminals
Bombings/assaults on airline offices
Interference with air traffic control/communications

Hijackings and other violence by political refugees, fugitives from justice, exiles wishing to return to their native countries, extortionists, mental incompetents, organized terrorist groups, and governments have profoundly affected the operation of domestic and international air travel. The burden of this threat upon both the airline industry and the traveling public is of major proportions. Deliberate explosions on aircraft in flight have cost the lives of over 1500 passengers and crew members. In addition to hijacking and placement of bombs, aircraft of several nations have been targets of surface-to-air missles while aloft and assaults on the ground.

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Airport terminals increasingly have come under attack as pre-boarding security procedures made airborne hijackings more difficult to initiate, prompting a move in many cases to easier targets. The same "soft-target-attractiveness" has resulted in increasingly frequent attack upon airline offices located in major foreign cities apart from airports.

The initial incident of aircraft hijacking was reported in Peru in February 1931.[1] The unlawful seizure of aircraft in flight as a means of escape for political refugees or criminal fugitives did not develop into a relatively common occurrence until after World War II. In the five years following the end of the war, fourteen hijackings were attempted by persons trying to flee East European countries under Communist control. Five of these occurred in 1948 and six in 1949.

The probability of hijackings increases substantially during internal armed struggles and after radical changes occur in a country's government. During the final year of Castro's revolution against Batista, rebel forces were responsible for four hijack attempts against Cubana Air Lines. The first of these, on 9 April 1958, occurred in Havana where hijackers boarded the aircraft and forced it to Merida, Mexico. Following the assumption of power by

Castro in 1959, political refugees fleeing Cuba hijacked ten aircraft over a two-year period, most of which were flown to the United States.

The successful and publicized tactics were copied rapidly outside of Cuba. The first incidence of a successful hijacking originating within the United States occurred on 1 May 1961 when a National Air Lines Convair 440 passenger airliner was taken over on a flight from Marathon, Florida to Key West by a man who forced the pilot to fly to Cuba. This was followed shortly, on 24 July, by the hijacking of an Eastern Air Lines Electra on a flight from Tampa to Miami.[2] The hijacking of the Eastern Electra was an acute source of alarm to U. S. officials who saw the hijacking of a second aircraft as the possible beginning of a trend.

The alarm was heightened after Castro held the plane in retribution for the impoundment of several Cuban aircraft previously hijacked to the U. S. The latter were held under claims brought against the Castro Government by private businesses holding pre-revolutionary assets in Cuba.

A total of eleven planes were hijacked worldwide that year (1961), including four U. S. commercial passenger aircraft. American officials were correct in their concern of

a trend of hijackings developing within the United States, even though it was not immediately apparent. After an initial peak in 1961, four more years elapsed (1962 through 1965) before eleven additional aircraft were subjected to hijack attempts worldwide, including two U. S. passenger airliners and four general aviation craft. The reduction was temporary; there were 12 hijacking attempts over the next two years (1966-67).[3]

An "epidemic" wave of hijackings started in 1968. A total of 38 hijacking attempts were reported worldwide in that year; 23 of which occurred in the United States. (Several general aviation hijackings are included in this figure). Cuba was the planned destination of 32 of the hijackers, including nine flights seized in Mexico, Colombia, Venezuela, and the Dominican Republic.[4]

The upward trend of hijacking attempts is illustrated in the following table. It lists hijacking attempts chronologically and includes both U. S. and worldwide totals.

HIJACKING ATTEMPTS AGAINST CIVIL AVIATION
1931-86

Year	Worldwide Total	U.S. Registered Aircraft	U. S. General Aviation*
1931-46	1	0	
47-49	14	0	
50-53	8	0	
54-57	0	0	
58	8	0	
59	6	0	
60	9	0	
61	11	5	
62	3	1	(1)
63	1	0	
64	2	1	(1)
65	5	4	
66	4	0	
67	6	1	(1)
68	35	22	(6)
69	87	40	
70	83	26	(1)
71	58	27	(2)
72	62	30	(3)
73	22	3	(1)
74	26	7	(4)
75	25	12	(6)
76	18	4	(2)
77	32	6	(1)
78	31	13	(5)
79	27	13	(2)
80	41	22	(1)
81	32	8	(1)
82	32	10	(1)
83	34	19	(1)
84	28	7	(2)
85	36	5	(1)
86	NA	5	

* This refers to U. S. aircraft involved in non-scheduled operations. (Included in preceeding totals).

SOURCE: U. S. Department of Transportation, Federal Aviation Administration, Office of Civil Aviation Security, U. S. And Foreign Registered Aircraft Hijackings, Up-dated January 1, 1986, pp. 1-134.

Although most of the hijackings since 1960 occurred in the Western Hemisphere, particularly so in the United States, a hijacking occurred in the Middle East in 1968 which served as an indicator of increasing violence later to be directed against civil aviation in that region. On 23 July 1968, El Al Flight 426 departed Rome enroute to Tel Aviv, Israel with thirty-eight passengers and twelve crew on board. Shortly after takeoff, three men belonging to the Popular Front for the Liberation of Palestine (PFLP) seized the plane and forced the pilot to fly the aircraft to Algeria. A crew member was shot during the takeover. After being held hostage in the aircraft for forty days, the Israeli passengers were released in a trade by Israel for fifteen prisoners.[5]

Motivation for the attack was to strike at a symbolic Israeli target and to force the release of Arab prisoners held in Israeli jails. Stung by having to give in to three armed terrorists after so decisively winning the Six Days War and concerned by the prospect of future attacks, Israeli authorities took immediate steps to enhance the protection of their national airline through a variety of security measures.

Such an attack against El Al was predictable. It had become increasingly difficult for Arab terrorists to

penetrate Israeli cities and the smashing defeat in the Six Days War in June 1967 was a powerful driving force for revenge by Palestinians in particular and other Arabs in general. El Al, as that country's flag carrier, presented a softer and highly symbolic target. In their search for a weakness in the Israeli defense, George Habash and the PFLP were influenced by the success of hijackers in the U. S.

The hijacking of the El Al flight is a clear example of the adoption by an organized terrorist group of a violent tactic proven successful by extortionists, fugitives, and mentally unbalanced persons with no apparent direct political motivations. Clutterbuck observed that several hijackings occurring in the U. S. earlier that month "probably encouraged" the first hijacking by Palestinian terrorists on 23 July 1968.[6]

Increased anti-hijacking procedures implemented by El Al diverted terrorists to targets which appeared less protected. On 26 December 1968, two PFLP terrorists, armed with automatic weapons and grenades, attacked an El Al aircraft on the ground at Athens Airport in an attempt to destroy the plane and harm those on board. One passenger was killed and two of the crew were injured. Both terrorists were captured. The attack prompted an Israeli reprisal raid several days later against the Beruit airport

during which soldiers destroyed all Arab aircraft on the ground.[7]

The PFLP launched a second unsuccessful attack against an El Al airliner on 18 February 1969 while the plane was on the ground at Zurich, Switzerland. Two persons were killed, including one of the terrorists, and two crew members were injured. The remaining three terrorists were captured.

1969 proved the worst year in history for hijacking attempts directed against international civil aviation. Eighty-seven such incidents were reported worldwide, including a record forty attempts against U. S. aircraft.[8] Cuba remained the preferred destination of hijackers. Sixty-three of the successfully seized aircraft were flown to Cuba during that year.

The terrorist threat to U. S. civil aviation also became evident on an international scale in 1969. The more stringent security measures being taken by Israel to protect El Al aircraft while aloft and on the ground was a factor which influenced the targeting of American aircraft by Palestinian terrorist groups. On 29 August 1969, a TWA flight enroute from Rome to Tel Aviv was hijacked by a team led by Leila Khaled. The aircraft was diverted to

Damascus. After all had deplaned, the hijackers set off an explosion which caused extensive damages to the cockpit. A second attempt four months later against TWA was thwarted when a preboarding inspection of baggage at Athens airport revealed smuggled weapons. Three passengers were arrested. Interrogation indicated it had been their intent to hijack the craft.

The search for softer targets also led Palestinian terrorists to airline offices. On 27 November 1969, terrorists attacked an El Al office in Athens. Two persons were killed in the assault. The terrorists were apprehended and jailed by Greek authorities. Another unsuccessful hijack attempt against El Al was made on the ground at the Munich airport, resulting in one death and eleven injuries. The three terrorists involved in the attempt were captured.

The frequency of hijacking attempts dropped in 1970. There were eighty-three hijacking attempts worldwide, but the total involving U. S. aircraft dropped to 27.[9] Despite the drop, the year proved very significant in terms of the terrorist threat to civil aviation.

Bombs exploded on board two aircraft on 21 February 1970 as a result of indirect links with Israel. An Austrian Airlines plane was severely damaged by an explosion but the pilot managed to land safely. A Swissair flight bound for Tel Aviv was destroyed soon after takeoff by a explosion on board which killed all 47 passengers and crew. The explosive devices on both aircraft apparently were detonated by sophisticated barometric fuses. Concealed in mail for Israel, the bombs probably were intended for El Al flights. The PFLP was considered responsible although no public claim was acknowledged by the group.

Bombing is a common terrorist tactic and attacks against civil aviation have proven no exception. The bombs damaging the two mentioned planes were not the first to explode on board scheduled civil air carriers. The first recorded bombing incident occurred 7 May 1949 in the Philippines and claimed the lives of all 13 persons on a Philippines Airlines DC-3. A woman hired two men to place an explosive device to kill her husband who was a passenger on that flight. Through the end of 1986, at least eighty-eight deliberate explosions have occurred on board civil aircraft, resulting in 1543 deaths.[10] U. S. aircraft were involved in 25 incidents. Interestingly, the Philippines ranks second to the U. S. in the number of bombs on board commercial passenger aircraft.[11]

EXPLOSIONS ON BOARD CIVIL AIRCRAFT
1949-1986

YEAR	WORLDWIDE TOTAL	U. S. REGISTERED AIRCRAFT
49	2	
50	1	
51		
52	1	
53		
54		
55	2	1
56	1	
57	2	1
58		
59	1	
60	2	1
61		
62	1	1
63		
64	1	
65	1	
66	1	
67	4	1
68	1	1
69	4	1
70	9	2
71	3	1
72	7	1
73	5	2
74	5	2
75	4	2
76	5	1
77	1	1
78	3	
79	2	1
80	1	1
81	3	
82	2	1
83	2	
84	3	
85	7	2
86	NA	2

SOURCE: U. S. Department of Transportation, Federal
Aviation Adminstration, Office of Civil Aviation Security,
Explosions Aboard Aircraft, January 1, 1986, pp. 1-14.

The first bombing of an American airliner occurred on 1 November 1955. A Delta flight enroute from Denver to Portland, Oregon, was destroyed shortly after takeoff by an explosion in a baggage compartment. A man was later executed for the crime. On 6 January 1960, a dynamite bomb exploded in the passenger compartment of a National Airlines flight from New York to Miami, killing 34 persons on board. Fifty-two people were killed over British Columbia, Canada in July 1965 by an explosion on board a Canadian-Pacific Airlines plane.[12]

The first incident of a bombing of a passenger airliner in the Middle East involved an Aden Airways DC-3 which was destroyed in the air near Aden on 22 November 1966, killing twenty-eight. Post-crash investigation revealed that the explosive device detonated in hand baggage. In June of the following year, another Aden Airlines craft was destroyed on the ground by a time bomb.

Athens was point of departure for a British European Airways flight enroute to Nicosia, Cyprus, which was destroyed at altitude by the detonation of a high explosive device in the tourist compartment on 12 October 1967. The bomb resulted in the death of all 66 on board. No group claimed responsibility.

Hijackings, however, remain a spectacular tactic highly suited for carrying out extortions or for forcing hostage exchanges. It was used as leverage to force a hostage and prisoner exchange on 22 July 1970 when PFLP terrorists seized an Olympic Airlines B-727 after departing Beruit for Athens. In a series of violence which fed upon itself, the hijackers demanded the release of Palestinian terrorists held in Greece for their involvement in earlier attempts to hijack an aircraft in Athens. The Greek Government agreed to the demands and the passengers were released unharmed in Cairo.

The most spectacular, coordinated hijacking to date was launched in September 1970 and resulted in the seizure and subsequent destruction of four passenger aircraft worth an estimated $US 55 million.[13] On 6 September, a TWA B-707 enroute from Frankfurt to New York was hijacked over Belgium and diverted to Dawson Field near Amman, Jordan. Shortly thereafter, a Swissair DC-8 enroute from Zurich to New York was seized over Europe and also was forced to land at Dawson Field. Minutes later, a hijack was attempted in flight on an El Al B-707 enroute to New York from an interim stop at Amsterdam. Israeli security agents on board killed Patrick Arguello, a Nicaraguan working with the PFLP. The surviving terrorist, Leila Khaled, was overpowered by the security guards. Khaled had gained

earlier notoriety as the hijacker of a TWA flight in February 1969. She was turned over to British authorities when the El Al jet landed in London following the action. Slightly more than four hours after the first hijacking of the day, a fourth hijacking was initiated by the PFLP. A Pan American B-747, also bound from Amsterdam to New York, was seized and diverted to Beruit where the PFLP had taken over the airport control tower. The hijackers of the latter aircraft also had intended to go to Dawson Field but were convinced by the pilot that the large aircraft could not land there. It was then flown to Cairo where, after a rapid evacuation by passengers and crew, it was destroyed by an explosion and ensuing fire.[14]

The purpose of the coordinated hijackings was to obtain hostages for a prisoner exchange and as a show of strength by the Palestinian organization. The more than three hundred passengers and crew held hostage at Dawson Field by the PFLP provided the leverage to accomplish that objective. Swissair was selected as a target to reinforce the terrorist's demands for the release of three terrorists held in Switzerland for the February 1969 attack on an El Al plane at the Zurich airport. The hijackers also demanded that West Germany release those Palestinians arrested in the February 1970 Munich attack on another El Al aircraft. The capture of Leila Khaled was unanticipated.

To improve their negotiating position in freeing her, PFLP terrorists on 9 September hijacked a British Airline VC-10 after interim stops in Dubai and Bahrain while enroute from Bombay to London. This plane, too, was forced to Dawson Field. The PFLP succeeded in securing their demands. Before releasing the hostages, the terrorists blew up the three aircraft amid extensive media attention.

The coordinated hijackings represented a huge, if short-lived, success for the PFLP but they led to a major setback for the Palestinian Liberation Organization (PLO). Dawson Field had been chosen deliberately as the base for the hijacking because of the near autonomy enjoyed at the time by the Palestinian Liberation Organization (PLO) in Jordan and, to a lesser degree, to make a rescue effort more difficult.

Angered by the incident within his country and fearful of a stronger PLO if left unchecked, King Hussein released his troops to throw the fedayeen forces out of Jordan. The attack by the Jordanian military forced the PLO into Lebanon in a bloody defeat that came to be referred to as the Black September. This action had a pronounced, if temporary, effect in decreasing terrorist activity directed against American, European, and Israeli civil aviation in the Middle East and Europe. It did result, however, in

terrorist attacks against Jordanian passenger aircraft. Three hijack attempts were made against the Royal Jordanian Airways (ALIA) over the next eighteen months.[15] The airline has continued to the present as a sporadic target of Palestinian and Shi'ite terrorist attacks.

Hijacking extortionists introduced a new tactic in Canada and the United States in 1971. Paul J. Cini attempted to take over an Air Canada flight between Calgary and Toronto on 12 November 1971. Cini, claiming to be a member of the Irish Republican Army, demanded a ransom of 1.5 million dollars and a parachute under threat of blowing up the aircraft. He was overpowered by the crew while distracted. Although the hijacker failed, his novel tactic was copied. Less than two weeks later, "D. B. Cooper" seized a Northwest Airlines B-727 flying from Portland to Seattle and demanded extortion money and four parachutes. After take-off in a southeast direction, the hijacker parachuted from the aircraft over rugged terrain with $200,000 in ransom. He was never found. The incident spurred similar "parachute extortion" attempts in the following months.[16]

Palestinian terrorists also adopted some successful tactics in hijacking for profit. On 21 February 1972, hijackers claiming to represent the Organization for the Victims of Zionist Occupation seized a Lufthansa B-747 enroute from

New Delhi to Athens. Having diverted the plane to South Yemen, the hijackers demanded a ransom of US$ 5 million not to harm the passengers nor to destroy the plane. Lufthansa paid and the aircraft was recovered.

On 8 May 1972, two male and two female Palestinian hijackers seized a Sabena Airlines B-707 enroute to Tel Aviv following an interim stop in Vienna. At Tel Aviv's Lod Airport, the hijackers demanded the release of over a hundred Arab prisoners being held in Israeli jails, threatening to blow up the plane and all on board if their demands were not met. Security agents, wearing ground crew uniforms, stormed the plane and engaged the terrorists, killing the two men and arresting the two females. One other passenger was killed. The failure of the terrorist attack soon led to an incident which demonstrated the interaction of diverse terrorist groups and the closeness of the Japanese Red Army (JRA) terrorist organization with the PLO. On 30 May, three Japanese terrorists arrived at Lod Airport on an Air France flight from Rome and opened fire upon the crowd of passengers. Twenty-four were killed, including 16 from Puerto Rico, and scores were injured. Two of the terrorists were killed. Interrogation of the survivor revealed that the trio had received support along the way from other terrorist organizations and had specifically chosen flight connections so as to avoid

security checks in Rome by arriving as in-transit passengers.[17] The attack also differed from earlier hijack attempts in that there was no intent to take hostages as leverage to demand release of jailed associates nor to extort money. It was clearly a raid of reprisal or warning that Israel was not able to ensure the protection of citizens and visitors within the country.

The U. S. public increasingly was becoming concerned with the threat to international air travel but domestic hijackings posed a more visible problem; a threat that directly affected the American population at large. Hijacking attempts against U. S. scheduled passenger aircraft averaged more than two per month throughout 1970, 71, and 72.

A guise of "political terrorism" was used in the United States in several hijackings and extortions by self-identified members of the Black Panther Party who forced pilots to fly to Algeria. The first incident occurred on 2 June 1972 when two hijackers took over a Western Airlines aircraft, demanded, and received a $500,000 ransom for the release of passengers before surrendering to Algerian authorities. Several weeks later, on 31 July, a small group of hijackers claiming to be Black Panther sympathizers seized a Delta Airlines jet over Florida. They

collected a one million dollar payoff before fleeing to Algeria.[18]

Two other hijacking incidents in late 1972, however, had a more significant impact upon the decision by the U. S. government to implement total screening for passengers and cabin baggage. On 29 October, four fugitives seized an Eastern Airlines B-727 on the ground at Houston airport. A ticket agent was killed and a ramp employee was wounded as the hijackers forced their way into the plane. The plane was ordered to Cuba. On 10 November, Henry Jackson and two accomplishes took over a Southern Airways DC-9 at Birmingham, Alabama and commanded the pilot to fly over Chicago. Jackson demanded $10 million, parachutes, and other supplies. In an attempt to emphasize his determination, Jackson forced the pilot to fly over Oak Ridge, Tennessee, and threatened to crash the plane into the nuclear reactor if his demands were not met. Nearby residents began to evacuate the area in fear that the hijackers would carry out their threats. The plane was landed several times to refuel. The plane was taken to Cuba after a smaller ransom was paid but returned to the U. S. after the hijackers were not satisfied with terms of surrender offered by Cuban authorities. After an ordeal of 26 hours, the plane landed for the second time in Havana and the hostages were released.[19]

Mandatory screening of passengers and hand baggage was implemented in January 1973 and a bilateral agreement between Cuba and the United States was signed in February of that year. The developments caused a precipitous drop in hijackings of commercial passenger U. S. aircraft; from 27 in 1972 to one in 1973.[20] The total of worldwide hijacking attempts fell sharply as well but not to the extent as was evident within the U. S.

Seeking methods for attacking Israeli targets, Palestinian terrorists attempted to shoot down an El Al plane with surface-to-air missles. On 4 April 1973, Italian authorities thwarted such an attempt at Rome airport. A terrorist group under the command of "Carlos" made a second attempt to destroy an El Al aircraft with rocket propelled grenades. Both projectiles missed an El Al aircraft taxiing at Orly Airport near Paris.

Airport terminals also were chosen as terrorist targets. The Athens airport terminal was attacked in July 1973 and a violent assault upon the Madrid airport terminal in late December 1973 left thirty-two persons dead. Most of those killed were on a Pan American Airlines jet then in the boarding process. The terrorists hijacked a Lufthansa airliner and forced the pilot to land in Athens after being denied clearance in Lebanon. Among demands made by the

hijackers were the release of two Black September terror-
ists jailed by Greece after the earlier attack on the
Athens airport terminal.[21]

The relative success of the Arab combatants against Israel
in the Yom Kippur War in October 1973 and the rapidly
growing strength of the OPEC cartel had a pronounced
damping effect upon continued broad Arab support of a PLO
terrorist strategy. Yassar Arafat also moved to contain
the more radical elements under the PLO umbrella in a
strategy emphasizing political objectives. Rifts within
the PLO intensified as a result and Sabri al-Banna, better
known as Abu Nidal, emerged as an undisputed leader of
violent terrorist attacks against civil aviation and other
targets.

Hijacking attempts remained at a relatively low level
during the mid-1970s, bottoming out in 1976 at 18 attempts
worldwide. That year became important for civil aviation,
nevertheless, with the 27 June hijacking of Air France
Flight 139 by a joint band of eight German and Pale-
stinian terrorists. The plane was enroute to Paris from
Tel Aviv and was carrying one hundred and five passengers
and crew. The hijackers boarded the A-300 aircraft at an
interim stop at Athens and diverted it to Entebbe, Uganda.
Relying upon a justification that most of the passengers

were Israeli citizens, Israel staged a dramatic rescue by flying in specially trained troops and recovering virtually all of the hostages. Seven of the then ten terrorists were killed by the Israeli troops.

