



**SAFETY IN AND AROUND AIRPORT AND AIRLINE:
CONTROL OVER AIRPLANE CRASHES**

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A Declaration by the Guide on Company Letter Head

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Executive Summary / Abstract

This research gives an overview of Airline & Airport Safety & Security. Through the history of aviation the importance of airport and airline security has steadily increased. Since the disastrous terrorist attack of September 11, 2001, many changes have taken place at airports to prevent such an attack from occurring again. The purpose of this paper is to: outline airport security procedures, discuss the different technologies involved with airport security, as well as examine the components of airport security. In addition I will also discuss how to control airline crashes.

The aviation industry is one of the most exposed to hazards and risks; however aircrafts are the safer way to travel. Indeed safety management systems have been designed to make that industry as safe as possible. Those systems receive valuable assistance from agencies such as the International Civil Aviation Organization and National authorities to reach the safety strategic objectives. They provide training programs to help SMS to improve their effectiveness, by ensuring the competences of the personnel from executives to employees. Therefore SMS could improve their management of hazards and risks, which are the principal, mean to avoid accidents and allowed companies to save money. To achieve these goals safety systems apply every day the fundamental management strategies, and put them together for a better efficiency and effectiveness. The results have been proved, in term of performance and profit, SMS improved the world aviation operations.

CHAPTER 1: INTRODUCTION

INTRODUCTION

Airport security refers to the techniques and methods used in protecting passengers, staff and aircraft which use the airports from accidental/malicious harm, crime and other threats. Large numbers of people pass through airports every day. This presents potential targets for terrorism and other forms of crime because of the number of people located in a particular location. Similarly, the high concentration of people on large airliners, the potential high death rate with attacks on aircraft, and the ability to use a hijacked airplane as a lethal weapon may provide an alluring target for terrorism, whether or not they succeed due their high profile nature following the various attacks and attempts around the globe in recent years.

Airport security attempts to prevent any threats or potentially dangerous situations from arising or entering the country. If airport security does succeed in this, then the chances of any dangerous situations, illegal items or threats entering into aircraft, country or airport are greatly reduced. As such, airport security serves several purposes: To protect the airport and country from any threatening events, to reassure the traveling public that they are safe and to protect the country and their people.

Airport Security is a necessity of Life throughout the world. Without airport security our airports would not be able to function and terrorist attacks resembling those of September 11th, 2001, would be more common place. Passengers would be afraid to fly in fear of such a terrorist attack happening again. The airline industry would lose more revenue from lost ticket sales. Then the airports themselves would lose money from the lack of passengers boarding through their gates. Finally this lack of security would trickle down to the entire economy not only in the communities surrounding the airport and aviation industry, but to the nation's economy as well. To keep this economic failure associated with another terrorist attack from happening, our nation must take the appropriate measures to prevent it.

"Airport security procedures are designed to deter, prevent, and respond to criminal acts that may affect safety and security of the traveling public" Wells and Young. In order for this to happen, airports must become more proactive instead of reactive to possible threats such as: hijacking,

explosive devices on aircraft or any other possible criminal act that could happen aboard an aircraft.

An aviation accident is defined by the Convention on International Civil Aviation Annex 13 as an occurrence associated with the operation of an aircraft, which takes place between the time any person boards the aircraft with the intention of flight until all such persons have disembarked, where a person is fatally or seriously injured, the aircraft sustains damage or structural failure or the aircraft is missing or is completely inaccessible. An aviation incident is defined as an occurrence, other than an accident, associated with the operation of an aircraft that affects or could affect the safety of operations.

Aviation accidents can affect people in the air, on the ground and in other ways. Here is a general overview of liability, potential causes of actions, and other issues pertaining to airplane accidents. While flying is generally considered to be a safe means of travel, accidents do happen. Due to the nature of air travel, when aviation accidents occur, they typically result in serious bodily injury or death. Depending on the cause of an aviation accident, a number of entities could be held liable for any injuries or deaths that result. Commercial airlines are legally classified as "common carriers" because they provide transportation services to the public. Other types of transport, such as cruise ships and tour buses, may also be considered common carriers which are held to a more stringent standard of care than private carriers in the event of an accident.

Another reason for specific immediate attention to airport safety lies in the emerging evidence, primarily created in the wake of the 747 crash in Amsterdam in 1992, which shows that the risk to the population living around the airport due to possible aircraft accidents, is comparable to the risk around chemical plants, which are strictly regulated in that regard. And finally, recent events (Dusseldorf 1996 and Heathrow 1997) show that the safety of large numbers of occupants of terminal buildings may be jeopardized in case of an emergency (for example, fires).

Achieving a safe working environment in any organization is important, but in aviation this is particularly so, as the working environment includes the use of aircraft that are responsible for carrying thousands of lives each day. Safety within an aviation operation is not confined to the safety of aircraft operations or physical flight; it also depends on the safety

behaviors and systems within the realms of Maintenance, Engineering, Air Traffic Control, Airport and Flight Operations. Proactive organizational safety consciousness is more than the latest trend; it is an absolute necessity and in many cases a legal requirement for many industries, not just aviation. Therefore, a system needs to be in place to ensure that all factors are continually identified, analyzed, reviewed, and measured to improve safety and mitigate errors and hazards.

Within aviation, this can be achieved by the development and implementation of a formal Safety Management System (SMS). As such, this course is intended to provide students with an understanding of safety management systems. The course includes all aspects of SMSs, including Risk Management, Quality Management, and Fatigue Management. The course goes beyond a business/ quality management system as it also focuses on how people contribute to the safety outcomes of a business. Other fundamental components of SMS are also included, Safety Culture of an organization, focus on Non-Technical Skills, and Crew Resource Management areas. The principles and considerations included within the course can be applied to small and large organizations, and are designed to provide an overview of safety within aviation.