Not all of the hijackings in the U. S. have been initiated by criminals, persons wishing to return to Cuba, or by mentally unbalanced individuals. On 10 September 1976, five Croatian nationalists seized TWA Flight 355 enroute from New York to Chicago. The hijackers claimed to have had a bomb with them on board the aircraft. To make their demands more credible, they informed that a similar bomb had been left in a Grand Central Station locker. A bomb was found by police at that location and a bomb expert was killed while trying to disarm it. The group's alleged intention was to call attention to the Croatian problem. The hijackers eventually forced the pilot to fly the short-range aircraft to Europe, making a series of refueling stops along the Northern Atlantic route.[22] This was not the first incident of a terrorist attack upon civil aviation by Croatian groups. A Yugoslavian aircraft flying between Stockholm and Belgrade was destroyed in flight by a bomb which resulted in the death of twenty-five persons on 26 January 1972. Responsibility for the act was claimed by a Croatian group.

A Lufthansa B-737 was hijacked on 13 October 1977 after departing Mallorca, Spain for Frankfurt. The hijackers, armed with pistols and plastic explosives, demanded the release of jailed comrades in Germany and Turkey along with a ransom of $US 15 million. The plane was forced to land at various stops before reaching South Yemen where the pilot was shot and killed. The plane was then taken to Mogadisho, Somalia. A specially-trained German force assaulted the plane at that location and rescued the hostages. Several hostages were wounded but none were killed. Three of the four terrorists died. The survivor was jailed by Somalia.

Hijackings of U. S. scheduled air carriers increased after 1976, reaching 11 in 1979 but then dramatically increasing to 21 in 1980.[23] American aircraft were involved in over half of the hijacking attempts made worldwide during that year. The sudden increase in frequency of hijackings resulted as an after-effect of the massive emigration of Cubans to the U. S. in the Mariel boat lift in 1980. The exodus included those who came both willingly or were forced by the Cuban Government. Hijackers were quick to spot the weakness in passenger and hand baggage screening to detect volatile liquids. The majority of hijackings attempted in the United States in the 1980s have

relied upon threats to detonate explosives or to ignite flammable materials.[24]

Bombs on board aircraft and at terminals have been a limited but nevertheless a significant threat to U. S. civil aviation. On 11 August 1982, an explosive device detonated beneath a passenger seat on a Pan American B-747 enroute from Tokyo to Honolulu. One passenger was killed and 14 others were injured by the force of the blast which ripped the floor over the baggage compartment and bulged the outer shell of the aircraft. The plane was not depressurized, however, and the pilot was able to land safely at the destination.[24] Two weeks later, a maintenance worker found an explosive device on an empty Pan American B-747 shortly after it had arrived in Rio de Janeiro.

Two members of the Armenian Secret Army attacked the Ankara airport in September 1982 in a raid in which ten died and eighty persons were injured. Interrogation of the surviving terrorist indicated that weapons had been supplied by the Abu Nidal organization. The Armenian Secret Army struck again in Paris in the following year. On 17 July 1983, a bomb exploded near a Turkish Airlines counter in Orly Airport. Seven were killed and ten were injured in that attack. Armenian extremists have been responsible

for numerous terrorists actions committed in the past against other than civil aviation targets in many countries, including the United States.

Intra-Arab terrorism involving attacks upon civil aviation also has been directed at countries other than Jordan. In September 1983, a Gulf Air plane exploded in flight near Abu Dhabi, killing all 111 on board. Abu Nidal's Arab Revolutionary Brigades claimed credit for the blast, allegedly in response to "fascist measures" directed against Palestinians in the Emirates.

A Kuwait Airlines jet was seized in December 1984 by terrorists who forced the aircraft to Tehran. American, British, and Kuwaiti nationals were separated from the rest of the passengers and subjected to harsh treatment. Two American hostages were killed in demonstration of the hijackers' resolve to force compliance with their demands for the release of prisoners held in Kuwait for involvement in a bombing attack in December of the previous year. Iranian security forces "stormed" the aircraft five days after the hijacking and apprehended the hijackers without further casualties. Iranian support or at least tolerance of the hijackers was suspected.

The Royal Jordanian Airline (ALIA) has continued to be targeted. A bomb exploded in luggage on an ALIA jet on 9 March 1985 shortly after the plane had landed in Abu Dhabi from Karachi. Two weeks later, a coordinated raid was made on ALIA ticket offices in Rome, Athens, and Nicosia. Five people were injured. In April, two rocket propelled grenades (RPG) were fired at an ALIA aircraft preparing to take off from the Athens airport. The plane was hit but incurred only minor damage when a grenade failed to explode upon impact. On 11 June, five Shi'ite terrorists hijacked an ALIA B-727 at Beruit Airport shortly before it was to depart to Amman. The plane was forced to Larnaca, Cyprus after low fuel prevented the hijackers from going to their intended destination at Tunis. The aircraft was then taken to Palermo, Sicily where the hijackers demanded that Palestinian guerrillas get out of Lebanon. The plane eventually returned to Beruit. After the passengers and crew deplaned, the terrorists set off an explosive device in the cockpit.[25]

This incident had implications far beyond the involvement of a Jordanian aircraft. It was yet another indicator of the critical antagonistic relationship which exists between the Shi'ite and PLO factions for control of areas in Lebanon.

American and other international airlines were targets for recent bombing attack as well. A powerful bomb was detonated in July of 1985 in Madrid in an office building housing ALIA, TWA, and British Airways offices. One person was killed and nearly 30 were injured. Responsibility was claimed by the "Revolutionary Organization of Socialist Muslims." The same group claimed it exploded a bomb at a British Airways ticket office in Rome in September. One was killed and 14 were injured in that incident. Three months earlier, fifteen baggage handlers had been injured at the airport in Rome when an explosive device detonated in a suitcase in a baggage staging area. Authorities were not able to determine the point of origin or destination of the bag containing the explosive.

The most dramatic incident affecting civil aviation during 1985 was the hijacking on 14 June of TWA Flight 847. Two Shi'ite terrorists boarded the Rome-bound aircraft in Athens and diverted it to Beruit. One American citizen was killed by the hijackers and 39 of the 145 passengers were held hostage for over two weeks. Israel released 735 Lebanese prisoners in a delayed exchange after the hostages were freed.[26] This incident was directly responsible for spurring a major review and intensification of security measures by the U. S. Government and airlines.

Sikh extremists were responsible for the destruction of Air India Flight 182 on 23 June 1985. The B-747 was enroute from Montreal to Bombay when it exploded over Ireland. Three hundred twenty-nine persons died in the attack. In a related incident on the same day, a bomb hidden in luggage exploded at the Tokyo airport while Flight 003 of the Canadian Pacific Airline was being unloaded. Two airport employees were killed and several others were injured. Sikh terrorists were blamed for that attack as well.

Among other dramatic terrorist actions affecting civil aviation during 1985 were coordinated attacks on airport terminals in Rome and Vienna on 27 December. Thirteen were killed and 70 injured in Rome as the attackers fired into crowds near the El Al and adjacent TWA and Pan American counters. There were three deaths and 47 injuries in Vienna. The terrorists in both attacks were either killed or captured. It is probable that the terrorists had intended to hijack planes for their escape. A surviving terrorist told his interrogators that they were members of the Fatah Revolutionary Council, an organization identified with Abu Nidal.[27] During the year, Abu Nidal's followers were considered responsible for over 30 attacks, most of which were directed at other than civil aviation targets.

Terrorist bombs being used against international air transport systems are becoming increasingly sophisticated. Such a device detonated on board a TWA Rome-to-Athens flight on 2 April 1986. The explosion ripped open the fuselage and four passengers fell to their deaths. Eleven others were injured. The plane fortunately had descended to a lower altitude in preparation for landing at Athens and the pilot was able to control the aircraft until it touched down.

Two attempts to put a bomb on board an El Al flight were thwarted by that airline's tight security. Security screeners found a bomb hidden in a suitcase of an Irish passenger at Heathrow Airport in London on 17 April. The woman's lover had placed the bomb in the suitcase without her knowledge. He subsequently was apprehended and convicted. The investigation by British authorities revealed Syrian involvement in the incident which led to a severing of diplomatic relations with Syria.[28] A second attempt occurred in Madrid in June. A suitcase exploded as the luggage was being processed. As in the first case, the passenger was unaware that an explosive device had been placed in the bag. Reportedly, the Spanish national who checked the bag had been duped into taking the flight under the belief that he was smuggling drugs.

In September 1986, Shi'ite terrorists attempted to hijack Pan American Flight 73 during an interim stop at Karachi, Pakistan, while enroute from Bombay to New York. The hijackers, dressed as security personnel, stormed the aircraft from the air operations side of the airport as the pilots escaped through a cockpit access door. The terrorists demanded a crew to fly the aircraft to Cyprus and emphasized their demands by shooting an American citizen. After a tense standoff, the terrorists opened fire on the passengers when the lights went out in the plane as a generator ran out of fuel or was turned off. Seventeen were killed and over 125 were injured in the ensuing violence.[29]

Within the United States, the frequency of hijacking and other serious attacks against civil aviation has remained low since tapering off from a six-year peak in 1983. Although traditional sources of threat to domestic air transportation appear controlled, the threat posed by external sources is unclear but ominous. Perhaps the most significant development pertaining to international terrorism since the emergence of Abu Nidal as a major terrorist leader, is that Shi'ite extremist groups are continuing to surpass PLO factions as authors of violence. The "Lebanon hostage crisis" of early 1987 exemplifies this. "Shi'ite terrorism" derives from fanatical religious

fundamentalism; a much broader base than that represented by Palestinian demands for a homeland. The demonstrated support of Syria and Iran to recent terrorist actions amplify the implications. It must be assumed that the threat against the domestic air transportation system, as has already occurred for international operation of U. S. airlines, is increasing.

NOTES

[1]U. S., Department of Transportation, Federal Aviation Administration, <u>U. S. And Foreign Registered Aircraft Hijackings</u>, (Updated January 1, 1986), p. 1.

[2]Ibid., p. 6.

[3]Ibid., pp. 6-8.

[4]Ibid., pp. 8-11.

[5]Stewart Steven, <u>The Spymasters Of Israel</u> (New York: Ballatine Books, 1980), p. 291.

[6]Richard Clutterbuck, <u>Living With Terrorism</u> (New Rochelle, (New York: Arlington House Publishers, 1975). p. 98.

[7]Steven, <u>The Spymasters Of Israel</u>, p. 293.

[8]U. S., Department of Transportation, Federal Aviation Administration, <u>Semiannual Report to Congress on The Civil Aviation Security Program: January 1-June 30, 1985</u>, p. 8.

[9]Ibid.

[10]U. S., Department Of Transportation, Federal Aviation Administration, <u>Explosions Aboard Aircraft</u>, (Updated January 1, 1986), p. A1. (Four deaths resulting from the 4 April 1986 bombing of a TWA from Rome-to-Athens flight are added to the statistics listed by this source).

[11]Ibid. p. B1-2.

[12]Ibid., p. 3.

[13]Richard Clutterbuck, <u>Living With Terrorism</u> (New Rochelle, New York: Arlington House Publishers, 1975), pp. 100-01.

[14]Ibid.

[15]FAA, <u>U. S. and Foreign Registered Aircraft Hijackings</u>, p. 31.

[16]Frederick J. Hacker, <u>Crusaders, Criminals, and Crazies</u>, (New York: W. W. Norton & Company, 1976), p. 28.

[17]Clutterbuck, Living With Terrorism, pp. 112-14.

[18]Brian Jenkins, "International Terrorism: A New Mode Of Conflict," in International Terrorism and World Security eds. David Carlton and Carlo Schaerf (New York: John Wiley & Sons, 1975), p. 39.

[19]Clutterbuck, Living With Terrorism, pp. 107-08.

[20]FAA, Semiannual Report to Congress on the Effectiveness of The Civil Aviation Security Program, January 1-June 30, 1985, pp. 7-10.

[21]Christopher Dobson and Ronald Payne, The Terrorists: Their Weapons, Leaders and Tactics, (New York: Facts On File, Inc., 1982, pp. 240-41.

[22]FAA, U. S. and Foreign Registered Aircraft Hijackings, p. 55.

[23]FAA, Semiannual Report to Congress on the Effectiveness of The Civil Aviation Security Program: January 1-June 30, 1985, p. 8.

[24]Air Transport Association, U. S. Hijackings: The Major Cause And Cure (Washington: ATA [October 1983]), pp. 1-6.

[25]U. S., Department of State, Bureau of Diplomatic Security, Lethal Terrorist Actions Against Americans, 1973-1985, p. 82-1.

[26]Russel Watson et al, "The Hard Road To Freedom," Newsweek, 8 July 1985, pp. 17-20.

[27]John Tagliabre, "Airport Terrorists Kill 13 and Wound 113 At Israeli Counters in Rome and Vienna," New York Times, 28 December 1985, p. A1.

[28]Nancy Cooper et al, "Linking Syria to Terrorism, Newsweek, 3 November 1986, pp. 40-2.

[29]William E. Smith, "Carnage Once Again," Time, 15 September 1986, pp. 30-35.

CHAPTER IV

RESPONSE TO THE CIVIL AVIATION THREAT

Social and Economic Implications of
Civil Aviation Security Programs

Violent, dramatic attacks against airliners and ground facilities which have occurred in the past underscore the seriousness of the continuing threat of terrorism, but credit is due to those organizations and individuals responsible for providing security to the civil aviation industry. Significant strides have been made in reducing the vulnerability of aircraft and airports to hijacking, bombing, armed assault, and other forms of attack. Unquestionably, the concerted effort has deterred, moderated, thwarted, or diverted many attempts which otherwise would have resulted in greater loss of life and property as well as avoiding greater instability and fear among the general populace.

This has not come without considerable social cost. Essential control measures have required, and the public has accepted, restrictions which would not have been readily tolerated nor believed achievable at an earlier

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time. The relative ease with which the traveling public adjusted to the inspection of their persons and carried articles for the purpose of common security represented a major change in traditional concepts of personal privacy, especially for Americans. The civil aviation industry has served also as a trend setter in the implementation of increasingly restrictive access controls and screening measures by other businesses and governmental bodies as general threat levels have increased and as people have become more accustomed to curtailments on personal liberties as a trade-off for added security. In parts of Europe and the Middle East, as well as in certain other international locations, the greater intensity of threat has necessitated far more vigorous controls and restrictions than have been considered warranted to date in the United States. It is likely that the United States will be forced by events to implement various of these increased security measures at some point in the future.

Efforts to protect civil aviation against terrorism and criminal interference have been carried out at great economic cost. The immensity of the task is difficult to comprehend at first glance. Currently, more than one million passengers are transported daily on some 15,000 flights on U. S. airlines alone.[1] All of these passengers, in addition to their carry-on articles and non-passengers

permitted in the departure areas, must be screened thoroughly but in an expeditious manner. Since a program of mandatory screening of passengers and carried articles was implemented by the United States in January 1973, substantially over seven billion persons and more than nine billion carry-on articles have been checked at airport screening points.[2] The screening volume is growing rapidly. Approximately twice as many persons were cleared through security checkpoints in airports in 1986 (1.13 billion) as in 1981 (598 million).[3] Understandably, the passenger screening operation has incurred very high capital investments and recurring costs to operate over 1200 screening stations in nearly 400 airports under U. S. control. Approximately 6000 contract employees and more than 1500 law enforcement officers are engaged in screening activity.[4]

In 1985, the Air Transport Association of America (ATA), which represents the airline operators, estimated the average cost of security screening per passenger as $.79.[5] U. S. airlines have been spending in excess of $200 million annually on screening activities but expenses are rising overall despite successful cost-cutting efforts in some areas.[6] Security costs are expected to increase further as a result of recently amended governmental requirements and extraordinary security measures under implementation by air

carriers with major routes traversing the areas of highest terrorist threat. Several U. S. airlines, among them American, TWA, and Pan American, are charging a $5 security surcharge per passenger for travel to selected international destinations to underwrite the expense of this increased security.[7] Airlines are taking an increasingly direct role in implementing extraordinary security measures. Pan American, for one, formed a proprietary security organization to provide greater control and a higher "security profile" in an effort to redevelop passenger confidence following serious terrorist attacks in Europe and the Middle East over the past several years.

Passenger and cabin baggage screening is the most visible of the security measures taken by civil aviation against the terrorist threat but, though the expenses are large, they represent only a portion of the overall costs of security. It is estimated that annual expenses for all security-related measures in protecting the industry is on the order of $500 million.[8] U. S. aircraft are involved in more than 5. 5 million flights annually, each of which require preflight protection and clearance. Physical improvements implemented specifically for security purposes are difficult to quantify but have figured prominently in extensive airport modernization projects. Special training for air crews for responding to on-board security

emergencies represents additional expense, as does the recently established requirement for expanded background checks on airport and airline employees. Viewed in this context, the cumulative costs of protecting U. S. civil aviation against terrorist attack are a major expense; a factor which has significantly affected airlines in a highly competitive industry with narrow profit margins. Not included in the above figure is the cost of training and equipping of special law enforcement teams and (for international application) military units for civil aviation security crises. When considered on a global scale, security-related costs for civil aviation reach exceptionally high levels.

Questions have been raised if the expense is justified by the threat, especially within the United States. Those who follow this line point out the difference in the frequency and nature of domestic hijackings and other attacks on civil aviation with those occurring internationally. The distinction is made that, to date at least, hijackings and other attacks that have taken place domestically were carried out almost exclusively by other than the violent political terrorist organizations characteristic of many international attacks in recent years. The point also is made that, while over 240 hijack attempts have occurred in the United States, most domestic airports have not

experienced any incidents of serious violence that have been directed against civil aviation in the United States.

The Federal Aviation Administration claims that at least 117 hijacking attempts have been prevented by mandatory screening procedures in the United States.[9] Using a simplistic equation, the cost of preventing domestic hijacks or other attacks against American civil aviation could be computed in excess of $2 million per attempt at the minimum and the figure could go considerably higher.[10] Clearly, this appears a high cost to pay, especially upon reviewing the details of actual hijackings and other security-related emergencies within the U. S. which in retrospect posed a relatively low threat level to the actual victims involved. (A chronology included as an appendix describes significant hijackings and other attacks against civil aviation).

The probability of a screener detecting an actual weapon has proven very small. Of the over seven billion passengers and over nine billion articles of cabin baggage inspected since the program has been active, more than 30,000 firearms have been detected in the passenger screening process, resulting in the arrest of approximately 13,000 persons.[11] Obviously, not all those attempting to take firearms onto an aircraft had an intent to use them to

take over planes but the FAA credits the security program with preventing well over a hundred hijacking attempts.

The domestic threat has been sharply focused. From past experience, Miami and New York airports are the most likely points from which hijackings will be staged. In the 96 hijacking attempts against U. S. scheduled air carrier flights originating from within the country since mandatory screening was implemented in 1973, hijackers boarded from Miami International Airport on 15 occasions and 13 times from New York airports.[12] These two cities represented the points of departure for 29 percent of all domestic hijacking attempts to date. San Juan, Puerto Rico, was the point of departure for six attempts, followed by Los Angeles and Chicago at five and four attempts, respectively. Tampa, Atlanta, and Denver experienced three incidents each. Hijackers have boarded at six other airports on two occasions each over the past 13 years. Thirty-two airports have experienced one such incident. Since the implementation of total passenger screening, hijackers have made their attempts by boarding, or attempting to board, through only 46 of the nearly 400 airports under U. S. civil control.[13]

The situation deserves a broader view, however. In addition to the 117 reported attempts which were detected

and thwarted, the combined security measures which have
been implemented domestically clearly have deterred other
attacks as demonstrated by the sharp drop in the number of
hijack attempts reflected on an annual average after 1973.

Internationally, the deterrent or diversionary effect of
security measures have been reflected in a perceptible
shift of terrorist attention to softer targets or to other
forms of attack. The high level of security provided by
Israel for El Al aircraft and ground facilities has denied
easy access to Arab terrorists despite their high priority
for attack. Unfortunately, this has translated into a
higher risk for U. S. and other flag carriers. The trend
toward attack upon city ticket offices and airports and,
more recently, in placement of explosives on board aircraft
attest in part to the effectiveness of anti-hijack measures
being taken internationally.

It must be concluded that the expense of providing security
for civil aviation is justified by the domestic and inter-
national threat. Such security programs, whether totally
effective or not, have become a permanent and essential
requisite in resisting the terrorist threat to civil
aviation. Despite the historical evidence that hijackings
and other attempts against domestic civil aviation have
concentrated on but a few of the nation's airports, there

is little likelihood that passenger screening and other security measures can be withdrawn from certain "low threat" locales without creating a negative public perception nor encouraging a shift, over the longer term, to increased security-related incidents in those areas. This does not mean, however, that all aspects of the security program should be retained in present form.

A point of major concern is that within the United States, the security protection of civil aviation, as extensive as it is, has not been challenged to date by determined terrorist groups of the sort that breached the security of airports in Athens, Rome, and Karachi. It cannot be assumed that the results would have been substantially different had similar attacks been launched against Kennedy, Miami, or Washington airports. Certainly, these and other domestic airports are vulnerable to the type of violent attack launched against Rome and Vienna airports in December 1985. If and when such a threat becomes a reality domestically, a quantum increase in security expense will be inevitable. If the contingent response is not adequately anticipated and planned, the potential for enormous but not necessarily cost-effective outlay for added security becomes very high.

The response to the terrorist threat to civil aviation has been multi-faceted, involving both governments and the

civil aviation industry itself. The following sections address key aspects of that response in detail.

Regulation of Civil Aviation Security

Domestic. The Federal Aviation Administration of the Department of Transportation is responsible for regulating civil aviation within the U. S. and for those national flag air carriers operating world wide. The primary security-related regulations are contained in FAA Regulations, parts 107, 108, and 129 for airport security, airplane operator security, and foreign aircraft operating in the U. S., respectively. These regulations are revised periodically.

Part 107 prescribes aviation security rules which govern airport operators who regularly serve scheduled passenger operations of a certificate holder or a foreign air carrier required to have a security program by FAA regulations contained in Part 129.[14] The airport operators are held responsible for implementing approved security plans which incorporate, in summary:

> Provision of law enforcement support, including that necessary for security screening stations operated by the air carriers as well as for general protection of the airport.

Controlling access to the airport perimeter which encompasses the terminal, airside, and peripheral areas.

Promptly detecting and taking action to control any penetration, or attempted penetration, of an air operations area by a person whose entry is not authorized in accordance with the security program.

Controlling the movement of persons and ground vehicles within each air operations area requiring, as necessary, the display of identification in a "see, challenge, and remove" enforcement.

Developing "alternate security" procedures to be implemented in the event of an emergency.

The airport operators are charged also with conducting background investigations of all airport employees and vendors requiring access to controlled areas and for administering the airport identification pass or "pouch" system. Recent legislation has imposed more detailed pre-employment requirements on both the airport operators and the air carriers.

Part 108-Airplane Operator Security governs the operations of holders of FAA air carrier operating certificates engaging in scheduled passenger operations or public charter passenger operations.[15] It does not apply to private charter, helicopter, nor to all-cargo operations and only peripherally to scheduled air services utilizing aircraft with a seating capacity of less than thirty. The

air carriers are held responsible for developing and implementing approved security programs which in summary provide for:

> Controlling access to and movement within their "exclusive areas" at airports. This includes restriction of access to doors leading to or from the airside ramp to authorized persons only.

> Conducting preboarding screening of passengers including the application of behavioral profiles.

> Equipping and manning security screening stations together with appropriate training of security screeners.

> Paying manpower costs for law enforcement officers assigned to screening stations.

> Screening checked baggage and cargo.

> Providing security-related training for flight crews.

> Protecting parked aircraft.

Part 129 regulates the operation of foreign flag carriers in U. S. territory. The requirements essentially are patterned after those regulating U. S. airlines.

International. The effort to regulate civil aviation on an international scale has been coordinated through the International Civil Aviation Organization (ICAO), accepted today as the principal international body concerned with the industry. The ICAO was formed out of the postwar Chicago Convention called in 1944 for the specific purpose

of developing technical standards and recommendations for civil aviation.[16] The ICAO maintains a headquarters in Montreal. Representatives from the various national regulatory agencies and the air transport industry serve as members of the organization's committees.

Three subsequent conventions have dealt specifically with the security issue for civil aviation. The Convention on Offenses and Certain Other Acts Committed Aboard Aircraft took place in 1963. The Tokyo Convention, as it came to be called, resulted in an agreement under which the signatory nations promised to come to the assistance of the passengers, crew and aircraft of a flight that had been diverted to their sovereign area as a result of a crime on board, as a hijacking, to the end that the flight could continue its flight to the destination intended before the crime took place. Ratification of the convention by the participants was slow. It was not until the sudden increase in hijackings in 1968-69 that serious concern for its implementation was generated. The United States approved the convention in 1969. The Convention entered into force on 4 December 1969.[17]

Shortly thereafter, escalating concerns for the safety of air travel resulted in another international convention in the Hague in 1970 for the purpose of developing more

explicit protection against hijacking. Formally the Convention for the Suppression of Unlawful Seizure on Aircraft, the Hague Convention refused to distinguish between political and criminal motivations and declared any hijacking as common crime. Based on international law, the convention in Article 1 determined it a crime if a "person on board a plane (a) illegally, by force, or by threat of force or terrorization of any kind, captures or plans or attempts to capture a plane; (b) becomes an accessory to a person who either commits or attempts to commit these actions"[18] The convention also required signatory states to impose serious punishment for offenders or, as an option, to extradite them to the country in which the crime occurred. The Hague Convention entered into effect on 14 October 1971 and has been ratified by 125 nations.

A subsequent international convention was conducted in Montreal in the following year to address the growing incidence of bombs and other acts of sabotage against civil aviation. The Convention for the Suppression of Unlawful Acts Against the Safety of Civil Aviation resulted in agreement that signatories would be obligated to prosecute or extradite persons responsible for crimes against civil air transportation other than hijacking. The Montreal Convention entered into force on 26 January 1973. Ninety-two nations have ratified that convention.[19]

International standards and recommended practices for security that have been developed through collective efforts to safeguard international civil aviation against acts of unlawful interference are formalized in Annex 17 to the Convention on International Civil Aviation.[20] The annex was first approved by the Council of the ICAO on 22 March 1974 and has been revised periodically. The most recent edition became effective on 19 May 1986 and includes additional standards agreed upon largely in response to the hijacking of TWA Flight 847 in June 1985. Virtually every major country has actively implemented a civil aviation security program patterned upon the ICAO standards and recommendations.

Despite the cooperation of most governments in developing a unified stand against crimes committed against international civil aviation, certain countries have continued to provide havens for those groups and individuals responsible for terrorist attacks. The difficulty of enforcing sanctions against nations which, by design or laxity, facilitate such actions has been a major stumbling block in realizing more effective international security protection for civil aviation. Confronted with a lack of support among third world countries, leading Western nations took advantage of an economic summit meeting in

Bonn in 1978 to adopt a declaration to consider the mutual suspension of commercial air service to and from any country that harbored airline hijackers.

Similarly, international leaders devoted a portion of the Tokyo Economic Summit in 1986 to address the need for greater international cooperation to protect against terrorism. In a joint summit statement, the heads of governments of the United States, Great Britain, West Germany, France, Italy, Japan and Canada pledged to make a maximum effort to fight terrorism and urged like-minded states to collaborate, particularly in such international fora as the UN, ICAO, and the International Maritime Organization.[21]

Among measures agreed to be adopted at the summit were a refusal to export arms to states which sponsor or support terrorism; a decision to impose strict limits on sizes of diplomatic and consular missions of states which sponsor or support terrorism; to improve provisions for extradition of perpetrators of terrorist actions; to implement stricter immigration and visa requirements; and to foster closer bilateral and multilateral cooperation between police and security organizations. The summit participants also agreed to make the 1978 Bonn Declaration more effective in dealing with terrorism affecting civil aviation. The

credibility of the United States in implementing certain of these measures has been called into question by recent disclosures of the country's involvement in the transfer of military equipment to Iran in exchange for the release of American hostages held for extended periods in Lebanon by Shi'ite terrorists sympathetic to Ayatollah Khomeini.

Bilateral agreements have proven effective in some cases where one or both countries were not signatory to the various international conventions. An anti-hijack agreement was signed by the United States and Cuba on 13 February 1973. The United States-Cuban Memorandum of Understanding on Hijacking of Aircraft and Vessels and Other Offenses provided for prosecution or return of hijackers of the other's aircraft or ships. The removal of Cuba as a safe haven during the time the agreement was in effect provided a major deterrent to further hijackings to that country. The combined effect of the agreement and the implementation in the U. S. of a program of total screening of passengers and cabin baggage in early 1973 resulted in a precipitous drop in the frequency of hijackings of American aircraft from an average of almost 12 per year from 1961 through 1972 to three per year.[22] The agreement was unilaterally revoked by Cuba on 15 April 1977, probably in delayed response to the 6 October 1976 destruction of a Cubana Airlines plane near Trinidad by a bomb set by Cuban

exiles. The relative importance of multilateral or bilateral agreements in denying safe havens to terrorists was evidenced by a sharp increase in the number of hijacking attempts to Cuba during 1979-83, perpetrated primarily by disaffected Cuban refugees who came, or were sent, to the U. S. during the "Mariel Boatlift" in 1980. Because of Castro's earlier revocation of the agreement, many of the hijackers were skeptical of a hostile reception by Cuban authorities. This was not the case, however. Although Cuba consistently has refused overtures to renew the agreement with the United States or to honor extradition requests, it has continued to treat hijackers severely with sentences reportedly ranging from 12 to 20 years.[23]

National Legislation. Aside from usual authority and responsibilities delegated to the various established internal regulatory agencies, some countries have enacted specific legislation which addresses the terrorist threat to domestic and international civil aviation. Both the Antihijacking Act and the Air Transportation Security Act were approved in 1974 and implemented the elements of the Hague Convention. The former provided for the suspension of air travel to any nations that abet terrorism.

Some of these actions assume or reserve for a state certain jurisdiction that may be debated on the basis of

international law. In 1984, the U. S. adopted a law un-
der which the country claims jurisdiction over cases of
hijacking of American planes outside the United States and
over crimes that may be associated with such hijacking.[24]
Trials for such offenses can be held in the District of
Columbia. The first case possibly to be tried under this
acts involves one of the terrorists alleged to have
participated in the June 1985 hijacking of TWA Flight 847
while outbound from Athens. One American citizen was
killed by the terrorists and others were held hostage in
Lebanon over two weeks. West German authorities arrested
Mohammed Ali Hamadei and identified him by fingerprint
comparison with those taken from the aircraft. Hamadei was
carrying a large amount of explosives when detained shortly
after arrival in Berlin from Lebanon in January 1987.[25] He
also is a suspect in a 1977 bombing in Europe. Shi'ite
terrorists kidnapped numerous Westerners in Lebanon in an
effort to force the release of Hamadei.

On 8 August 1985, President Reagan signed the International
Security and Development Cooperation Act of 1985.[26] The
new law established a requirement, among others, to assess
security conditions at designated foreign airports and to
encourage improvements where considered essential to the
safety of U. S. citizens. Specifically, the act directs
that:

"Sec 1115 (A)(1) The Secretary of Transportation shall conduct, at such intervals as the Secretary shall deem necessary, an assessment of the effectiveness of the security measures maintained at those foreign airports being served by air carriers, those foreign airports from which foreign air carriers serve the United States, those foreign airports which pose a high risk of introducing danger to international air travel, and at such other foreign airports as the Secretary may deem appropriate."

This act further stipulates that:

. . . "If security at a foreign airport is found deficient, the Secretary of Transportation, after advising the Secretary of State, shall notify the foreign government and recommend corrective action. . . If the deficiencies are not remedied 90 days after such notification, the Secretary of Transportation shall immediately notify the Secretary of State who shall then issue a travel advisory with respect to the foreign airport."

The Act also provides an element of enforcement compliance with minimal airport security standards by authorizing the Secretary of Transportation, in agreement with the Secretary of State and without notice or hearing, to immediately suspend all service between the U. S. and any foreign airport when the former determines that the safety or security of passengers, aircraft or crew traveling to or from that airport is threatened and that the public interest requires an immediate suspension of service. The Federal Aviation Administration conducted approximately 300

inspections of foreign airports served by U. S. airlines during 1986. The effort is considered very successful by those in the industry in encouraging and assisting needed improvements in local security in line with the standards and recommendations of Annex 17 to the Convention on International Civil Aviation.

Protection On The Ground

The Passenger Screening Process

The passenger and hand baggage screening program is a primary but not exclusive part of the security program for protecting civil aviation from terrorist or other form of assault. It is the most visible element of the general security program and, as such, greatly affects the public's perception of the effectiveness of security measures.

Pre-boarding techniques employed prior to 1973 consisted of the application of a profile with selected screening of suspect passengers proved insufficient as a control measure to contain the increasing incidence of hijackings and the hastily-implemented Sky Marshal program was broadly criticized. Mandatory screening of passengers and cabin baggage was initiated in that year in the United States and since

has become an accepted norm worldwide. Air carriers are presently charged by their respective regulatory agencies with properly screening all passengers and articles of cabin baggage for firearms, explosives, or incendiary devices prior to permitting the boarding of their flights.

The adoption of such a massive effort represented a major shift in the strategy to combat the rapidly increasing incidence of hijackings by concentrating on denying access to aircraft to a would-be hijacker rather than reacting to an emergency on board. The proposal to undertake a total security screening program was not universally supported, however, due to the enormity of the undertaking and the realization that security measures to be implemented would necessarily compete with other major operational priorities of close adherence to departure times and minimal passenger inconvenience. The decision to create a "sterile area" for screened passengers waiting to board was considered a logical compromise.

Operation of security screening stations is accomplished, for the most part, by contract security companies. In some international locations, screening may be conducted both by local authorities and airlines in redundant searches, utilizing automated, manual, or a combination of inspection methods.

The Profile System. The screening process may begin before the passenger reaches the familiar security checkpoint at entrances to departure lounges through utilization of a profile system which has been refined and proven useful over the past twenty-five years. In the early 1970s, Dr. Evan W. Pickrel identified certain characteristics common to earlier hijackers from which a profile test was developed for the FAA. Richard Shultz reported that FAA officials considered the behavioral profile useful in eliminating ninety-eight percent of the passengers as potential hijackers and in identifying the remaining less than two percent of the traveling public for closer scrutiny. This percentage was lowered to one-half of one percent as the technique was perfected.[27] As stated, the profile system was relied upon as the basis for selective screening of passengers prior to 1973. Applied in retrospect, the profile system generally matched the persons who actually carried out hijackings; the major shortcoming lay in the effective application of the profile by those persons charged with selective screening.

Although the requirement for mandatory total screening of all passengers and carried items resolved this short-coming, the profile system remains an integral and important part of the screening process today and continues to be refined. In revised form, the profile system is

currently employed by specially trained airline employees, security personnel, and law enforcement officers at various stages through the boarding process. For obvious reasons of security, detailed characteristics of a profile system remain closely held. Nevertheless, such broad factors as sex, age, racial ,origin, citizenship, manner of ticket purchase, points of departure and destination appear among logical indicators in identifying certain travelers for closer scrutiny.

Questioning has been employed successfully by several airlines in applying and developing passenger profiles during screening for high threat flights. El Al Airlines initiated the procedure in conjunction with its meticulous passenger and baggage screening program. The questions are designed to detect if any persons other than the passenger might have had access to his baggage; if the passenger is carrying a package or item given him to deliver by someone else; where the passenger intends to stay at his destination; etc. Inconsistent responses to the list of questions will spur a more detailed inspection. Other airlines are following the El Al approach for high risk international flights. Pan American, for one, has incorporated the technique in the company's expanded security program.[28]

The profile system is credited with aiding in thwarting various terrorist attacks against aircraft or ticket counters. Perhaps the most dramatic of recent incidents which attest to the importance of the profile system was the discovery of a bomb that had been intended to explode on El Al Flight 016 from New York to Tel Aviv on 17 April 1986. After successfully passing an initial screening checkpoint at London's Heathrow airport, Marie Murphy, an Irish national, "triggered" the airlines' profile and was subjected to an intense inspection. The search revealed that a bomb had been placed in the luggage without her knowledge by her boyfriend, Nezar Hindawi. The latter was detained and subsequently convicted by the British Government for plotting to blow up the Israeli aircraft. The extensive investigation of Hindawi's actions also uncovered "conclusive" evidence linking Syria to the attempt.[29] Hindawi claimed that a Syrian intelligence officer provided him with explosives which were smuggled into London. This disclosure constituted one of the clearest examples to date of Syria's role as a supporter of state terrorism. The British Government severed diplomatic relations with Syria in protest for the latter's role in the incident.

A bomb exploded at Barajas Airport in Madrid, Spain, on 26 June 1986 as the bag in which it was concealed was being checked prior to loading on El Al Flight 396 to Tel Aviv.

Although the bomb detonated prematurely, El Al security agents already had been alerted by the "profile" and had implemented special security procedures before the explosion. The passenger was unaware of the bomb. Manuel Jalafe, a Spanish national, apparently had been duped under the pretense of receiving payment to smuggle drugs into Israel.[30] Nassar Hassam Ali of the Fatah Uprising, a PLO splinter led by Abu Mousa, was implicated.

The profile system also is credited with thwarting various hijack attempts within the United States. In one incident, a man identified as a potential threat was subjected to special screening in the jetway leading to an aircraft during boarding operations on 16 February 1982. The aircraft door was closed by the crew as a precaution. A patdown search revealed the man was carrying a small handgun which he drew and began firing at the searchers who immediately fled. After a further exchange of fire with responding police, he was taken into custody. Despite the gunfire, there were no injuries. During interrogation, the man admitted he had intended to hijack the aircraft.[31]

The Security Screening Station. A typical high-volume security screening station is equipped with at least one walk-through magnetometer or metal detector, an X-ray detector, and operated by a security team to process both

passengers and cabin baggage. The size of the screening station and type of equipment are determined by the location and volume of passenger traffic to be screened. Hand-held metal detectors are routinely available for backing up the walk-through detectors. Explosives detectors are used under special circumstances.

Metal Detectors. Approximately 2000 of the familiar walk-through magnetometers or weapons detectors are deployed at screening stations at airports in the U. S.[32] When operated properly, the devices have been highly effective in alerting security personnel to the possibility of carried weapons or knives. Approximately two to three percent of weapons discovered during the screening process consistently have been detected by the magnetometers. This seemingly low amount apparently is influenced by the tendency for persons to attempt to conceal unauthorized articles in their baggage rather than on their person under the perception that the walk-through detector is more fool-proof.[33] The sensitivity of the detector can be controlled by the operator. Due to its configuration, detection capabilities vary somewhat on a vertical plane. Of a given mass, detection of metallic objects tends to be less reliable on a person's foot or lower leg than on his torso. Hand held metal detectors are available to security screeners for more thorough or special searches.

Recent technological advancements have led to the development of high stress plastics of sufficient strength to be used in making firearms. The advent of the "plastic" pistol has been touted by some as meaning the end of effective screening with current generation equipment. One such weapon, the Glock 17 automatic pistol, has been perfected through the new technology. According to a FAA expert, however, the Glock does not represent that extent of a threat. The new weapon still contains various metallic components with a cumulative weight of 19 ounces. The expert states that the Glock can be detected by a walk-through metal detector if properly tuned.[34] On the other hand, the true plastic or ceramic weapon, when developed, will pose an extremely serious concern for automated screening of passengers for such items carried on the person. Until a better detection capability is developed, the increased use of the profile system and physical search of suspect passengers may be necessary if such weapons come to represent a serious threat.

X-ray Machines. Carry-on articles are routinely inspected by X-ray devices at high-volume screening stations. There are more than 1000 such machines in use by U. S. airlines at present. These machines have been extremely effective in detecting weapons and other unauthorized articles.

Approximately 95 percent of smuggled firearms or knives found at screening stations have been detected by X-ray of hand baggage.[35]

The potential for smuggling non-metallic firearms does not pose as great a threat to automated inspection of baggage. Depending upon the proficiency of the operator, the machine is also effective in detecting suspect items of lower densities than heavy metals. Manufacturers of X-ray equipment claim that in-service machines are capable of detecting the "plastic" Glock automatic pistol concealed in luggage.[36] User tests thus far have supported such claim. Field testing of advanced X-ray machines coupled with automatic computer-based analysis of luggage contents has been positive to date. Further discussion of detection equipment is contained in a subsequent section on research and development.

Explosives Detectors. The most serious vulnerability in current screening programs exists in the critical area of explosives detection. An effective and reliable automated capability has yet to be achieved on the scale required by the massive volume of civil air traffic for security screening of passengers, cabin baggage, and checked luggage for the possible presence of explosives and inflammable materials.

Faced with a substantial risk that attempts to smuggle weapons on board aircraft will be detected, terrorists have looked to softer targets and for other means of defeating security screening. Bomb threats and attacks against aircraft and ground facilities have sharply increased as a result.

Domestically, this was most obvious in a change in tactics by hijackers. The dramatic incidence of hijackings in the early 1980s resulted, in large part, from the desires of some of the "Marielitos" (Cuban refugees who came or were sent to the U. S. during the Mariel boatlift) to return to Cuba. Exploiting a weakness in the screening process, the perpetrators were successful in carrying out various hijack attempts by threatening to explode or ignite inflammables or other substances which were not readily detectable by standard screening procedures.[37] Walk-through metal detectors obviously are ineffective in detecting liquid or solid explosive or inflammable substances. X-ray machines may alert the operator to questionable containers in cabin baggage but do not differentiate the contents. This necessitated increased reliance upon manual inspections and close adherence to a modified profile system during the height of the resurgence in domestic hijackings during the 1979-83 period.

Eleven explosions have occurred since 1955 on aircraft engaged in scheduled air services within the United States but the threat has been much more severe internationally in recent years. Four persons were killed on 2 April 1986 when a bomb exploded under a passenger seat on a Rome-to-Athens TWA flight shortly before arrival at its destination. It is believed that a passenger on an earlier flight placed the sophisticated explosive device. The force of the explosion ripped a gaping hole in the fuselage and caused the plane to depressurize. Fortunately, the plane had descended to a relatively low altitude when the explosion occurred and the pilot was able to maintain control.[38]

Although this and similar incidents received wide publicity at the time, the magnitude of bomb threats is not fully appreciated by the general public. As case in point, 1484 bomb threats were made against civil aviation in the United States during 1981.[39] Of that number, over 1080 were directed at aircraft belonging to 27 U. S. and 24 foreign air lines. At least 45 percent of the threats were considered serious enough to warrant searches, many of which resulted in flight delays. Four hundred threats were directed against domestic airports during this period. Injuries and property damage resulted in some of these incidents.

BOMB THREATS AND EXPLOSIONS-U. S. CIVIL AVIATION
1971-81*

YEAR	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
BOMB THREATS											
Aircraft	1145	2156	1383	1453	1853	1450	1229	1032	1121	1179	1084
Airports	212	288	239	387	449	1036	519	318	309	268	400
Total	1357	2444	1622	1840	2302	2486	1748	1350	1430	1447	1484
EXPLOSIVE DEVICES FOUND											
Aircraft	1	2	2	1	1	1	2	0	2	1	1
Airports	5	5	3	11	5	3	1	6	6	4	6
Total	6	7	5	12	6	4	3	6	8	5	7
Explosions											
Aircraft	1	1	2	3	2	2	1	0	1	1	0
Airports	0	2	2	4	4	2	3	3	2	1	2
Total	1	3	4	7	6	4	4	3	3	2	2

* Figures for subsequent years were not available due to changes in statistical reporting.

PRIMARY SOURCE: U. S. Department of Transportation, Federal Aviation Administration, Semiannual Report to the Congress on the Effectiveness of the Civil Aviation Security Program, 1980 through 1982.

Explosives emit vapors at a given rate or pressure specific to the chemical composition of the material which can be collected and rapidly analyzed. The effectiveness of electronic explosive detectors depends upon the relative concentration of explosive vapors in the environment being screened and the sensitivity of the devices to the explosives being tested for. The optimal application of explosives detectors is under conditions of low volume and relatively contained environments. Explosive detectors are available and in limited operational use for screening baggage or other suspect items. Early versions of a walkthrough or pass-by explosives "sniffer" are being marketed for passenger screening utilization, but have yet to be proven and widely accepted. A draw back to widespread utilization of explosives detection equipment is and will be the long sensing cycle (a minimum of 6 seconds) which will slow passenger traffic.[40] One highly regarded explosives expert claims that the current state of the art equipment still can be expected to produce a high false and no alarm rate in high volume use in a crowded airport environment.[41]

A major challenge to aviation security arises from the increasing sophistication and availability of explosives and detonating devices. Most of the newer explosives inherently are far more difficult to detect due to much

lower vapor pressures and other electronic components, such as "E" cells, provide precise and longer timing cycles for detonation of explosives. The following table portrays the range of vapor pressures of some explosives currently in use by terrorists:[42]

Explosive[43]	Vapor Pressure
Nitroglycerin	31 parts per billion
NH4NO3	12 parts per billion
TNT	4 parts per billion
RDX	22 parts per trillion
PETN	7 parts per trillion

Chemical taggants are impurities deliberately added in the manufacture of industrial explosives by most countries. Intended to assist in post-explosive analysis, if needed, they also aid in the detection of explosive materials. The taggant program is not supported worldwide and, in addition to "home-made" explosives, makes dependence on taggant detection unreliable.

Difficulty of detection may not be necessarily a primary factor in their selection, but certain of these explosives pose an even greater challenge for detection with existing equipment under less than ideal conditions, such as are found in most airport lobbies. Air movement and the presence of many non-explosive items containing nitrogen and other components commonly found in explosives complicate reliable detection.

Concentrating vapors sufficiently to facilitate detection is necessary for effective explosives detection (using a vapor characterization concept). Explosives can be shielded to some extent by sealing them in tight containers. It may be possible to detect residual vapors on a terrorist's hands from handling the material (or from his handprints on the luggage as he loaded a bomb) more easily than an explosive device hidden in luggage or other articles. If the handler's hands are not washed or care taken in loading the bomb, such residual vapors may persist for hours. This applies as well to inflammable materials.

This recognized vulnerability has prompted a major developmental effort focused upon various concepts of explosives detection utilizing x-ray absorption; thermal neutron activation; nuclear magnetic response; vapor characterization; and others.[44] Prototypes of later generation screening equipment currently are undergoing tests in selected locations. This equipment is discussed further in a section dealing with research and development.

Manual Search. Electronic equipment is an essential part of the passenger and baggage screening process, but it cannot replace the requirement for manual search on an exception basis. Security screening personnel conduct

manual inspections of such items as cameras not passed through metal detectors or X-ray at the passenger's request. They also conduct searches of suspect passengers or baggage. Approximately two percent of the weapons found in the screening process are uncovered by manual search after the person or baggage has passed through metal detectors or X-ray check.[45] Physical search and "patdown inspections" are more common in many international locations than in the U. S. based on a higher perception of threat, local customs which do not emphasize concepts of individual privacy as much as in this country, and more limited availability or reliance on automated equipment. The Secretary of Transportation, however, recently directed an intensification of physical inspections of cabin baggage after the items have passed through X-ray machines. This reflects a growing concern with threats posed by explosives and flammables. Manual searches, of course, are not confined to an established screening station. Used in redundant screening points or under special suspect circumstances, manual searches have been credited with thwarting various hijacking and bombing attempts. Dog/handler teams have proven effective in selective screening for explosives and other substances in baggage and cargo but are considered unsuited for general use in a passenger environment.

Law Enforcement Support of Security Screening. The airlines are financially responsible for the cost of providing
law enforcement support for passenger screening stations.
This police support is coordinated by the airport operator
in conjunction with the overall facility plan for law
enforcement and protection. Initially, an armed law
enforcement officer with arrest authority was required to
physically be present at each security screening station at
an airport. Due to the high cost and limited availability
of officers, a flexible response concept was recommended
and eventually approved in 1981 which permitted significant
savings in both manpower and cost without seriously jeopardizing security screening programs.[46]

Depending upon the category of the airport, as determined
by passenger volume and as certified in approved airport
plans, the minimum response time to an emergency at a
security screening station by a law enforcement officer or
officers ranges from five minutes in the case of a major
airport to 15 minutes for a small facility. A category I
airport with over two million passengers a year, such as
O'Hare, Miami International, Kennedy, etc., is required to
assign a dedicated officer to each security check point.
The officer can patrol in the general area but must be able
to respond to an emergency at the check point within a five
minute time frame or less. This flexible response still is

relatively expensive on a per-officer basis. One major airline calculates its annual cost of flexible police support as equal to the total cost of contract security personnel needed for operating the screening stations.[47]

Training of Security Screening Personnel. For the most part, screeners are employees of a security contractor and receive minimum or near minimum wage. They are required to complete a basic course of instruction in operation of the inspection equipment and in the performance of screening procedures. The course includes training in the effective utilization of walk-through and hand-held metal detectors, X-ray systems, radiation safety (in operating the X-ray equipment), and the identification of weapons and other dangerous articles.[48] This is supplemented by on-the-job training and scheduled refresher training. Screening performance is evaluated by unannounced tests conducted by the contractor, airline, and FAA inspectors. Common to contract security experience, employee turnover rates and quality of individual performance are areas of continuing concern in ensuring a well-trained and alert screening capability. Overall, the preparation and performance of security screeners in the U. S. have been considered generally satisfactory by the FAA.[49] But, it must be recalled that few serious attempts have been made against

domestic flights in recent years, especially by a well-organized group.

Observations. The exemption, in most airports, of airline employees, airport employees, and other "authorized persons" from the screening process creates a vulnerability that can be exploited by persons intent upon bypassing inspections for prohibited items. New York Kennedy Airport is an exception. Airline crews, as well as airport employees, are required to pass through the screening procedure upon entering the sterile area.[50] The vulnerability, at airports where such persons are exempt, is intensified by a sometime casual approach by security screening station operators. Observations by this researcher in various airports and over a period of time revealed a tendency by the screeners to frequently wave through crew members and other exempt persons with but a perfunctory glance, if any, at the individual's pass. Inspection of the pass in sufficient detail to determine authenticity is not consistent.[51]

Checked Luggage and Cargo

Positive Match of Passenger and Baggage. Checked baggage is not normally subjected to routine screening as are

passengers and carried articles but exceptions are increasing in response to recent incidents of bombings or attempted bombings of in-flight aircraft. Various airlines have implemented or are in the process of implementing special screening procedures for flights considered as high risks, which include X-ray inspection of all checked baggage. One important protective measure involves a positive match of passenger and checked baggage.[52] If a ticketed passenger does not board the aircraft for any reason, his checked luggage is pulled from the flight. Increasing computerization is expected to facilitate this matching and reduce unnecessary delay in departures of aircraft during search by ground crews for a missing passenger's baggage. As part of the general profile system, a "checked baggage" profile may also be employed in subjecting suspect baggage to X-ray or other types of inspection.

At certain international locations, primarily in more remote Third-country areas, checked baggage is not loaded on the aircraft until the passenger personally identifies each piece of his luggage at plane side during the boarding process. This procedure by necessity consumes considerable time and would be difficult to conduct in most modern terminals which utilize standard enclosed jetways for boarding. However, curbside checking of luggage for international flights has been terminated in the United

States.[53] This enhanced security measure was implemented in response to the threat of bombs being placed on board aircraft by non-passengers. Baggage to be checked on an international flight must be presented by the ticket-holder at the airline counter. Curb-side check-in for domestic travel continues to be the norm. The obvious imposition upon operational efficiency and passenger convenience is not considered warranted by the relatively low current domestic threat.

Physical Security of Baggage and Cargo. Airlines are responsible for providing reasonable security for luggage from the time it is checked until delivered to the passenger at the destination. Banding of checked luggage has been utilized on a limited basis in some areas to provide additional protection against easy insertion of explosives or other controlled items between check-in and loading.

Security screening requirements for general cargo depend upon the mode of transport. Cargo carried on board U. S. passenger flights is required to be held for 24 hours in a controlled ground facility or undergo physical search or X-ray before being loaded.[54] Mail as well as regular cargo is included in this requirement. The 24-hour hold provides some protection against an explosion set off by a clock-

action detonator, but more sophisticated and available deto-
nators with the potential for longer cycle times pose a
growing threat which is not controlled by this measure. As
a matter of practice, U. S. airlines are not accepting rush
cargos from new shippers on such flights even with a
preloading inspection. Shipments on all-cargo flights are
exempt from these security screening requirements but are
subject to pre-loading inspections by airline represent-
atives or governmental authorities for smuggled drugs or
other prohibited items.

Special Inspection Techniques and Equipment. Airlines have
selectively employed reinforced decompression chambers for
testing suspect baggage or cargo for bombs possibly
activated by atmospheric pressure switches.[55] Such
explosive ignition devices have been employed for terrorist
attacks in the past. They were responsible for severely
damaging an Austrian Airlines plane and destroying a Swiss
airliner with 47 on board in 1970. An El Al plane was
damaged in 1972 by a pressure-activated bomb but special
reinforcement of the cargo section of the company's air-
craft limited the extent of damage and the pilot success-
fully landed the plane.

<u>Manual/Animal Inspection</u>. Highly trained dog/handler teams have a particularly effective capability for detecting explosives. Although limited in the volume of baggage or areas that can be reliably and rapidly inspected, the teams are considered highly accurate in detecting commonly used explosives. The FAA sponsors or maintains explosive detection dog/handler teams at 28 locations in the U. S. and Puerto Rico.[56] If the nature of the emergency permits, airborne aircraft with suspect explosive devices discovered or reported on board are directed to one of the nearest airports so equipped. As an indication of the performance of such teams, 44 explosive items were detected in 5690 aircraft and airport searches conducted over one six month period.[57] In addition to civil aviation missions, these dog/handler teams also respond, as available, to local requests for assistance.

General Airport Security

<u>Terminal Security</u>: Airlines are responsible for screening passengers and controlling access to their "exclusive" areas, but the airport operator is charged with maintaining effective access and internal control of the general airport area. The main lobby and general terminal areas not otherwise restricted are, with few exceptions, open to the

general public. The notable exceptions are at J. F. Kennedy Airport in New York. Both El Al and Air India control access to their terminal lobbies at that airport. Non-ticket holders are not permitted to enter and initial screening of passengers and luggage is conducted at the entrance.[58] This is facilitated by the multi-lobby layout of that particular airport and is considered a necessary security measure by the airlines due to their elevated levels of risk. It could not be readily implemented on a partial basis, or for certain airlines, in most terminals.

Non-passenger access to "sterile" pre-boarding areas is determined by the individual airport operator. Airport layout, passenger volume, and risk determination are factors. In some airports, the general public is allowed in all passenger waiting areas adjacent to the departure gates. Tampa (Florida) Airport is an example. Miami International Airport permits non-passenger access to several of its corridors, each containing multiple gates. Available lobby space in that heavily utilized airport is cited as a reason.[59] With the exception of airline and airport employees and certain other exempt persons, both passengers and non-passengers entering the sterile area must pass through the screening process. A substantial portion of the seven billion persons screened in airports since the

program was implemented in 1973 is represented by such non-travelers.

Employee Access and Internal Control. The primary means for controlling access into and movement within restricted or non-public portions of the airport is accomplished through the administration of an airport pass or "pouch" program. All persons authorized access to restricted areas on the airport are required to display an approved identification card which has been permanently affixed to a clear "pouch" or a validated visitor's card, both of which are issued by the airport operator. Various color codes, print-overs, or seals may be used to denote authorized access to specific zones within the general restricted area.

The airport operator issues identification cards to airport employees and certain other approved contractors or persons requiring frequent access. Proprietary badges issued to employees for internal purposes by airlines and other approved agencies or organizations are accepted by the airport operator upon certification by the employer that the cardholder has been screened (background check) in accordance with pertinent regulations. Authorities from other tenant agencies may establish additional access restrictions for areas under their exclusive control within the larger controlled area. The U. S. Customs, for one,

denotes access authorization to restricted zones under its control by affixing a customs seal to the particular employee's airport pouch.

The airline operators are pushing for multi-airport acceptance of their identification cards, as opposed to the existing airport-specific pouch arrangement. The airport operators reject this but, in practice, frequently admit air-side access to critical airline employees, as emergency repair crews, with a "pouch" from another airport.

The potential for misuse of stolen, lost, or counterfeited airport badges is a continuing concern for those officials charged with civil aviation security. Incidents of lost or stolen cards, as well as incomplete collection of cards from terminated employees are problems common to any card-identification system. Anti-counterfeiting protection is being enhanced by state-of-the-art measures in most domestic locations. The U. S. Customs at Miami International Airport now utilizes a holographic seal on approved badge/pouches to denote authorized access to customs-controlled areas. The Metro-Dade Aviation Department, which operates Miami International Airport, is considering incorporation of a similar anti-counterfeiting measure for employee and contractor identification during rebadging at some point in the future.[60]

<u>Perimeter and Airport Operations Areas</u>. The airport operations area also is a sterile area closed to the public. This area routinely contains various zones or areas to which access is further restricted. The airport operator is charged with providing effective security into and throughout the airport operations area with the exception of the air carriers' "exclusive" areas. The latter, specifically delineated and agreed to in writing between the airport operator and the respective domestic or foreign airline, are concentrated in the ramps or gates and possible maintenance or parking facilities controlled by the airline. The air carrier is directly responsible for prohibiting unauthorized access to the plane from the operations side as well as the passenger side. The airport operator provides backup support to the air carriers within these exclusive areas as requested.

Considering the extensive activity in a modern airport operations area by employees of multiple airlines, the airport operating authority, and many permanent and temporary contractors, control of internal movement is a difficult task at best. Display of authorized identification (either the airport pouch identification or validated visitor pass as previously described) is mandatory in the airport operations area. A "see-and-challenge" procedure is used by security, supervisory, and other personnel to

control internal movement of individuals and ground vehicles.[61] This procedure is relatively effective but is vulnerable to abuses similar to those described in controlling access to the passenger pre-boarding sterile areas.

Fencing and other physical security measures for ensuring adequate perimeter protection are specified by the FAA as the domestic regulating agency. Electronic intrusion sensors and alarms may be installed in critical, high risk areas of the perimeter, in addition to selected application within the operations area. Perimeters are routinely patrolled by airport police or security officers and are inspected with some frequency by local FAA Civil Air Security Field Offices. Separation between the passenger (or terminal) and the air operations area is maintained by physical barriers, intrusion alarm systems, and access points controlled by security personnel or mechanically or electronically by key or card access systems. As a result of enhanced security measures recently implemented, some airlines are positioning additional personnel at access points between the pre-boarding area and ramp formerly controlled by combination or keyed locks. This manpower-intensive measure may be scaled back, however, if the threat is perceived as lessening.

The Airport Operator is responsible for detecting and taking action to control a penetration attempt against the perimeter or within the air operations area by unauthorized persons. The September 1986 attempted hijacking of Pan American Flight 73 in Karachi, Pakistan, resulted from such a breakdown in local airport security.[62] The terrorists, dressed in security guard uniforms, stormed the aircraft from the air operations area.

Law enforcement support: The airport operator is responsible for providing adequate law enforcement support for the general airport requirements as well as for the passenger screening program. (The latter is an expense of the air carriers). All law enforcement officers are required by FAA Regulation 108 to complete an approved training program pertinent to airport security. Although municipal and, to a lesser extent, state police are primarily utilized for such support, private law enforcement officers may be employed provided they have arrest authority, with or without warrant, for a crime committed in an officer's presence or a felony which the officers have reason to believe a suspect has committed; they are identified by uniform and/or badge as an authority; they are armed and authorized to use the weapon; and have completed the mentioned special training course. (A distinction is made between private law enforcement

officers and non-sworn security guards not empowered with special arrest authority). Federal law enforcement officers may be deployed, as authorized, in support of airport security.[63] Dog/handler explosives detection teams are strategically located at FAA-designated airports.

Employee Background Checks: Security concerns have spurred more intensive investigations of employees' backgrounds in an effort to detect possible connections with terrorist organizations. The FAA recently amended regulations to require limited background or historical records checks for employees (of regulated companies or agencies) hired after November 1985. Current employees hired previously are exempted from the background check.[64]

Although widespread support for employee background investigations increased following media exposure of vulnerabilities in hiring practices, there are complaints that the new requirement does not go far enough. The background check is historical; where the person worked, where he lived, etc. It does not include a criminal records check. The validity of the requirement as a measure to detect possible security risks is also questionable in areas with a large resident alien population; the investigation covers only that portion since the employee received his "green card" or arrived in the United States.[65]

Air Traffic Control and Communications Security

There have been no serious terrorist attacks made against domestic or international air traffic control facilities, computer systems, or communication networks. These are vulnerable targets nonetheless. The number and distribution of remote FAA radar facilities used in controlling air traffic provides a redundancy for continued operation in the event of accidental or deliberate outage of a site, but the ability of the system to cover for outages will decrease as more powerful but fewer radars replace the smaller and outdated equipment.[66]

More vulnerable to assault, perhaps, is the communication system used for controlling air traffic. The potential for jamming or masquerading as a controller or pilot on the crowded frequencies is considerable. Limited interferences with communications have been reported and, in at least one instance, erroneous information provided to a foreign pilot resulted in a "near-collision" in the New York area. Although deliberate attempts to interfere with communications or, in the previous case, FAA radar sites may have only local immediate impact, the ripple effect through the air traffic system could be extensive due to the interdependence of flight routes and schedules.

International Airport Security

Security measures in effect at many international airports are far more rigid than at airports in the United States. Extensive efforts to improve airport and related facility security by both airport operators and airlines has been continuous at many European and Middle Eastern locations in response to numerous violent terrorist attacks in those regions and the perception that such threats are increasing. Athens and Rome airports have been particular targets for terrorist attack upon the terminal or as points of departure for hijack or airborne bomb attack, but area airports and air carriers servicing those airports, in general, have been forced to take extraordinary measures against the threat.

El Al Airlines is credited with maintaining the most intensive security program among international air carriers. That airline has experienced only one successful hijacking, which occurred in June 1968 when the terrorists boarded in Rome and diverted the B-707 to Algeria. Stringent passenger and baggage screening since implemented have greatly reduced both hijacking and airborne bombing threats. Following an explosion in an aircraft triggered apparently by a barometric device, El Al reportedly has employed pressure chambers in high risk

airports to test suspect baggage. Passenger pre-boarding clearance routinely requires up to two hours and is exceptionally detailed, including questioning as earlier described. Such efforts have been highly successful in detecting bombs as the recent examples in London and Madrid proved.

The extraordinary screening program is justified by the terrorist threat to El Al and is possible to accomplish, in great part, by the relatively few daily flights by the airline. An identical program would be extremely difficult for large private sector airlines to achieve and, considering the relative terrorist risk, is not justified nor likely to be embraced by other airlines due to cost and passenger inconvenience which could drive travelers to other air carriers. Airlines have adopted portions of the El Al security procedures, however. Pan American Airways, implementing an extraordinary security program for certain international routes, employs a detailed questioning technique similar to that of El Al.[67] Other U. S. and international airlines have followed the example.

The thoroughness of passenger and baggage screening, however, has diverted part of the threat to airline ticket counters in airports and city offices. There are many incidents of this nature, the most vivid of which were the

simultaneous attacks upon airport lobbies in Rome and Vienna on 27 December 1985 during which a total of sixteen people were killed and 117 were injured. Most of the victims in Rome were those near the El Al, Pan American, and TWA counters.[68] These incidents and the continuing threat suggest an increasing requirement for physical security and access control to ground facilities.

The hijacking of TWA Flight 847 in June 1985 provided a major impetus to international civil air security programs, most especially by the United States. Since the International Security and Development Cooperation Act was enacted on 8 August 1985, the FAA has been in the process of inspecting international airport served by U. S. airlines and encouraging the implementation of needed security improvements. One hundred eighty-five foreign airports currently are included in this effort.[69]

Cairo Airport provides an example of extraordinary security steps being taken to improve terminal security, as described by Ralph Blumenthal of the New York Times.[70] A special anti-terrorist force of sixty men armed with Baretta machine guns is assigned as part of the 400-man police force at the airport. There are also 1000 soldiers guarding the airport and an additional 1400 posted around the perimeter. Security screening stations are located at

the terminal entrances and both passengers and non-travelers are subjected to a manual search of hand-carried articles and luggage at the first stage of a redundant screening program. Only ticketed passengers are permitted access to the departure counters. The luggage of travelers on TWA and Gulf Air is X-rayed prior to check-in. Hand baggage is also X-rayed and passengers go through a metal detector. Blumenthal also observes that passengers are subjected to body searches at the entrance to the departure lounges and carried items are again searched by hand. Passengers are moved by bus to the respective planes. At plane side, each passenger identifies his or her checked luggage before it is loaded.

Airport workers are also closely monitored at restricted access checkpoints and within the controlled areas. As an additional precaution, passengers arriving at the Cairo airport from Syria, Lebanon, and other selected points of departure must identify their luggage at plane side upon landing before the bags are carried to the terminal for customs clearance and pick up.

Similar extraordinary security procedures have been implemented in airports in the region. Hard hit by terrorist incidents in the past, Athens airport has been vastly improved in terms of security.

Protection In The Air

Flight Crew Security Training

The responsibility for responding to an airborne security emergency resides with the command pilot who is designated by FAA regulation as the in-flight security coordinator. Training for such a contingency has received high priority with the industry. U. S. airline crew members annually undergo an eight-hour training course specifically designed for preparing them to respond to security-related emergencies.[71] The training also sensitizes crew members to suspect situations which, if unchecked, could develop into a serious security incident. The crew also participates in pre-flight briefings when air marshals are on board.

The Federal Air Marshal Program

The U. S. began deploying armed security officers on selected flights as early as 1962 in response to incidents of hijacking aircraft to Cuba. Following the dramatic outbreak of hijackings worldwide and reaching a domestic high of 40 in 1969, the Sky Marshal program was implemented in 1970. Drawing initially upon the military as an interim

force and spurred by the coordinated hijacking of four planes to Dawson Field in Jordan and another to Egypt in September of that year, the federal force expanded rapidly to almost 1500 officers.

Training was limited in the rush to deploy the marshals and many were young, inexperienced, and had little, if any, law enforcement background. Marshals frequently operated alone on flights under a strategy of placing as many marshals as available on both domestic and international flights. Marshals were assigned to particular flights with minimal notice to the airlines and, at times, without the knowledge of the crew. The program was strongly criticized by airlines and the Air Line Pilots Association (ALPA) due to lack of control or coordination of the airborne response and lack of confidence in the training and experience of the marshals. The unpopular Sky Marshal Program was phased out in 1972 as the concept of securing civil aviation was switching from reliance upon reaction in the air to one of total pre-boarding screening of passengers and cabin baggage.[72]

The issue of armed security personnel aboard U. S. aircraft was revitalized in 1980 with the establishment of the Air Marshal Program. The new air marshal concept differed significantly from that of the sky marshals in stressing a

smaller force of more intensely trained individuals with prior law enforcement experience working in teams and in close coordination with the flight crew. Under the provisions of the International Security and Development Cooperation Act of 1985 signed into law on 8 August, the Secretary of Transportation, in coordination with the Secretary of State, evaluated the need and approved an expanded air marshal presence on international flights of U. S. carriers.

Designated as federal air marshals, officers are sworn Deputy U. S. Marshals with arrest powers and authority to carry weapons. Normal deployment is on international flights with from three to twelve marshals assigned to a designated high risk flight. Flights to be so protected are selected by the FAA. The air carrier is required, under the provisions of FAA Regulations Part 108 (Airplane Operator Security), to carry Federal Air Marshals in the number and manner specified by the Administrator. This includes the selection of specific seats. The captain must consent to, and the flight crew is aware of, the air marshals' presence. Pre-flight briefings are conducted and prior agreement is made of the response by the marshals in the event of an emergency. As inflight security coordinator, the command pilot has final authority for response to an in-flight security emergency.[73]

There still is not universal agreement on the use of armed security personnel on board aircraft. Many command pilots are hesitant to authorize a possible gun battle at high altitudes with obvious risks to passengers and crew. The Air Marshal Program, however, generally has been well received. Both the Air Line Pilots Association and the Air Transport Association support the concept.

U. S. Air Marshals are armed with cal. 38 short-barreled revolvers. Low velocity ammunition is used to minimize the risk of penetration of the plane's outer skin in a high altitude, pressurized environment. Operating as a team, the marshals use verbal and non-verbal communication to direct a coordinated response in the event of an incident.

Air Marshals are assigned to Civil Aviation Security Field Offices (CASFO) located at major airports throughout the country. When not deployed on air marshal missions, the officers perform various related duties such as inspecting airports and aircraft security by monitoring passenger screening operations, inspecting cargo and baggage handling, and conducting checks of airport operations areas and perimeter security. They receive extensive training in broad areas, including handling of explosives, and are required to maintain a current rating as an expert marksman.[74]

As would be expected, El Al Airlines makes extensive use of security agents on its flights. The effectiveness of the Israeli equivalent of an air marshal program was clearly demonstrated during the attempted hijacking in British airspace on 6 September 1970 of an El Al flight from Amsterdam to New York. In thwarting the hijacking attempt, planned to coincide with seizures of two Trans World Airways jets and a Swissair aircraft, armed security personnel killed Patrick Arguello, a Nicaraguan working for the PFLP, and captured Leila Khaled who was reluctantly turned over to British authorities when the plane returned to London.

Israeli airline security officers were armed with cal. 22 handguns and low velocity ammunition to minimize the risk of puncture of the outer shell of the aircraft.[75] Consistent with the Israeli policy of aggressive reaction to terrorist attacks, the officers are instructed and trained to forcibly resist any hijack attempt.

Air marshals are utilized by many other countries to protect national airlines. As many as six air marshals were aboard Iraqi Airlines Flight 163 when it was hijacked by Shi'ite terrorists on 25 December 1986 enroute from Baghdad to Amman, Jordan. During an exchange of gunfire, the latter threw grenades, causing extensive damage and

forcing the pilot to crash land on a small air strip in a remote area in northern Saudia Arabia. Sixty-two of the 107 on board were killed in the gunfire and explosions or by the subsequent crash. According to interrogation of a surviving terrorist, the plan was to force the airliner to Damascus and then to Tehran.[76]

Modification of Aircraft for Enhanced Protection Against Terrorist Attack

Specific modifications have been made to aircraft by manufacturers and airline operators to provide increased protection against hijack attempts, bombings, and other forms of terrorist attack. Most of these changes were made in response to specific incidents which demonstrated weaknesses or vulnerabilities. Some modifications have been made in anticipation of possible attack.

In 1971, a lone hijacker seized a Canadian aircraft and demanded a parachute and 1.5 million in ransom under threat of blowing up the plane. He was subsequently captured before carrying out his threat or jumping from the aircraft. The novel tactic was copied various times in the United States, successfully in the case of D. B. Cooper.

Responding to incidents of hijackings by parachuting ex-
tortionists, modifications were made to rear stairwell
doors of B-727 and DC-9 type aircraft to prevent in-flight
opening.[77]

A security measure implemented early in the response to
threats of interference with aircraft in flight was the
locking of cockpit doors to provide a degree of protection
against forced entry by a would-be hijacker. Its value is
lessened by a practice on some airlines, or by some flight
attendants, of the attendant to carry the key to the
pilots' cabin. In event of hijack, the attendant is highly
vulnerable to duress and access to the flight deck would be
but momentarily delayed. In addition to locking the cock-
pit, El Al Airlines took a major step in strengthening
aircraft against hijacking by installing armor plating on
the bulkhead between the cockpit and the passenger compart-
ment on selected aircraft.[78]

Fire is a major threat to passenger and crew safety aloft
and on the ground. The sharp resurgence of hijacking
attempts in the United States, occurring over a five year
period beginning in late 1978, sprang from threats by
hijackers to ignite explosive or flammable materials if
their demands were not met. These materials were not
readily detectable by security screening measures then (and

now) in effect. Accidental fires, more so than deliberate fires in lavatories and other locations have called attention to this risk. In response to the threat of on board fires, most airlines have since refitted aircraft with Halon 1211 or equivalent fire extinguishers.

Various testing has been done to strengthen aircraft against bombing attempts. As a prime target for terrorist attack, the Israelis have pursued this objective vigorously, going as far as to conduct in-flight experiments with controlled explosions.[79] In addition to installation of armored partitions between flight deck and passenger compartment, some El Al aircraft were modified by reinforcement of baggage holds with armor plating. An explosion occurred in the reinforced baggage compartment of an El Al B-707 airliner on a Rome-to-Tel Aviv flight in August 1972, but the damage was limited by the added protection to a six-inch hole in the fuselage and the pilot was able to make a safe emergency landing.

Research has been conducted to identify areas on different types of aircraft that are of greater strength or less critical to maintaining effective control of damaged aircraft in flight. This has been accomplished for the purpose of responding to the detection of suspect explosive devices on board and, if necessary, to move the devices to

areas where damage can be contained or at least moderated. One such area is adjacent to doorways, preferably in galleys for enhanced protection of the passengers.[80] Blankets, cabin baggage, and other available soft items would be placed around the suspect bomb to lessen the effects of a possible explosion.

The threat of missle attack against aircraft in flight has prompted limited modifications. Although rare, such attacks have occurred. Most recently, in August 1986, a Sudanese civil aircraft was shot down by a surface-to-air missle fired by rebels in southern Sudan, killing all 60 on board. At least two documented plots to shoot down an aircraft in flight have been directed against El Al airliners in Rome and Nairobi, Kenya.

As a state-owned enterprise, El Al Airlines has a special access to government expertise and assets. The response to the threat of attack by surface-to-air missles reportedly included installation of electronic countermeasures equipment on some civil aircraft similar to that employed on military aircraft to deflect or alter the flight of such missles by "electronic" or other countermeasures."[81]

Duress Signals

A capability exists for the pilot to discretely signal Air Traffic Control of an emergency on board. On aircraft equipped with a secondary surveillance radar transponder, the crew on the flight deck can switch to Code 7700 to signal an emergency situation or to Code 7500 to indicate specifically that the plane is being subjected to unlawful interference.[82]

Air traffic control immediately notifies rescue coordination centers in the event a signal is received of unlawful interference. Other aircraft in the vicinity are also advised of the emergency. No reference is made in air traffic control communications to the nature of the emergency on board unless if it has been stated in communications from the aircraft involved and if it is certain that such reference will not aggravate the situation.[83]

Crisis Management and Coordination

Jurisdiction

The Federal Aviation Administration has jurisdiction by law

over hijackings or related crimes committed over U. S. territory while an aircraft is in the air. Jurisdiction passes to the Federal Bureau of Investigation at the time of landing. In practice, the two agencies work closely together and, according to a senior FAA official, the question of jurisdictional priority is not a major concern.[84] In the event of a domestic civil aviation security emergency, local law enforcement authorities take appropriate action on their own until FBI agents arrive on scene to assume control.

Incident Crisis Centers

Crisis management centers are activated in various locations when a hijacking or other serious action against civil aviation is in progress. The FAA opens a hijack command post upon notification from the air traffic control system of an emergency in progress and establishes a communication link among the FAA, the FBI, the National Military Command Center of the Department of Defense, the airline, and the aircraft with the emergency. Other groups that may be included are the State Department, the Secret Service, the White House, FAA regional offices, and local law enforcement offices. An on-site command post will be

set up as close as possible to the plane (if on the ground) or where it appears to be headed.[85]

Special Military/Police Rescue Units

The successful rescue in 1976 of hijacked hostages from Entebbe, Uganda by a special Israeli force established a precedent for the deployment of an armed force outside of national boundaries as a response option to hijackings or other attacks involving the taking of hostages by terrorists. The Israelis based their authority to effect the rescue on the fact that most of passengers on the Air France flight hijacked over Greece on 28 June 1976 were of Jewish origin. The rescue involved immense coordination in organizing and transporting a strike force from Israel through Kenya to Uganda while maintaining the element of surprise. In a lightning attack, the Israeli commandos rescued hostages held at Entebbe airport despite resistance from both terrorists and Ugandan soldiers. Three hostages, one commando, seven terrorists, and twenty Ugandan soldiers were killed in the rescue effort.[86]

Other countries have organized similar special teams. The West Germans established the Grenzschuzgruppe (GSG-9) as a special purpose team of the Border Protection Group. The

GSG-9 was successfully deployed in Somalia in October 1977 to rescue passengers and surviving crew members of a Lufthansa flight hijacked by PFLP terrorists. The attack was skillfully executed and no hostage nor commando was killed in the rescue although several were injured.

Two attempts by Eqyptian special teams to forcibly rescue hostages from hijackers ended in high loss of life due, in considerable part, to ineffective coordination with local authorities where hijacked planes were being held. In a February 1978 attempt to storm a plane in Cyprus, a fire fight developed with Cypriot national guardsmen which resulted in fifteen deaths among the Eqyptian force. A subsequent rescue attempt in November 1985 in Malta re-sulted in fifty-seven passengers killed in the ensuing fire fight with terrorists on board.[87]

The Federal Bureau of Investigation has the responsibility for responding to aviation security emergencies within the United States. The FBI has organized and maintains highly trained Hostage Rescue Teams (HRT) on a stand-by basis for rapid deployment to a crisis site. The mission of the teams is to respond to any type of serious crisis under federal jurisdiction, but the teams are specially trained for assaults upon airliners to rescue passengers and crew and to terminate a hijacking if necessary.[88] The FBI and

local law enforcement organizations have responded capably to domestic aircraft hijackings to date.

The U. S. created the "Delta Force" in the late 1970s as an army unit especially trained for deployment in hostage rescue missions outside of the country. Other branches of the military have prepared small elite units but the Delta Force is charged with primary responsibility for such missions on land.[89] The unit has not been used to date in attempts to rescue hijacked hostages.

A major problem in reacting to a hijack of an American passenger plane is response time. By the time Delta Force elements reached the Mediterranean following the hijacking of TWA Flight 847 out of Athens, they were not in a position to attack the aircraft with an acceptable chance of success. Recommendations have been made for location of special teams in international locations more accessible to high risk areas but the issue carries distinct political sensitivities and had not been settled.

These special military units cannot be utilized within the United States without specific presidential authority. Although it is unlikely that such authority would be granted in an aircraft hostage incident, they do represent an option for backup for FBI Hostage Rescue Teams as may be needed.

Research and Development

Explosives Detection

The primary focus of developmental efforts for enhancing the protection of civil aviation against terrorist threat is in explosives detection. This is recognized as a high priority requirement due both to the increasing incidence of bombing attack as a terrorist tactic as well as limitations upon existing state-of-the-art technology. Such concern is not limited to civil aviation; improving the ability to detect and protect against this form of attack is critical to both the private sector and government in the view of an increased threat.

Research and development in explosives detection is currently centered on four main concepts, namely: vapor characterization; X-ray absorption; thermal neutron activation; and nuclear magnetic response.[90] These concepts potentially have broad application for special screening of baggage and cargo but several are not suitable for passenger screening. In addition to electronic detection, research has also been conducted in the use of animals other than dogs for explosive detection. The results have not been promising for such utilization to date.

Vapor Characterization. Explosives continuously give off vapors at a rate or pressure specific to their composition. Vapor characterization relies upon the detection of minute amounts of these vapors by sampling or "sniffing" the surrounding air. Of the various options under consideration, this concept appears the best suited for screening of passengers. It is the concept employed by dog/handler detection teams which have been proven effective but on a limited volume basis.

It was previously noted that some electronic explosives detectors based on this principle are currently in production and are considered relatively effective in under controlled conditions. The detectors range from small hand-held units to larger machines using a "pass-through" or "pass-by" configuration. They have not yet achieved a reliable confidence level for sustained operation under conditions of high volume, rapid processing in an open environment encountered in most passenger screening situations, but the objective appears feasible. Machines are undergoing field testing at the FAA Technical Center and at the Boston airport.[91]

Effective explosives detection will necessarily slow the passenger screening process. When fully developed and operationally deployed in passenger screening roles, the

explosives detector will require approximately six seconds in a sensing cycle to screen one person or item. A certain level of false alarms necessarily will be encountered in an airport lobby environment due to the sensitivity required to detect certain types of explosives and the similarity of nitrogen and other compounds in non-explosive items. Certain medical applications, such as nitroglycerin patches at times used for patients with heart disease, could trigger sensor alarms. Aircraft exhausts and fuel vapors also can interfere with testing, especially for inflammables.

X-ray Absorption. This concept of explosives detection is based upon tightly focused X-ray beams and automatic computer-based analysis of the size, shape, and X-ray density of the contents of parcels or luggage being inspected. This represents a significant technological improvement over existing X-ray inspection equipment. Detectors are undergoing testing at several airports and at the FAA Technical Center in Atlantic City, New Jersey.[92] The new technology permits a multi-role capability for detection of unauthorized items including weapons and explosives. U. S. Customs is evaluating a machine at Miami International Airport for use in detecting controlled substances as cocaine. The concept obviously cannot be used for passenger screening.

Potential problem areas for utilization of higher intensity X-ray inspection arise in concern over radiation exposure for security operators who work closely to the machines for sustained periods and the possible damage to film and computer tapes when passed through the machines.

Thermal Neutron Activation. The detection of explosives by thermal neutron activation relies on a chemical reaction unique to specific explosive materials. The principle has possible application for cargo screening. Yinon and Zitrin cite one problem particular to baggage inspection using this concept is the "presence of nonexplosive materials like wool, Nylon, Orlon, silk and leather."[93] The relative density of the explosives and clothing is the key in differentiating the two. Two contractors are developing a prototype. Fairly cumbersome, a machine will begin field testing in May 1987.[94]

Nuclear Magnetic Response. Another exotic concept, nuclear magnetic response depends upon detection of characteristic responses of explosive modules when subjected to magnetic and pulsed radio frequency fields. This concept apparently has limited application potential in the screening role and is no longer being pursued as vigorously as some of the others mentioned.

Small Animals for Use in Explosives Detection. The FAA and
other governmental agencies have sponsored research in
small animal detection of explosives for possible
application in such role. Mice and gerbils, among others,
can be trained or conditioned to react to the presence of
explosives. The approach may have a very limited appli-
cation potential.

Other Detection Concepts

Anomaly Detection. Another interesting concept under study
is focused upon the detection of items or situations which
are out of the ordinary. Passive infra-red and sonic
imaging are possible sensing techniques for a system based
on this concept. An envisioned system would alarm if an un-
usual mass and density, for example a possible weapon
strapped to a passenger's calf, was detected where not
normally expected.[95] This remains in a conceptual stage.
If sufficiently refined, such a concept could offer a
possible detection capability for the "plastic" or ceramic
handguns.

Flammables Detection. Most of the hijacking attempts made
within the United States within the past six years have
incorporated threats to explode or ignite flammable sub-

stances. X-ray detection of suspect containers and extensive manual search of passengers and baggage provide the primary detection capability to date. Testing for evolved vapors, similar to vapor characterization detection of high power explosives, could afford a partial defense against hijackings attempted under threat of igniting flammables.

NOTES

[1]Air Transport Association (ATA), Protecting Air Transportation From Hijacking and Sabotage (Washington, D. C.: Air Transport Association, [October 1985]), p. 1.

[2]U. S., Department of Transportation. Federal Aviation Administration, Semiannual Report to Congress on the Effectiveness of The Civil Aviation Program; January 1-June 30, 1986 (Washington, D. C.: Department of Transportation, [November 1986]), p. 3-4.

[3]Ibid, p. 15.

[4]ATA, Protecting Air Transportation From Hijacking and Sabotage (Washington, D. C.: Air Transport Association, [October 1985]), p.8.

[5]Ibid, p. 9.

[6]Interview with Ron Long, Eastern Air Lines, Miami, Florida, 27 June 1985.

[7]Interview with Richard A. Noble, Federal Aviation Administration, Washington, D. C., 12 January 1987.

[8]Interview with Richard F. Lally, Air Transport Association, Washington, D. C., 15 January 1987.

[9]FAA, Semiannual Report to Congress on The Effectiveness of the Civil Aviation Program: January 1-June 30, 1985, (Washington, D. C.: Department of Transportation, [November 1985]), p. 3.

[10]The cost of preventing hijackings was computed on the basis of 13 cumulative years of total screening operations multiplied by estimated average annual screening costs of $200 million. Divided by the 117 thwarted attempts, the result is over $2 million. The alternate computation of dividing the actual attempts prevented in a given year by the screening costs, at least in recent years, gives a drastically higher result. Four attempts were prevented in 1985.

[11]W. F. Beane, "Cleared For Takeoff," Security, October 1986, p. 47.

[12]U. S., Department of Transportation, Federal Aviation Administration, U. S. Registered Aircraft Hijacking Statistics 1961 to Present, Updated: January 1, 1986, pp. 3-6.

[13]Ibid.

[14]U. S., Department of Transportation, Federal Aviation Administration, Regulations: Part 107-Airplane Operator Security.

[15]U. S., Department of Transportation, Federal Aviation Administration, Regulations: Part 108-Airport Security.

[16]Interview with William L. Rach, Federal Aviation Administration, Miami, Florida, 15 July 1986.

[17]Nancy Douglas Joyner, Aerial Hijacking as an International Crime (Dobbs Ferry, New York: Oceana Publications, Inc., 1974), pp. 283-93.

[18]Ibid., pp. 299-305.

[19]Ibid., pp. 307-15.

[20]International Civil Aviation Organization, International Standards And Recommended Practices-Security: Annex 17 to the Convention on International Civil Aviation, 3rd ed. (Montreal: ICAO, March 1986), pp.1-18.

[21]David Hoffman, "Summit Unites on Terrorism," Washington Post, 6 May 1986, p. A1.

[22]ATA, U. S. Hijackings: The Major Cause And Cure (Washington, D. C.: Air Transport Association, [October 1983]), pp. 1-8.

[23]Ibid, p. 5.

[24]"House, Senate Focus on Airline Security, Legislation Aimed At Curbing Terrorism," Security Systems Digest (8 July 1986):6.

[25]Robert J. McCortney, "Hijack Suspect Arrested," New York Times, 16 January 1987, p. A1.

[26]Jan W. Steenblik, "Combatting Terrorism," Airline Pilot, April 1986, p. 16.

[27]Richard H. Shultz, Jr. "The Operational Art: A Critical Review of Anti-terrorist Programs," in Responding To The Terrorist Threat, eds. R. H. Shultz, Jr. and Stephen Sloan (New York: Pergamon Press, 1980), p. 25.

[28]Interview with Richard F. Lally, Air Transport Association, Washington, D. C., 15 January 1987.

[29]"Syria and Terrorism," _Wall Street Journal_, 9 October 1986, p. 34.

[30]Interview with Major Don Matthews, Miami-Dade Police Department, Miami, Florida, 30 July 1986.

[31]FAA, _Semiannual Report to Congress on the Effectiveness of The Civil Aviation Security Program: January 1-June 30, 1982_, p. 10.

[32]ATA, _Protecting Air Transportation From Hijacking And Sabotage_, p. 8.

[33]FAA, _Semiannual Report to Congress on the Effectiveness of The Civil Aviation Security Program: January 1-June 30, 1985_, p. 5.

[34]Interview with Dr. Lyle O. Malotky, Federal Aviation Authority, Washington, D. C., 12 January 1987.

[35]FAA, _Semiannual Report to Congress on the Effectiveness of The Civil Aviation Security Program: January 1-June 30, 1985_, p. 4.

[36]The Astrophysics Research Corporation advertises that the company's Linescan X-ray units can detect the "Glock" pistol in luggage. The company manufactures approximately 92 percent of X-ray machines used in airport screening applications in the U. S.

[37]ATA, _U. S. Hijackings: The Major Cause And Cure_, pp. 1-2.

[38]Roberto Suro, "T. W. A. Bomb Called Type Used by Terrorists," _New York Times_, 6 April 1986, p. A2.

[39]FAA, _Semiannual Report to Congress on the Effectiveness of The Civil Aviation Security Program: July 1-December 31, 1981_, pp. 7-15.

[40]Interview with Richard A. Noble, Federal Aviation Administration, Washington, D. C., 12 January 1987.

[41]Interview with David Nye, Tactical Response Association, Miami, Florida, 15 May 1986.

[42]Interview with Dr. Lyle O. Malotky, Federal Aviation Administration, Washington, D. C., 12 January 1987. Also Jehuda Yinon and Shumel Zitrin, _The Analysis of Explosives_ (Oxford: Pergamon Press, 1981), p. 243.

[43]The technical names of the explosives are:

Nitroglycerin	Glcerol trinitrate
Nh4NO3	Ammonium Nitrate
TNT	2, 4, 6-Trinitrotoluene
RDX	1 , 3, 5-Trinitro-1, 3, 5-triazacyclohexane.
PETN	Pentaerythritol tetranitrate

[44]FAA, <u>Semiannual Report to Congress on the Effectiveness of The Civil Aviation Security Program: July 1-December 31, 1982</u>, pp. 7-15.

[45]Ibid. p. 8.

[46]Interview with Ron Long, Eastern Airlines, Miami, Florida, 27 June 1986.

[47]Ibid.

[48]Interview with Richard A. Noble, Federal Aviation Administration, Washington, D. C., 13 January 1987.

[49]Ibid.

[50]"Pan Am Security," <u>Wall Street Journal</u>, 5 September 1986, p. 20.

[51]This is not a general condemnation of screening employees. Many, if not most, are dedicated workers. Based upon the author's observations over a prolonged period and experience in screening applications in various industries, the control of "exempt" personnel invariably represents a problem for effective security controls.

[52]Inteview with Ron Long, Eastern Airlines, Miami, Florida, 27 June 1986.

[53]"Dole Calls for Concerted International Effort to Combat Terrorism Against Civil Terrorism," <u>Security Systems Digest</u>, 8 July 1985, p. 3.

[54]Interview with William L. Rach, Federal Aviation Administration, Miami, Florida, 15 July 1986.

[55]Richard Witkin, "For El Al, Vigilence Against Violence," <u>New York Times</u>, 28 December 1985, p. A4.

[56]JEPPESEN EMERGENCY USOR, dated October 85, FAA Sponsored Explosives Detection (Dog/Handler Team) Locations.

[57]FAA, Semiannual Report to Congress on the Effectiveness of The Civil Aviation Security Program: January 1-June 30, 1981. p. 11.

[58]Interview with Richard A. Noble, Federal Aviation Assoication, Washington, D. C., 12 January 1987.

[59]Interview with Charles W. Mauch, Miami International Airport, Miami, Florida, 25 July 1986.

[60]Ibid.

[61]Ibid.

[62]Dennis Hevesi, "F.A.A. Distributed Alert on Terrorism About 2 Weeks Ago," New York Times, p. A1.

[63]Interview with Richard A. Noble, Federal Aviation Administration, Washington, D. C., 13 January 1987.

[64]Interview with Charles W. Mauch, Miami International Airport, Miami, Florida, 25 July 1986.

[65]Interview with Major Don Matthews, Miami-Dade Police Department, Miami, Florida, 30 July 1986.

[66]Interview with Richard A. Noble, Federal Aviation Administration, Washington, D. C., 13 January 1987.

[67]Donald Pevsner, "Domestic airlines get tough on terrorism," Miami Herald, 27 July 1986, p. 2J.

[68]John Tagliabre, "Airport Terrorists Kill 13 and Wound 113 At Israeli Counters In Rome And Vienna," New York Times, 28 December 1985, p. A8.

[69]FAA, Semiannual Report to Congress on the Effectiveness of The Civil Aviation Security Program: January 1-June 30, 1986. p. 6.

[70]Ralph Blumenthal, "On Alert at the Cairo Airport: An Elaborate Security Screen," New York Times, 8 April 1986, p. A1.

[71]Interview with Richard F. Lally, Air Transport Association, Washington, D. C., 15 January 1987.

[72]J. Ponte, Jr., "Airborne Lawmen," Reprint from Air Line Pilot, November 1979.

[73]Interview with FAA officials, Miami, Florida, 15 July 1986.

[74]Ibid.

[75]Stewart Steven, The Spymasters Of Israel (New York: Ballantine Books, 1980), pp. 324-5.

[76]William E. Smith, "The Long Shadow of Tehran," Time, 5 January 1987, p. 56.

[77]Interview with Richard A. Noble, Federal Aviation Administration, Washington, D. C., 12 January 1987.

[78]Steven, The Spymasters Of Israel, p. 315.

[79]Christopher Dobson and ,Ronald Payne, The Terrorists: Their Weapons, Leaders and Tactics (New York: Facts On File, Inc., 1982) p. 137.

[80]Interview with Richard F. Lally, Air Transport Association, Washington, D. C., 15 January 1987.

[81]Richard Witkin, "For El Al, Vigilance Against Terrorism," New York Times, 28 December 1985, p. A4.

[82]ICAO, International Standards And Recommended Practices-Security: Annex 17 to the Convention on International Civil Aviation, pp. 12-14.

[83]Ibid.

[84]Interview with Richard A. Noble, Federal Aviation Adminstration, Washington, D. C. 12 January 1987.

[85]J. Ponte Jr., "Aviation's United Force," Reprint from Air Line Pilot, June 1980.

[86]Christopher Dobson and Ronald Payne, The Carlos Complex: A Study In Terrorism (New York: G. P. Putnam's Sons, 1977), p. 190.

[87]David K. Shipler, "Terror: Americans As Targets," New York Times, 26 November 1985.

[88]"Danger on Our Doorsteps," Security Management, December 1986, p. 52.

[89]Evan Thomas, "A Warrior Elite For the Dirty Jobs," Time, 13 January 1986, pp. 16-19.

[90]Richard Witkin, "F.A.A. Working on System to Detect Explosives," New York Times, 12 July 1985.

[91]Interview with Dr. Lyle O. Malotkty, Federal Aviation Administration, Washington, D. C. 12 January 1987.

[92]Ibid.

[93]Yinon and Zitrin. **The Analysis of Explosives,** p.261.

[94]Interview with Dr. Lyle O. Malotky, Federal Aviation Administration, Washington, D. C., 15 January 1987.

[95]Ibid.

CHAPTER V

CONSIDERATIONS FOR THE FUTURE

A case study of civil aviation provides revealing and interesting insight into the phenomenon of terrorism. The domestic experience with hijackings and other crimes against civil aviation clearly demonstrates the author's thesis as to the cumulative impact even of "unintentional terrorism" upon the indirect victims' perception of the threat.

Although but few of the numerous hijackings and related crimes against domestic air transport operations involved perpetrators considered in a conventional terrorist sense, the response to the overall threat by government agencies, the air transport industry, and the general public has been dramatic. Considering the distinct area concentration of past incidents and the high expenditures for security-related programs as measured against the number of thwarted hijacking or other criminal attempts against domestic air transport operations, it appears a legitimate question if the threat has not been over-estimated and the response excessive.

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The tendency to over-react seems strongly entrenched within the United States. Unfortunately, once committed, it becomes difficult to reduce or dismantle certain protective programs without calling attention to the relative gap created.

The importance of the (indirect) victims' perspective is even more apparent on the international scene. Relatively few but very violent terrorist assaults against civil aviation and other targets over the last several years, in particular, have created an impact far out of proportion to the actual violence inflicted.

The case study has also demonstrated the relative ease with which tactics or techniques of violence can be passed to others. The process may be deliberate or coincidental. Of particular note is the "copy-cat" phenomenon. As cycles of hijackings and other forms of attack indicate, violence appears to stimulate violence, at least temporarily. This becomes a necessary security planning consideration.

Despite a recent lull in terrorist actions directed at civil aviation, the prospects are not optimistic. Of particular concern is that the long term threat to domestic civil aviation is significantly more severe than that which

existed prior to 1973 and which prompted the implementation of a protective program of total passenger and hand baggage screening.

Internationally, U. S. airlines and citizens have been frequent targets of terrorist assault upon civil aviation and a heightened sensitivity exists as to the threat of future attack. The response of U. S. airlines in international operations, as well as by other countries and foreign airlines in areas of higher terrorist activity, will be that of intensifying extraordinary protective measures already in effect. The greatest threat to domestic and international civil aviation operating within the United States, however, stems from the potential for a spread of international terrorism to the United States.

The author is not alone in this view. Others foresee a rising potential for terroristic violence domestically, one of the primary targets of which will be the civil aviation system. Among experts in the field who espouse a theme of "the terrorists are coming" is Dr. Robert Kupperman who considers terrorism in America as "inevitable" and sees a migration of Mideast-type of terrorism to the United States within several years.[1] Kupperman points to the relative vulnerability of domestic targets to attack and the

progression of terrorist attacks against American citizens and property abroad to support his view.

Many factors have served in the past to keep significant international terrorist activity out of the country. The maintenance of a good intelligence posture by the FBI and other federal and local agencies has been instrumental to date in thwarting serious violence by domestic extremist organizations and by limited international terrorist groups. The civil aviation security program developed in in the United States in response to the specific domestic threat also has provided a reasonable deterrent effect against hijacking attempts by organized terrorists within this country. The distance and relative isolation of the United States and the accessibility and familiarity of Western Europe and the Mideast to the principal international terrorist organizations have been a factor. This situation is changing, however.

The emergence of "Shi'ite terrorism" as a major if currently unfocused force (one with a potential of eclipsing that of the various PLO factions) and the increasingly apparent role of Iran and Syria in supporting international terrorism already have been demonstrated in recent terrorist attacks against international civil aviation. They have ominous

implications for the future safety of international and domestic air travel.

The taking of hostages within Lebanon by Shi'ite and other groups with ties to Syria or Iran accelerated in early 1987. Though not directly affecting civil aviation, demands made by the captors for prisoner exchanges included those for the release of terrorists involved in earlier attacks upon airliners or terminals. Specifically named in these demands was Mohammed Ali Hamadei, detained by the West German government in January 1987 while attempting to smuggle explosives into that country. Hamadei subsequently was identified by fingerprints as one of the hijackers of TWA Flight 847 in June 1985. The kidnapping of two German businessmen in Beruit in late January appeared directly related to pressures placed upon the West German Government not to accede to requests by the United States to extradite Hamadei. That delay, thus far, in West Germany's response to the extradition request attests to the impact of those tactics.

The FBI has succeeded in the past in developing and maintaining a good base of information on domestic threats, but the demonstrated ability even of very small groups to operate effectively and the difficulty of infiltrating closely-knit and compartmented Arab terrorist organizations

with possible intentions against American targets make this a progressively harder task. This is further complicated by an increasing potential for support and encouragement, by various state sponsors, of U. S. extremist groups or of individuals or small groups among the large foreign resident population in the country.

The ability of a very small terrorist group to inflict serious and widespread damage is clearly shown by the Hindawi family. Nezar Nawaf Mansour Hindawi, responsible for placing an explosive in his girlfriend's bag in an abortive attempt in April 1986 to blow up an El Al airliner, is the brother of Ahmed Nawaf Mansour Hazi, a man held by West Germany for alleged involvement in the 7 April 1986 bombing of a popular discotheque frequented by American servicemen in West Berlin.[2] The cousin of the two, Awni Hindawi, was released in February 1987 by Italian authorities for a stated lack of evidence proving him to be a member of a suspected terrorist organization.[3] The latter was arrested when Nezar Hindawi wrote him a letter from prison requesting that he contact their Syrian contact to arrange a prisoner swap for him and his brother. Awni Hindawi reportedly admitted to the Italian authorities that the three were freelance terrorists who had gone first to Libya in 1985 for support but were turned down by the Qadhafi regime. They then sought and received Syrian

assistance in training and financial support.[4] Nezar Hindawi and Hazi admitted that they received explosives from Syrian contacts in the respective countries where both attacks occurred.

The ability of an individual terrorist or small group to infiltrate the United States, or to activate a "sleeper" constitutes a genuine concern. This has been demonstrated against other than civil aviation targets in the past. An example is provided by the assassination of a Turkish diplomat by members of the Armenian Secret Army and the 1976 car bomb murder in Washington, D. C. of Orlando Letelier, the former Chilean Ambassador to the United States during the Allende regime.[5]

The large population of resident aliens in the U. S., represents a pool from which individuals can be drawn, either willingly or under duress by way of threat to relatives or other "holds," to commit or provide support for directed acts of terrorism. There is a precedent for such concern. In March 1985, the FBI received a report that a Libyan national had made contact with pro-Qadhafi group in the United States to encourage the initiation of a wave of violence.[6] Moreover, threats repeatedly have been made by leaders of terrorist organizations and by heads of

government of militantly anti-US regimes in Libya and Iran to send international terrorism to the United States.

The threat is not limited to foreign terrorists. Domestic terrorist organizations are small and poorly organized but represent a potential threat. Of this group, Puerto Rican terrorists have already been involved in actions against civil aviation. There have been reports of Libyan contacts with American terrorist groups. It is feasible to assume that such extremist organizations would seek and may receive assistance from international terrorist groups or state sponsors.

There is a tremendous psychological advantage to be had either by state sponsors or by international terrorist groups in staging a spectacular act or acts within the United States. It is difficult to envision that such bodies are not aware of the extreme reaction that would be generated. It does remain unlikely that such adversaries could or would attempt to sustain a high level of terrorist activity in this country; it continues far easier and with less risk to focus their efforts in more traditional centers of terrorist activity in the Middle East and Western Europe. But, it would not take many spectacular acts to achieve the psychological objective of creating a massive,

even an over-reactive, response to the threat within this country.

Civil aviation must be considered a high priority, though not exclusive, target for domestically-generated or imported organized terrorism. There is not a consensus as to the intensity of this threat but the trend is generally viewed as on the increase. This is evidenced by a progression of additional protective measures being taken by the air transport industry to protect against unlawful interference with air travel.

Airlines can be expected to impose additional restrictions on the amount of hand baggage that can be carried on by a passenger. In some cases, this amounts to the more strict enforcement of current rules on hand baggage. As an anti-hijack measure, this has considerable merit by reducing the options of a would-be hijacker to smuggle weapons or other items on board an aircraft and by permitting a more thorough search of carry-on items by security screeners in reducing the volume of items to be cleared. At some international airports, metal brackets are attached to X-ray machines to serve as a gauge to ensure that carry-on times can fit beneath the seat. If the parcel or bag cannot pass below the bar or within the lateral limits, it must be checked as baggage.[7] This measure removes the necessity for a decision

by the screener (and complaints from passengers) and could be adopted for domestic use within the United States. The International Air Lines Pilots Association is pressing for greater restrictions on cabin baggage on the grounds of both security and safety.

Airline operators, through the Air Transport Association, are vitally interested in strengthening FAA/Industry security and anti-terrorism measures. Included on their safety agenda for 1987 is the stated intent to pursue efforts to improve the quality of the airline passenger screening process and enhance public confidence in the adequacy of airline security.[8] A likely outcome is greater direct participation by the airline operators in the screening process.

Pan American Airlines was the first of the airlines to form a proprietary security organization, Alert Services, in an effort to increase control and to effect an improved level of security for international and domestic operations. That program is considered a success by the airline and a possible pilot program by the industry.

The ATA is considering the feasibility of setting up a central organization to coordinate passenger screening and related security services to provide a more uniform, better

trained security force. Under this concept, the airlines operators, in effect, would consolidate many of the broader management functions currently being performed by various contract security firms. Administrative and related functions would continue to be carried out by the security firms as employers of security screeners.[9] The passenger screening program has operated relatively effectively against domestic terrorism to date, despite a number of hijackings since 1973, but it has not been proven effective against possible penetration by an organized terrorist group of the order of some international incidents. Projected efforts to be taken in improving the operational efficiency of the screening program, however, will afford a greater protective capacity against both types of threats.

Other more drastic security measures are unlikely to be implemented unless or until provoked by serious domestic incidents. They cannot be excluded as a long term possibility or necessity, however. Recurring explosions on board aircraft would prompt serious consideration of such measures. The elimination of curb-side checks of baggage and mandatory X-ray inspection of all checked baggage on domestic flights would markedly affect system efficiency and passenger convenience, in addition to requiring an expensive activation of additional screening capacity.

It is the airport terminal, however, that emerges as a particularly attractive and vulnerable target. Among civil aviation targets, it presents less risk to the terrorist, is harder to protect and, if attacked on a repetitive basis, the implications would result in a massive dilemma for the industry and governmental authorities. Because of their relative vulnerability and the impact generated, airport terminals may well become a target. They also are easier to attack than many federal buildings, military installations, or other "high profile" targets such as nuclear power plants. Moreover, the "copy-cat syndrome" may be reflected in further incidents by non-political terrorists. Bombings are more likely than armed attacks such as occurred in Rome and Vienna in December 1985.[10]

A series of such terrorist incidents could prompt efforts to control access to terminals similar to those now in force in certain international airports and at El Al and Air India terminals at Kennedy Airport. The task of controlling access to airport terminals appears a very difficult program to implement should a decision be reached of such need. Undoubtedly, this would have tremendous economic and social implications on the order of the total passenger screening program when implemented in 1973.

These are significant but not exclusive areas of vulnerability. Broad contingency planning and improvement of intelligence collection and coordination capabilities are critical to an effective defense against this threat. Considerable efforts are underway to this end but, as past experiences indicate, preplanned responses rarely have been as complete or implemented as rapidly and smoothly as desired. Should a serious terrorist incident occur within the United States in the near future similar to those against foreign and U. S. airlines in Western Europe, there will be a tendency to over react. This, too, must be anticipated.

NOTES

[1] *Security Systems Digest*   Vol. 16   No. 14 (8 July 1986): 2.

[2] Nancy Cooper et al, "Linking Syria to Terrorism," *Newsweek*, 3 November 1986, pp. 40-2.

[3] *Miami Herald*, 3 February 1987, p. 8A.

[4] Cooper, *Newsweek*, 3 November 1986, p. 41.

[5] Ken Fireman, "Chilean admits role in Letelier's murder," *Miami Herald*, 5 February 1987, p. 21A.

[6] "Danger on Our Doorsteps," *Security Management* (December 1986): 51.

[7] Personal observation, Barranquilla, Colombia, May 1985.

[8] Air Transport Association, "ATA Safety Agenda For 1987," Washington, D. C., December 1986.

[9] Interview with Richard F. Lally, Air Transport Association, Washington, D. C., 15 January 1987.

[10] As noted in Chapter IV, the incidence of bomb threats and actual explosions increased sharply in 1981 after an explosion at New York's Kennedy Airport. The explosion, which killed an airport employee, was attributed to the Puerto Rican Armed Forces of National Liberation (FALN). Publicized incidents or violence frequently generate additional attempts, often by persons or groups with no connection to perpetrators of earlier attacks.

APPENDIX

**CHRONOLOGY OF ATTACKS DIRECTED AGAINST
CIVIL AVIATION**

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CIVIL AVIATION

Following is a description of significant incidents or events affecting the security of civil aviation, arranged in reverse chronological order. Data has been collated from a broad spectrum of sources.

1987

Early 1987   **Hostages Taken in Lebanon**
Hostages of several nationalities were kidnapped by Shi'ite terrorists groups in Lebanon in January and February of 1987. Two West German hostages apparently were kidnapped as leverage to force the West German Government not to extradite TWA 847 hijacker Hamadei who was arrested in Berlin in January as he attempted to enter that country with explosives hidden in his luggage.

10 January 1987   **Hijack Thwarted-New York Air**
A mentally-ill passenger threatened to set fire to a New York Air jet enroute from Newark to Dulles International Airport near Washington, D. C. The man held a lighter under a small box which he claimed was explosive. He demanded to see Nation of Islam leader Louis Farrakham. The plane landed at Dulles and the passengers deplaned while the crew talked with the hijacker. He subsequently was arrested without incident.

5 January 1987   **Hostage Incident at Dallas Airport**
A young boy was taken hostage at the Dallas-Fort Worth Airport by a Syrian national who demanded to be flown to Egypt. After an eight-hour standoff, the man surrendered to police after falsely promised he could leave the

country. The man was arrested and the hostage was freed unharmed.

<u>1986</u>

25 December 1986 Hijack of Iraqi Airways B-737
Iraqi Airways Flight 163 was hijacked while enroute from Baghdad to Amman, Jordan. The aircraft crashed in northern Saudia Arabia during a confrontation between two to four terrorists and sky marshals on board. Sixty-two of the 107 persons on the aircraft were killed as a result of the shoot-out and the crash. Five terrorist organizations, including the Islamic Jihad, a fundamentalist Shi'ite Muslim faction, claimed responsibility for the hijack. Reportedly, a captured hijacker told interrogators that the plan was to force the plane to fly to Damascus and then to Tehran.

5 September 1986 Aircraft Seized at Airport-Pakistan
Pan American Flight 73 from Bombay to New York was seized upon landing in Karachi by terrorists dressed as airport security guards. The pilots escaped through a cockpit exit upon hearing the gunfire. The terrorists demanded a crew to fly the aircraft to Cyprus and emphasized their demands by shooting an American citizen. After a tense standoff for 13 hours, a generator providing power to the plane ran out of fuel or was turned off, cutting the lights on the plane. The terrorists opened fire upon the passengers believing a rescue attempt was under way. More than 17 were killed and over 125 were injured in the gunfire. The terrorists were apprehended. The hijack may have been planned to force the release of three men being held in Cyprus for the murder there of three Israelis last year.

3 September 1986 Hijack Thwarted-Eastern in Miami
A man checking into Eastern Airlines Flight 975 from Miami to San Juan was found by alert security agents to be carrying two bottles of gasoline in

his baggage. Under interrogation, the man, who came to the United States during the Mariel boatlift, admitted that he had intended to force the plane to go to Cuba.

16 August 1986   **Aircraft Shot Down-Sudan Airways**
A Sudan Airways plane was shot down by a SA-7 surface-to-air missle as it was departing Malakal for Khartoum on a domestic flight, killing all 60 on board. The Sudanese Peoples' Liberation Army claimed responsibility.

26 June 1986   **Bombing Thwarted-El Al in Madrid**
A bomb concealed in checked luggage prematurely exploded at Barajas Airport resulting in 13 persons injured and extensive damage to the El Al counter and nearby areas. A subsequent investigation revealed that the passenger checking the bag on El Al Flight 396 to Tel Aviv, Manual Jalafe, a Spanish national, was unwitting of the bomb. He apparently had been duped under the belief he was transporting drugs for an undisclosed amount of money. Nassar Hassam Ali of the Fatah Uprising, a PLO splinter group led by Abu Mousa, was implicated.

May 1986   **Bomb Plot Detected-Air India**
The Royal Canadian Mounted Police arrested five Sikh extremists in Montreal in an alleged plot to place a bomb on board an Air India flight out of New York.

2 May 1986   **Hijack Attempt-Eugene, Oregon**
A lone male seized a plane by claiming to have an incendiary and forced the pilot to fly south. He agreed to land for fuel but demanded water, parachutes, and maps. Following negotiations, the hijacker permitted the passengers and crew except for the pilot to deplane. The pilot escaped when the hijacker was distracted. The latter subsequently surrendered. There were no injuries.

17 April 1986	**Bombing Thwarted-El Al in London** Alerted by a passenger's "profile" during screening at Heathrow airport in London, El Al security inspectors found an explosive device in the luggage of Anne-Marie Murphy, an Irish national, who was booked on El Al Flight 016 to Tel Aviv. The bag contained a 13 pound charge of a Czech-made plastic explosive. Investigation revealed that the woman's lover, Nezar Hindawi, placed the bomb without her knowledge. Following his apprehension, Hindawi admitted links with Syrian intelligence in carrying out the attempt. Britain severed diplomatic relations with Syria.
2 April 1986	**Explosion In Flight-TWA.** A sophisticated explosive device placed under a passenger seat on a TWA flight enroute from Rome to Athens detonated as the aircraft was nearing its destination. The explosion blew a gaping hole in the passenger compartment, carrying four persons to their deaths and depressurizing the aircraft. Nine others were injured. A terrorist group identifying itself as the Arab Revolutionary Cells claimed credit for placing the bomb in retaliation for the limited encounter between U. S. naval forces and Libyan military units during the preceding month. The organization is possibly liked with the Abu Nidal group.
14 March 1986	**Hijack Attempt-Delta at Daytona Beach** A man entered undetected into the air operations area at the Daytona Beach, Florida airport as Delta Flight 655 was discharging passengers. He displayed a pistol, boarded the plane, and took the copilot hostage. Desiring to commit suicide, he demanded the plane be flown up and crashed. The copilot taxied the plane as to take off when a law enforcement officer fired at the craft, deflating a tire and hitting the fuselage. The hijacker eventually surrendered.

5 February 1986   Hijack Attempt-Delta at Fort Lauderdale
In an unsuccessful hijack attempt, a lone male grabbed a flight attendant and placed a knife to his throat. The other passengers deplaned and the flight attendant was able to escape. The hijacker was apprehended by law enforcement officers. No injuries resulted.

1985

There were 16 reported hijacking attempts during 1985, including three in the United States.

27 December 1985   Airports Attacked in Rome and Vienna
In a coordinated attack, terrorists stormed airports in Rome and Vienna. Thirteen were killed and 70 injured in Rome as the attackers fired into crowds near the El Al and adjacent TWA and Pan Am counters. The death toll included three of the four terrorists directly involved. The surviving terrorist was captured. There were three deaths and 47 injuries in Vienna. One terrorist was killed and the other two captured. Under questioning, the surviving terrorists stated they were members of the Fatah Revolutionary Council, a splinter group headed by Abu Nidal.

19 December 1985   Hijacking-Aeroflot
A lone armed man seized a domestic Aeroflot flight in eastern Russia and diverted the plane. The plane landed in a field near the international border in the People's Republic of China, apparently due to lack of fuel. The hijacker was taken into custody by Chinese authorities.

25 November 1985   Hijacking-Iran Asseman Airlines
Two men, possibly armed with a machine gun took control of a small passenger aircraft and ordered the pilot to fly to Dubai. The plane landed at the military airport where the hijackers surrendered to Dubai authorities. The

hijackers were returned to Iran under guard the following day.

23 November 1985
Hijack and Rescue-Egyptair
An Egyptair flight enroute from Athens to Cairo was hijacked and forced to land in Malta. During the takeover, one hijacker was killed by an in-flight security officer who was wounded along with two crew members. Singling out American and Israeli citizens, the terrorists killed two passengers and shot five others. In a poorly coordinated rescue attempt, an Egyptian special team landed in Malta and assaulted the aircraft. Fifty-seven passengers and two hijackers died in the incident. The hijackers claimed to be members of the "Egypt's Revolutionaries," indentified with Abu Nidal, but the Arab Revolutionary Command and the Organization of Egypt's Revolutionaries also claimed responsibility.

2 November 1985
Hijack Attempt-Iran Airways
A lone hijacker threatened to blow up a domestic flight from Bandar E'Abbas if the plane was not diverted. He was overpowered by in-flight security officers.

15 October 1985
Explosives in Luggage-Rome
Two Arab males were arrested in Rome following a search of their luggage upon arrival from Baghdad on Iraqi Airline. A 20-pound bomb was found in each of their bags in a concealed compartment. One man was quoted as saying he had intended to use the bombs against Israeli and American targets but not against the Italians.

7 October 1985
Bomb in Airline Office-Athens
An anti-Qadhafi group claimed responsibility for setting off a bomb at the Libyan Arab Airlines office in Athens. The blast caused considerable damage but no injuries.

30 September 1985   Bomb in Airlines Office-Amsterdam
A bomb exploded near an El Al Airlines office in Amsterdam. The Fatah Revolutionary Council claimed responsibility.

25 September 1985   Bomb in Airlines Office-Rome
A youth tossed a satchel containing a bomb into a British Airways ticket office in Rome. One person was killed and 14 were injured. The teenager was captured and claimed to be a member of the "Revolutionary Organization of Socialist Muslims," the same group which claimed responsibility for bombing airline offices in Madrid in July of that year.

27 August 1985   Bomb in Airline Office-Istanbul
A bomb exploded in the cellar of a building in which El Al Airlines offices were located. No injuries resulted. The Islamic Jihad Movement claimed responsibility for placing the bomb.

26 August 1985   Bomb on Plane-Haiti Air in New York
Alert security officers questioned a man who left a Haiti Air B-737 moments before it was to depart Kennedy Airport in New York. The man claimed that he had no other baggage but a claim stub was attached to his ticket envelope. Upon retrieval and inspection of the checked item, security officers found an explosive device.

5 August 1985   Hijack Attempt-Iran Airlines
Two men attempted to seize a domestic Iranian Airlines flight from Tehran to Bandar E'Abbas. One was shot and killed and the other arrested by in flight security guards.

22 July 1985   Bomb In Airline Office-Copenhagen
A Northwest Airlines office was bombed in Copenhagen resulting in the injury of 27 persons and caused considerable damage to the office. The Islamic Jihad Organization claimed it was responsible for the blast in a call made to a news agency in Beruit, Lebanon.

21 July 1985	Bomb In Airline Office-Beruit A bomb was exploded in a Kuwait Airlines office in Beruit.
14 July 1985	Bomb In Airline Office-Pakistan A bomb exploded in an office of Pan American in Karachi, Pakistan. A disaffected former employee was suspected for setting the bomb which caused extensive damage.
1 July 1985	Bomb Exploded at Airline Offices-Madrid Terrorists planted a bomb in the building housing TWA and British Airways ticket offices and attacked the office of the Jordanian airline ALIA. One person was killed and 27 wounded. Responsibility for the attack was claimed by the "Organization of the Oppressed."
1 July 1985	Bomb Exploded in Airport-Rome Fifteen baggage handlers were injured when a bomb exploded in luggage in an open air baggage bay under the main airport terminal. Authorities were unable to determine the point of origin or the destination of the luggage.
23 June 1985	Bomb On Board Aircraft-Air India Air India Flight 182, a B-747 enroute from Montreal to Bombay, was destroyed by a bomb and crashed near Ireland. The terrorist attack, attributed to Sikh extremists, killed all 329 on board.
23 June 1985	Bomb Exploded in Airport-Tokyo In a related incident, a bomb hidden in luggage exploded at Tokyo airport as a Canadian Pacific Flight 003 was being unloaded, killing two airport employees. The aircraft had arrived ahead of schedule only minutes before from Vancouver. Sikh extremists were blamed for this attack as well.
19 June 1985	Bombing at airport-Frankfurt An explosive device detonated at Frankfurt's international airport, killing three persons and wounding 42 people. Responsibility was claimed by

the Arab Revolutionary Council believed linked to Abu Nidal.

14 June 1985	**Hijacking-TWA** TWA Flight 847 was hijacked by two Shi'ite terrorists with alleged ties to the Imam Hussein Brigade of the Islamic Jihad Organization. The hijackers boarded the Rome-bound aircraft in Athens and forced to it to fly between Beruit and Algeria several times before returning to Beruit. One American citizen was killed and 39 of the 145 passengers were held hostage in Beruit for over two weeks. After first demanding the release of Shi'ite terrorists held in a Kuwaiti jail since the 1983 bombing of the U. S. Embassy, the captors holding the hostages then called for the release of Shi'ites detained by Israel. Israel released 735 Lebanese prisoners shortly after the hostages were freed. The incident led to renewed international pressure to tighten airport security. The involvement of Syria and Iran in sponsoring the hijack incident has since been raised.
11 June 1985	**Hijacking-ALIA in Beruit** Five Shi'ite terrorists seized a Royal Jordanian ALIA B-727 at Beruit Airport as it was preparing to depart for Amman, Jordan. The aircraft was diverted to Larnaca, Cyprus, after limited fuel prevented the hijackers form going to Tunis. The plane was then taken to Palermo, Sicily, where the hijackers demanded the departure of all Palestinian guerrillas from Lebanon. The plane eventually returned to Beruit where the terrorists released the passengers and crew and then destroyed the cockpit with explosives. The hijackers departed in waiting vehicles and disappeared into a Shi'ite-controlled suburb in Beruit.
4 April 1985	**Rocket Attack on Aircraft on Ground** Two rocket propelled grenades were fired at a Jordanian ALIA aircraft preparing to take off from the Athens,

Greece, airport. The plane was hit but sustained only minor damage. No passengers were killed.

1 April 1985	**Bomb at Airline Office-Rome** A powerful bomb exploded at the Syrian Arab Airlines office in Rome, slightly injuring three people and causing considerable damage. No group has claimed responsibility for the attack.
21 March 1985	**Attack on Airline Offices-Rome, Athens, and Nicosia** Jordanian airlines (ALIA) offices were attacked in Rome, Athens, and Nicosia, Cyprus, in a coordinated attack. Three persons were wounded in Athens and two in Rome.
9 March 1985	**Bomb on Aircraft-Abu Dhabi** A bomb exploded in luggage on board a Jordanian ALIA plane on the ground in Abu Dhabi. The plane had arrived ahead of schedule from Karachi. There were no injuries.
27 February 1985	**Hijacking-Lufthansa** Two Syrians being deported from Germany used knives and broken bottles to take control of a Lufthansa flight enroute to Damascus. The hijackers forced the pilot to land in Vienna where they demanded political asylum in Austria without being tried for air piracy. After five hours of negotiations, the hijackers surrendered to Austrian authorities. There were no injuries.
23 February 1985	**Hijacking-Middle East Airlines in Beruit** An armed airport security guard seized a Middle East Airlines B-707 as passengers were boarding at Beruit Airport. The hijacker ordered the passengers to deplane using the emergency chutes. When other security officers began firing at the aircraft, the hijacker forced the plane to take off. At least one passenger was killed and others injured by the jet exhaust. With doors open and the emergency chutes dangling, the plane was flown to

Cyprus. The disgruntled guard claimed he was upset by the low pay for security personnel and the high cost of living in Lebanon. The guard's supervisor in Lebanon persuaded him to return with the promise that he would not be harmed. The plane was flown back to Lebanon and the hijacker left the plane.

7 February 1985   Hijack Attempt-Cyprus Air in Beruit
Shi'ite terrorists drove onto the runway at Beruit Airport as a Cyprus Airways jet was preparing to take off. The group fired at and boarded the aircraft. They demanded the release of two men being held in jail in Cyprus. The hijacking ended after five hours of negotiations when Cyprus authorities agreed to consider their demands. There were no injuries.

18 January 1985   Hijack Attempt-Eastern
A Cuban refugee seized Eastern Flight 403 enroute from Newark to Miami and threatened to blow up the A-300 craft if he was not taken to Cuba. The pilot landed at Orlando, Florida after telling the hijacker they were in Cuba. The perpetrator was apprehended and the hijacking was terminated without injuries. He carried no explosive nor flammable liquids.

4 January 1985   Hijack Attempt-Pan American at Cleveland
A female hijacker attempted to hijack Pan American Flight 558 out of Cleveland to Brazil. Two persons were wounded before she was apprehended.

1984

Twenty-eight hijacking attempts occurred worldwide. Five of the seven reported in the United States were directed against scheduled air carriers.

4 December 1984   Hijack-Kuwait Airlines.
A Kuwait Airlines plane was seized by five Shi'ite terrorists after departing Dubai and forced to land in Tehran. The hijackers reportedly were closely

connected to the Shi'ite terrorists responsible for the 1983 bombings of the United States Embassy and Marine headquarters in Lebanon. American, British, and Kuwaiti nationals on the flight were separated from other passengers and subjected to harsh treatment. Two U. S. citizens were killed by the terrorists in pressing their demands for the release of prisoners held in Kuwait for involvement in a bombing attack in December of the preceding year. Iranian security forces stormed the plane on 9 December and freed the hostages without further injury.

1983

There were 34 reported hijack attempts in 1983. Nineteen of these occurred in the U. S., all but one involving scheduled air carriers.

23 September 1983 Explosion In Flight-Gulf Air
A Gulf Air aircraft exploded in flight near Abu Dhabi, killing all 111 on board. The Arab Revolutionary Brigades (Abu Nidal's group) claimed credit for the attack launched allegedly in response to "fascist measures" directed against Palestinians in the emirates.

17 July 83 Airport Bombing-Paris
Seven were killed and over 30 injured when a bomb exploded near a Turkish Airlines counter at Orly Airport. The Armenian Secret Army for the Liberation of Armenia claimed responsibility for setting the explosive device.

July 1983 Hijacking-Iran Air Lines
An Iranian Air Lines B-747 on a domestic flight was hijacked by six persons and diverted to Paris. The hijackers, claiming they were fleeing Khomeini's government, surrendered to French authorities. There were no injuries as a result of the incident.

1982

There were 32 hijacking attempts this year. Nine of the ten attempts in the U. S. involved scheduled air carriers.

30 December 1982
Attempted Hijack-United Air Lines
A lone hijacker seized control of an United B-727 enroute from Chicago to Pittsburgh and ordered it flown to Washington, D. C. After landing at Pittsburgh for fuel, the hijacker intended to release some hostages but all, including the crew, deplaned in the confusion. Alone on the plane, the hijacker finally surrendered.

16 December 1982
Explosive Device in Airport-Honolulu
A low power explosive device was found in Honolulu by a cleaning crew.

27 October 1982
Hijack Attempt-TWA
A lone hijacker attempted to seize a TWA L-1011 aircraft on the ground at Los Angeles Airport. He was armed with a knife. The hijacker was tricked into opening a door and was overpowered.

24 September 1982
Extortion Bomb Threat-American Airlines
An extortion demand of $400,000 was made to the airline, claiming a bomb had been placed. A search revealed a pipe bomb in luggage checked on Flight 75 from Los Angeles to San Diego.

September 1982
Attack on Airport-Ankara
Two members of the Armenian Secret Army for the Liberation of Armenia attacked the airport in Ankara, killing ten and injuring 80. The surviving terrorist told Turkish authorities that the weapons used in the attacked had been furnished by the Abu Nidal group.

25 August 1982
Bomb Found on Plane-Pan American
Several hours after a Pan Am B-747 arrived in Rio, Brazil from Miami, a maintenance worker found a bomb under a passenger seat. It was safely removed.

16 August 1982	**Attempted Hijack-West Palm Beach, FL** A Latin male attempted to hijack a Dolphin Airways EMB-110 to Cuba from West Palm Beach Airport. He claimed to have an explosive device. The hijacker was apprehended without any damage or injuries occurring.
11 August 1982	**Explosion In Flight-Pan American** An explosive device detonated under a seat in the passenger compartment of a Pan American B-747 enroute from Tokyo to Honolulu. One passenger was killed and 14 others injured by the explosion which ripped the floor over the baggage compartment and bulged the outer shell of the aircraft. The plane was not depressurized, however, and the pilot landed successfully at Honolulu.
August 1982	**Attack on Airport-Ankara** Armenian terrorists attacked Ankara International Airport, killing nine and wounding over 70. Both attackers were killed. The Armenian Secret Army for the Liberation of Armenia claimed responsibility for the attack.
4-20 September 1982	**Hijacks of Domestic Flights-Air India** Sikh extremists hijacked two Air India flights inside India.
22 July 1982	**Hijack-Air Florida** Two Latin males took over Air Florida Flight 39 from Miami to Key West and demanded to be taken to Cuba. The hijackers poured a liquid smelling like gasoline on the plane floor, seats, and splashed some on a flight attendant to reinforce their demands.
Summer 1982	(Israeli forces invaded Lebanon).
5 April 1982	**Hijack Attempt-Delta Airlines** Delta Flight 591 out of Chicago was seized by a hijacker demanding to be taken to Cuba. The hijacker threatened to ignite a liquid material.
1 March 1982	**Hijack Attempt-United Airlines** United Flight 674 out of Chicago was

seized by a hijacker demanding to be taken to Cuba. The hijacker claimed to have explosive or flammable material

16 February 1982   Potential Hijack Thwarted-Amarillo, TX.
A male fitting the profile of a potential hijacker was subjected to a special search in the jetway leading to an aircraft then in the boarding process. The aircraft door was closed as a precaution. During the patdown search, a handgun was detected on the passenger. At this point, the man drew the weapon and began firing. The two searchers fled and responding police exchange gunfire before the man surrendered. There were no injuries. During interrogation, he admitted his intent to hijack the aircraft.

2 February 1982   Hijack Attempt-Air Florida
Air Florida Flight 710 was hijacked from Miami to Cuba by a Latin male claiming to be carrying explosives or flammables.

1981

Thirty-two hijacking attempts were reported in 1982. Seven of the eight attempts in the United States involved scheduled air carriers.

18 September 1981 Hijack-LOT (Polish)
Twelve persons were involved in the hijack of a LOT flight enroute from Katowice to Warsaw. The plane was forced to West Berlin where the hijackers surrendered to local authorities.

10 July 1981   Hijack Attempt-Eastern Air Lines
A Chicago to Miami L-1011 flight was seized by two Latin males who were accompanied by their wives and children. The hijackers threatened to ignite bottles of flammable liquid and demanded to be transported to Cuba.

16 May 1981   Bomb Exploded-JFK Airport, New York
An airport employee was killed when a pipe bomb exploded in a restroom at JFK

airport. The blast also caused considerable damage to the adjacent Pan Am counter. Shortly after the explosion, a caller claiming to be with the Puerto Rican Armed Resistance Group warned that two additional bombs had been placed at the airport and also one on Pan Am Flight 403 then enroute to Guatemala City. The two bombs were found at the airport but a search of the aircraft conducted after an emergency landing revealed no explosive device. This occurred during a period of extremely high bomb threats in the New York area. In the first half of 1981, seventy of the 270 bomb threats directed against airports were received by JFK. Nearby La Guardia Airport received 25 during this same period.

4 May 1981   Extortion Threat-Pittsburgh Airport
A caller claimed a bomb had been placed on board a USAir flight from Pittsburgh to Phoenix and stated that proof of his threat could be found in a parcel in the airport restaurant. The bag was found to contain components for a workable bomb except for a fuze. The caller demanded one-half million dollars to tell how the alleged bomb on the flight could be defused. A search of the aircraft revealed no bomb.

10 April 1981   Hijack Attempt-Eastern Airlines
A lone man attempted to hijack a New York-to-Miami Eastern Airlines flight to Cuba. He claimed to be carrying an explosive liquid and threatened to blow up the A-300 if his demands were not met. He was overpowered by crew and passengers was accidentally asphyxiated.

30 March 1981   Hijack and Rescue-Thailand
Terrorists belonging to an Islamic fundamentalist group hijacked an Indonesian airliner to Thailand. An Indonesian special force assaulted the craft and rescued the hostages.

1981   Attacks on Airline Offices By Armenians
During 1981, Armenian extremists were

involved in bombing incidents against at least nine airline offices in several countries, including the U. S. and occupied two airline offices for brief periods.

4 April 1981	**Explosion at Airport-Washington, D. C.** A military explosive simulator detonated in a restroom at National Airport in Washington, D. C. Two custodial employees were slightly injured by the blast.
5 March 1981	**Attempted Hijack/Extortion-Los Angeles** A lone gunman seized a Continental B-727 on the ground at Los Angeles Airport. Claiming to be carrying explosives, the man demanded a $3 million ransom. He subsequently surrendered to authorities with no injuries nor damage resulting from the incident.
5 February 1981	**Attempted Hijack-Eastern Airlines** A lone male attempted to hijack a New York-Puerto Rico Eastern Airlines L-1011 to Cuba. The hijacker was overpowered.

1980

There occurred 41 hijacking attempts worldwide. Twenty-two took place in the United States, all but one directed against scheduled air carriers.

12-17 September 1980	**Hijack Attempts-Eastern and Delta** Hijackers, using flammable materials to support their demands, seized four aircraft over a several day period and attempted to force the aircraft to Cuba.
July 1980	**Plot to bomb El Al plane-Brussels** Police officers, acting on sensitive information, discovered explosives in the room of a suspect. He admitted his intent to attack an El Al aircraft.
1980	(Mariel boat lift from Cuba to the U. S.)
25 January 1980	**Hijacking-Delta** A hijacker claiming he was a Black Muslim took over a Delta L-1011 flying

between Atlanta and New York. He forced the plane to Havana where he demanded to be flown to Iran. Some passengers were successful in escaping from the plane. Cuban authorities blocked the runway, preventing take off. The man surrendered at that point.

1979

Twenty-seven hijacking were reported in 1979. Eleven of the 13 attempts occurring in the U. S. were directed at scheduled air carriers.

26 November 1979   Airline Offices Attacked-Madrid
The city offices of TWA and British Airways were bombed in Madrid. Two injuries resulted. An Armenian group claimed credit for the incidents.

1979   Bombing of Aircraft at Airport-Eastern
An Eastern Air Lines plane was bombed while parked overnight in Guatemala City. The attack was carried out by leftist terrorists in an effort to dissuade tourism with resultant denial of revenue to the government. Eastern suspended operations to Guatemala.

27 January 1979   Hijack Attempt-United Air Lines.
An attempt to take over a Los Angeles to New York United Airline flight was made by a woman who claimed to have nitroglycerin. She threatened to blow up the plane if a prepared note was not broadcast in the Los Angeles area. She was overpowered and captured. The hijacker carried no explosive material.

1978

There were 31 hijackings worldwide. Of the thirteen in the U. S., eight were directed against scheduled air carriers.

18 February 1978   Botched rescue of hijacked plane-Cyprus.
After killing an Egyptian editor in Cairo, two terrorists hijacked an Cypriot plane and forced it to land at Larnaca, Cyprus, after landing was

denied in Libya, Algeria, and other locations. In an uncoordinated rescue attempt, an Egyptian military unit landed and tried to rush the aircraft but were fired upon by The Cyprus National Guard. Fifteen were killed and 22 were injured in the failed rescue. After the confrontation, the hijackers released their hostages and surrendered to Cypriot authorities. The hijackers were believed members of the Adu Nidal group.

1977

There were 32 hijacking attempts worldwide, six of which occurred in the U. S. Five of the six were directed against scheduled air carriers.

November 1977   Plot to Shoot Down Plane-Kenya
Two West Germans were arrested near Nairobi airport with surface-to-air missles (SAM-7). Their intended target was El Al Airlines, apparently in response to the 1976 Entebbe rescue which was staged through Nairobi.

20 October 1977   Hijack Attempt-Frontier Airlines
A hijacker pulled a shotgun at a screening station at Grand Island, Nebraska, and seized a Frontier B-737 which he forced to Atlanta in an effort to obtain the release of a jailed friend. He also demanded $3 million ransom and parachutes. The hijacker killed himself when he realized his demands would not be met.

13 October 1977   Hijack and Rescue-Lufthansa
Lufthansa Flight 181 was seized by PFLP terrorists over Germany and diverted to Mogadishu, Somalia after stops in Cyprus, Bahrain, Dubai, and South Yemen. The terrorists were acting in behalf of the Baader-Meinhof gang to reinforce the demands of the kidnappers of Hans Schleyer in Germany. They demanded the release of eleven held in German jails and two Palestinians in Turkey as well as a ransom. The pilot was killed by the hijackers to

underscore their demands. On 18 October, a German special counter-terrorist team (GSG-9) assaulted the aircraft and rescued the hostages. None of the remaining 86 hostages nor any commandos were killed in the rescue.

October 1977	**Airport Attack-Abu Dhabi** Terrorists belonging to the Abu Nidal group attacked the Abu Dhabi airport in an attempt to assassinate the Syrian Foreign Minister. The latter escaped injury but the Foreign Minister of the United Arab Emirates was killed.
28 September 1977	**Hijack-Japan Air Lines** Japanese Red Army terrorists seized a Japan Air Lines flight, diverting it to Dacca, Bangladesh, and ultimately to Algeria. The terrorists demanded and received $6 million and the release of six jailed comrades.
25 May 1977	**Airlines Office Bombed-Ft. Lauderdale** An anti-Castro group bombed the offices of Mackey International Airlines in Fort Lauderdale, Florida, after the company announced it would offer air services to Cuba. The plan was cancelled as a result of the attack.
15 April 1977	Cuba rescinded the anti-hijacking agreement with the U. S. on this date.

1976

Eighteen hijackings occurred worldwide, including four in the United States. Two of the four were directed against scheduled air carriers.

6 October 1976	**Explosion In Flight-Cubana Airlines** A bomb exploded on a Havana-bound Cubana Airlines plane near Trinidad, killing all 73 on board. Cuban exile leader Orlando Bosch of the Commandos of Unity Revolutionary Organizations (CORO) was jailed in Venezuela on charges that he was responsible for the attack.

10 September 1976 Hijacking-TWA

Five Croatian nationalists seized a TWA fight enroute from New York to Chicago after bypassing screening with faked or stolen airline employee identification passes. The group claimed they had a bomb with them and had left a second bomb in a Grand Central Station locker to add credibility to their claim. The latter was found and a bomb expert was killed as he attempted to dismantle the device. The short-range aircraft was forced to France, making several refueling stops.

2 July 1976

Aircraft Bombed on Ground-Boston
An Eastern Electra aircraft was totally destroyed while out of service at Logan Airport in Boston. One person was injured.

28 June 1976

Hijack and Rescue-Entebbe
Eight terrorists seized an Air France airliner over Greece and diverted it to Entebbe, Uganda. The hijackers demanded the release of prisoners held in various countries. In a well-executed plan, Israeli commandos attacked the airport terminal where the hostages were being held. One hundred four hostages were rescued after a fire fight with the terrorists and Ugandan troops. The terrorists included Germans and Palestinians. Killed were three hostages, one Israeli commando, seven of the 10 terrorists present, and 20 Ugandan soldiers.

25 May 1976

Bomb Exploded In Airport-Tel Aviv.
A bomb concealed in luggage exploded at Ben Gurion airport in Tel Aviv, killing two persons.

1 January 1976

Bomb Exploded On Aircraft-Middle East
A Middle East Airlines (Lebanon) jet was destroyed by an explosion in the baggage compartment and crashed in Saudia Arabia while enroute to Dubai from Beruit. Eighty-two persons were killed.

1975

Twenty-five hijacking attempts occurred worldwide, including 12 in the U. S. Six of the 12 attempts reported in the U. S. were directed against general aviation.

19 December 1975 Explosion at Airport-New York
A bomb exploded in a luggage locker at La Guardia Airport in New York. Eleven persons were killed, 70 were injured and extensive damage was sustained.

17 October 1975 Explosion at airport-Miami
A bomb exploded in a locker at Miami International Airport causing damage but no injuries.

1975 Thwarted Surface to Air Attack-Kenya
A plot to shoot down an El Al airliner near Nairobi with SA-7 surface to air missles was thwarted.

1975 Surface to Air Attack-Rhodesia
A Rhodesian airliner was shot down by a SA-7 missle.

13-19 January 1975 Rocket Attack/Hijack-Paris
Two attempts were made to destroy an El Al airliner on the ground at Orly Airport in Paris using rocket propelled grenades (RPG-7). On the first attempt, terrorists missed the El Al craft and hit a nearby Yugoslavian airliner and terminal. The second attempt also failed, leading to a hostage situation and the commandeering of a plane to Lebanon. "Carlos" and the PFLP were involved in the two incidents.

1974

There were 26 hijacking attempts worldwide during the year. This included seven in the U. S., four of which were directed against scheduled air carriers.

22 November 1974 Hijacking-British Airways
Four terrorists seized a British Airways jet in Dubai and forced it to Tunis. The hijackers demanded the release of fellow terrorists held in

Eqypt and also that Yassar Arafat and the PLO delegation not appear before the United Nations General Assembly. One hostage was killed before the terrorists surrendered. The attack was attributed to the Abu Nidal group.

8 September 1974   Explosion In Flight-TWA
A suicide bombing attack apparently was responsible for the destruction of a TWA airliner enroute from Tel Aviv to New York. The plane, carrying eighty-eight persons on board, crashed off Greece with no survivors. A spokesman for a group describing itself as the Arab Nationalist Youth for the Liberation of Palestine claimed that one of their members exploded a charge carried around his waist.

3 March 1974.   Hijacking-British Airways
A British Airways plane was hijacked by two PLO terrorists after departing Beruit. The plane was commandeered to Amsterdam where the terrorists burned it after releasing the passengers and crew.

1973

There were 22 hijacking attempt worldwide but only two in the United States following implementation of a screening procedure for all passengers and carry-on baggage and an anti-hijack agreement with Cuba.

27 December 1973   Airport Attack-Madrid
Five male terrorists opened fire in the Madrid airport lobby and attacked a Pan Am flight then in the boarding process. They then seized a Lufthansa airliner and ordered the pilot to Beruit. Denied permission to land in Lebanon, the aircraft diverted to Athens where the hijackers demanded the release of two Black September terrorists held since captured following an attack on the Athens airport in August 1973. The plane was ordered to Kuwait after the jailed terrorists refused to board. The hijackers surrendered to Kuwaiti authorities who later turned them over

to the PLO. Thirty-two persons were killed in the attack and hijack, most on the destroyed Pan Am aircraft.

25 November 1973	**Hijack-KLM Airlines** A KLM aircraft enroute to New Delhi and Tokyo from Beruit was seized in Iraqi airspace and was diverted first to Cyprus and then to Malta. The hijack was resolved when the hostages were released and the terrorists were permitted to leave for Syria. The Arab Nationalist Youth Organization claimed responsibility but this incident is believed the first terrorist action directed against civil aviation by Abu Nidal.
October 1973	(The Yom Kippur War resulted in a psychological victory for Arabs).
16 August 1973	**Hijack-Middle East Airlines** A lone hijacker seized a Libya to Lebanon flight and diverted the aircraft to Tel Aviv, allegedly to "help create peace." The emotionally disturbed individual was taken into custody without injuries resulting.
5 August 1973	**Aircraft Attacked on Ground-Athens** A TWA flight from Athens to New York was attacked by the Black September terrorist organization at the Athens airport. Four were killed and 70 injured in the attack.
20 July 1973	**Hijack-Japan Air Lines** A JAL B-747 enroute from Amsterdam to Tokyo was hijacked and diverted to Benghazi, Libya, where it was destroyed after those on board had disembarked. The terrorists included one member of the Japanese Red Army, three Palestinians, and a Latin American. The latter was accidentally killed when the grenade she was carrying exploded.
19 July 1973	**Attack on Airline Office-Athens** An attempt was made to attack the El Al Airlines office in Athens by a terrorist allegedly a member of the Organization of the Victims of occupied

Palestine. The attack was thwarted when a police guard locked the bullet-resistant door before the attacker could enter.

4 April 1973	**Surface-to-air Attack thwarted-Rome** Italian authorities thwarted a plot to shoot down an El Al airliner with a surface-to-air heat seeking missle.
February 1973	**Anti-hijack Agreement** The United States and Cuba signed a five year anti-hijack agreement under which both parties pledged to prosecute or return air or ship hijackers.
January 1973	**Passenger Screening Implemented** Mandatory screening of all passengers and carry on articles was implemented in the U. S.

1972

Sixty-two hijacking attempts occurred worldwide of which one-half (31) took place in the U. S. Of the latter, 27 were directed against scheduled air carriers.

10 November 1972   Hijacking-Southern Airways
Henry Jackson and two others hijacked a Southern Airways DC-9 after departure from Birmingham, Alabama, and attempted to extort $10 million from the city of Chicago. The plane was forced to fly over Chicago and over Oak Ridge, Tennessee, where Jackson threatened to crash the plane into the nuclear reactor at that location. This threat created panic in the Oak Ridge area and prompted an evacuation by many people. After receiving a small ransom and landing in five airports, the trio forced the craft to Cuba where they sought refuge. Refused by the Castro government, Jackson ordered the plane returned to the U. S. but subsequently returned to Havana for the second time in 24 hours where they surrendered to Cuban authorities. This incident was influential in the development of an anti-hijack agreement between the U. S. and Cuba which was signed in February 1973.

29 October 1972   Fugitive Hijacking-Washington, D. C.
Following a bank robbery in the
Washington, D. C. area, several crim-
inals seized an aircraft in Houston and
forced it to Cuba. A ticket agent was
killed and an employee was wounded.

6 October 1972   Bomb Exploded-Royal Jordan Air Lines
A bomb exploded in a suitcase in
Beruit. The baggage was checked on a
Jordanian aircraft but had not yet been
loaded when the explosion occurred.

September1972   Hijacking for Prisoner Exchange-Lufthansa
A Lufthansa flight enroute to Zagreb
was hijacked by Palestinian terrorists
who successfully forced the release of
three of their members captured earlier
that month during the massacre of
Israeli athletes at the Munich
Olympics.

15 September 1972   Hijacking-Swedish Air Services Aircraft
Croatian emigres hijacked a SAS air-
liner and ransomed its passengers for
Croatian terrorists held in Swedish
jails.

16 August 1972   Explosion In Flight-El Al Airlines
An explosive device detonated in the
baggage compartment of an El Al B-707
aircraft on a Rome to Tel Aviv flight.
The explosion ripped a small hole in
the fuselage and injured four but the
plane was landed safely. The severity
of the damage was limited by prior
reinforcement of the baggage compart-
ment with armor plating. The bomb had
been concealed in a tape recorder given
to a British girl by a young Arab she
had met in Rome.

31 July 1972   Hijacking-Delta Air Lines
Two hijackers claiming to be sympa-
thizers of the Black Panthers seized a
Delta Airlines plane over Florida.
They received a demanded one-million
dollar ransom before forcing the plane
to Algeria.

3 June 1972	**Hijacking-Western Airlines** A lone gunman took over a Western Airlines flight in the U. S. and hijacked it to Algeria after exchanging the passengers for $500,000. He claimed to be a member of the Black Panther organization.
30 May 1972	**Attack on airport-Tel Aviv** Upon arrival on an Air France flight, three members of the Japanese Red Army (JRA) attacked Lod Airport in Tel Aviv with automatic weapons and grenades. Twenty-five were killed and over 70 wounded, mostly Christian pilgrims from Puerto Rico. Two of the three terrorists were killed in the apparent suicide attack. The terrorists were acting on behalf of the PFLP and apparently had received assistance from Italian terrorists prior to boarding the Air France flight in Rome.
28 May 1972	**Hijack-Sabena Airlines** Palestinian terrorists hijacked a Sabena Airlines craft out of Vienna and diverted it to Tel Aviv where they demanded the release of a hundred prisoners. The aircraft was assaulted by security personnel dressed as mechanics. Two of the attackers were killed and the other two were captured.
21 February 1972	**Hijack-Lufthansa** A Lufthansa B-747 enroute from New Delhi was hijacked by Palestinian terrorists who diverted the aircraft to South Yeman. The hijackers, claiming to be from the "Organization for Victims of Zionist Occupation" demanded $5 million and the release of jailed comrades for not destroying the plane and harming the hostages. The ransom was paid and the jailed terrorists were released.
26 January 1972	**Explosion In Flight-Sweden** A Stockholm to Belgrade aircraft was destroyed in flight by a bomb explosion which killed all 26 on board. Responsibility for the act was claimed by a Croatian exile group.

1971

Fifty-eight hijacking attempts occurred worldwide in 1971, including 27 in the U. S.

Violence against civil aviation carried out by Palestinian terrorists during the year were directed primarily against Jordanian aircraft in reaction to the expulsion of the PLO from Jordan.

12 November 1971   Parachuting Hijacking Extortionists.
Paul Joseph Cini hijacked a Canadian airliner and demanded a parachute and $1.5 million in ransom under threat of blowing up the plane. Cini claimed to be a member of the Irish Republican Army. He was overpowered and captured while distracted. His novel tactic was copied, however. D. B. Cooper seized an aircraft near Seattle, Washington, on 24 November and demanded four parachutes and $200,000. After releasing most of those on board when the plane landed in Seattle, he ordered the pilot to fly on a specific course. He jumped from the aircraft over a rugged isolated area of the North West and, despite an intensive search, was not found. At least five similar "parachute" hijacking attempts occurred in the weeks following Cooper's successful incident.

1970

There were 83 hijacking attempts worldwide. This included 27 in the U. S., all but two of which were directed against scheduled airliners.

10 November 1970   Hijacking-Saudi Arabian Air
A domestic flight of Saudia Arabian Airlines was hijacked and forced to Damascus.

9 November 1970   Hijacking-Iranian Air Lines
An Iranian aircraft was seized in Dubai and forced to Teheran by fleeing criminals.

September 1970   (Jordanian military ejected the PLO from Jordan in a bloody defeat that

came to be known as the Black September).

6-10 September 1970 Hijackings to Dawson Field,Jordan

A TWA 707 traveling from Frankfurt to New York and a Zurich=to-New York Swissair DC-8 were hijacked to Dawson Field near Amman, Jordan, by Palestinian terrorists. A simultaneous attempt over England to hijack an El Al 707 enroute from Amsterdam to New York was foiled. Security agents on board killed one terrorist and captured Leila Khaled who was later turned over to British authorities after the plane landed in London. A Pan Am B-747 was seized shortly after departing Amsterdam and was diverted to Cairo where it was later burned by the hijackers. On 9 September, a British Airways VC-10 on a Bahrain to London flight was seized and also was diverted to Dawson Field. On 10 September, seven Palestinian prisoners, including Leila Khaled, were exchanged for the fifty-six remaining passengers held hostage at Dawson Field. The terrorist subsequently destroyed the aircraft. The total value of the four planes destroyed in this coordinated attack against civil aviation was over $55 million.

22 July 1970 Hijack-Olympic Airways

An Olympics Airways 727 flight from Beruit to Athens was seized by Palestinian terrorists, resulting in the release of two of their members held in Greece for their role in an attack on an El Al office in Athens in 1969.

31 March 1970 Hijack-Japan Air Lines

Nine youths belonging to the Japanese Red Army hijacked a JAL B-727 on a domestic flight and forced it to North Korea and a tense five day interim stop in South Korea.

21 February 1970 Explosion In Flight-SwissAir and Austrian Airlines

A aircraft of Austrian Airlines was severely damaged by an explosion but

the pilot succeeded in landing without further incident. On the same day, a bomb exploded on a SwissAir flight, killing all forty-seven on board. The explosive devices were activated by altitude or pressure switches set to go off at 10,000 feet. Hidden in mail for Israel, these bombs probably were intended for an El Al flight. The PFLP was considered responsible although it did not admit the attacks.

10 February 1970   Hijack Attempt of El Al-Munich
Three terrorists made an unsuccessful attempt to hijack an El Al aircraft on the ground at Munich. One person was killed and eleven were injured in the attack. The three were captured by police.

1969

Eighty-seven hijacking attempts occurred in 1969. Sixty-three of the successfully seized aircraft were flown to Cuba, including 37 of the total 40 aircraft hijacked in the U. S. during the year.

December 1969   Hijack Attempt Foiled-Athens
Three terrorists were arrested when weapons were found in baggage being taken on board a TWA flight in Athens. Interrogation revealed their intent to have hijacked the aircraft.

26 December 1969   Hijack-United Air Lines
A lone hijacker seized a United flight between New York and Chicago and forced the pilot to fly to Cuba.

27 November 1969   Attack on El Al Office-Athens
Palestinian terrorists attacked an El Al Airlines ticket office in Athens. Two persons, including a small child, were killed. The terrorists were captured and jailed.

29 August 1969   Hijack-TWA
A TWA flight enroute from Rome to Tel Aviv was hijacked by Palestinian terrorist Leila Khaled and diverted to

Damascus. Four persons were wounded.

18 February 1969   Attack on El Al Aircraft-Zurich
The PFLP unsuccessfully attacked an El Al airliner on the ground in Zurich. Two were killed, including one of the terrorists, and five were injured. The surviving terrorists were captured.

1968

There were 38 reported hijacking attempts during 1968 with 23 occurring in the United States. Thirty-two hijacked flights were flown to Cuba.

26 December 1968   Attack on El Al Aircraft-Athens
Palestinian terrorists attacked an El Al aircraft on the ground at Athens with automatic weapons and grenades. One passenger was killed and two of the crew were injured. Two terrorists were captured.

23 July 1968   El Al Aircraft Hijacked by PFLP
El Al Flight 426 from Rome to Tel Aviv was hijacked by three men and forced to Algeria. After holding the passengers hostage for several weeks in the plane, the incident was resolved with the release of 15 Palestinians held in Israel in exchange for the hostages. The PFLP claimed credit for this first and only (to date) successful hijacking of an El Al aircraft.

1967

Seven attempted hijackings occurred worldwide during the year.

30 June 1967   Hijack-Spain
A chartered aircraft with Moise Tshombe, Prime Minister of the Congo, on board was seized on a flight from Mallorca, Spain, and was forced to Algeria. Tshombe was held by the Algerians until he died in 1969.

June 1967   (Six Days War between Israel and neighboring Arab states).

1966

There were five reported hijack attempts in 1966.

27 March 1966   Hijack Attempt-Cuba
                   A lone hijacker seized a Santiago to
                   Havana flight and tried to force the
                   pilot to fly to Miami. The pilot and a
                   guard were killed when the hijacker
                   realized the pilot had landed instead
                   in Cuba.

1965

Four hijacking attempts were reported worldwide in this year.

26 October 1965   Hijack Attempt-National Air Lines
                   A man attempted to take over a Miami to
                   Key West flight but was overpowered.
                   Three weeks later, another National
                   flight was interrupted in an unsuc-
                   cessful hijack attempt.

1964

Three reported hijacking attempts occurred.

18 February 1964   Hijack of Private Charter
                   Two men seized a private charter
                   aircraft flying between Miami and Key
                   West and forced it to Cuba.

1963

Only one hijacking was reported in 1963.

28 November 1963   Hijack-Avensa (Venezuela)
                   Six persons hijacked a domestic flight
                   by Avensa Airlines and forced the plane
                   to Trinidad. Authorities there extra-
                   dited the hijackers to Venezuela.

1962

There were three recorded hijack attempts during the year.

1959-61

Eighteen hijacking attempts were recorded during these three years. Twelve were carried out by Cuban refugees fleeing the Castro government.

3 August 1961   Hijacking-Continental Airlines
                                     Paroled convict Leon Berden seized a Continental 707 airliner near Phoenix, Arizona, and ordered it to Cuba.

24 July 1961   First Hijacking to Cuba-Eastern Airlines
                                     An Eastern Airlines Electra was seized while enroute from Miami to Tampa and was commandeered to Havana in the second hijacking in the U. S. The aircraft was held by the Castro government in retaliation for court impoundment of Cuban craft hijacked to the United States.

1 May 1961   Hijack-National Air Lines
                                     A National Airlines Convair 440 was taken over on a Marathon (Florida)-to-Key West flight and was forced to Cuba. This was the first incident of hijacking involving U. S. commercial aircraft.

1945-52

There were 21 recorded hijackings during the period, 18 of which were committed by East Europeans fleeing to the West.

9 September 1949   Bomb on Aircraft-Quebec Airways
                                     A bomb exploded in the baggage compartment of a DC-3 flying over Canada. All 23 persons on board were killed.

7 May 1949   Bomb on Aircraft-Philippine Airlines
                                     A DC-3 was destroyed by an explosion and crashed into the sea near Manilla. Thirteen passengers and crew were killed. Investigation revealed a woman had hired two men to set the bomb to kill her husband who was a passenger on the flight.

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