1.1 OVERVIEW

The main objective of this research is to understand about safety in and around airport and airline and also discuss about how to avoid airplane crashes. The airline industry is affected by many conditions that are beyond its control. Southwest's business and the airline industry in general are also impacted by other conditions that are largely outside of Southwest's control, including, among others:

Actual or threatened war, terrorist attacks, and political instability, changes in consumer preferences, perceptions, spending patterns or demographic trends, actual or potential disruptions in the air traffic control system, increases in costs of safety, security and environmental measures and weather and natural disasters. Because expenses of a flight do not vary significantly with the number of passengers carried, a relatively small change in the number of passengers can have a disproportionate effect on an airline's operating and financial results. Therefore, any general reduction in airline passenger traffic as a result of any of these factors could adversely affect southwest's results of operations. The ministry of Infrastructure and the Environment strives to make aviation safer, even safer than it is today. The introduction of Safety management systems supports this objective. The ministry has published a State Safety Programme and a Policy Agenda Aviation Safety 2011-2015.

The basic principles of the Agenda Aviation Safety are:

- A high level of safety and continuous improvement thereof, so there is no increase in the number of accidents;
- The aviation sector has proven that it's well aware of the fact that safety is of paramount importance. This means that it is possible to grant the sector greater freedom in taking responsibility itself on the basis of sound safety-management systems;
- A reduction in red tape and the administrative burden. A different role for the government is needed to restrict the costs of safety measures as much as possible.

Aviation is a very safe mode of transport and aviation accidents are the exception, not the rule. Despite the growth of aviation, the number of accidents has not increased.

An important goal is to learn from things that went wrong and to prevent repetition. This not only involves accidents, but also incidents not necessarily resulting in accidents, from which we can learn a great deal. Generally people are screened through airport security into areas where the exit gates to the aircraft are located. These areas are often called "secure", "sterile" and airside. Passengers are discharged from airliners into the sterile area so that they usually will not have to be re-screened if disembarking from a domestic flight; however they are still subject to search at any time. Airport food outlets have started using plastic glasses and utensils as opposed to glasses made out of glass and utensils made out of metal to reduce the usefulness of such items as weapons.

As air traffic increases, so does the risk that passengers will be involved in of an aviation accident. Generally, air traffic is considered a safe means of transportation. But when aviation accidents do occur they often result in fatalities. Smaller, less serious accidents involving private aircraft are more frequent than people realize, because many of these incidents go unreported in the media.

An aviation accident investigator may also be called an air safety investigator. They investigate , study and report on airplane crashes to figure out how and why they happened. Aviation accident investigators cover a myriad of areas and try to discover the cause of accidents. This is done through various means including interviewing survivors, reviewing and analyzing flight and maintenance records, studying human performance issues and operations, examining engines, systems, instruments and other airplane parts, Including operations, flight recorders, structures, cabin safety, aircraft performance (engineering), airports, air traffic services, and power plant (engines). to try and figure out what caused an accident.

1.2 BACKGROUND

Airport security attempts to prevent any threats or potentially dangerous situations from arising or entering the country. If airport security does succeed in this, then the chances of any dangerous situations, illegal items or threats entering into aircraft, country or airport are greatly reduced. As such, airport security serves several purposes: To protect the airport and country from any threatening events, to reassure the traveling public that they are safe and to protect the country and their people. The pre-flight safety demonstration (also known as a pre-flight briefing, in-flight safety demonstration, safety instructions, or simply the safety video) is a detailed explanation given before takeoff to airline passengers about the safety features of a commercial aircraft.

On smaller aircraft this may take place in the form of a live briefing performed by flight attendants standing up in the aisles, while another flight attendant narrates over the public address system. Smaller regional jets and turboprops, where there may be only one flight attendant sometimes use recorded narration accompanying a live demonstration. On many larger aircraft equipped with in-flight entertainment, safety demonstrations may take place in the form of a video, which typically lasts 2 to 6 minutes. In consideration for travelers not speaking the airline's official language and for the passengers with hearing problems, the video may feature subtitles, an on-screen signer, or may be repeated in another language. Some safety videos are made using three-dimensional graphics. All airlines and ground handlers are responsible for the security of their passengers and aircraft as well as for controlling access to the Security Restricted Area (SRA) through any boarding gates they utilize when conducting flight operations (including boarding and disembarkation).

The airside area encompasses the whole of the exterior area of the airport that is contained within the airside/landside boundary fence lines. Private hangars and other buildings that have access to both airside and landside are included within the airside area and the tenants of such facilities are responsible for maintaining the airside security and preventing unlawful access to airside through their premises.

1.3 PURPOSE OF THE STUDY

The purpose of the study is to find out the safety in and around airport and airline and how to avoid airplane crashes. Airport safety procedures are one of the burdens that comes along with traveling. With security measures constantly being altered and tightened, it is hard to stay up to date with the latest airport safety rules. However, staying safe and going through security calmly and without any problems should be on every traveler's agenda. Aviation safety is a term encompassing the theory, investigation, and categorization of flight failures, and the prevention of such failures through regulation, education, and training. It can also be applied in the context of campaigns that inform the public as to the safety of air travel. Many people think quite differently about airplanes, however. Knowing that these machines are clearly heavier than air, they might wonder what exactly keeps an airplane in the sky. And they might fear that any airplane might just fall out of the sky. In fact, to some people, airplanes seem more at peace sitting on the ground than they do in the air.

Airport personnel must always be aware of and protect critical areas on the airport such as runway safety areas, obstacle free zones, and approach surfaces, even during construction operations the most efficient and cost-effective method of instituting security measures into any facility or operation is through advancing planning and continuous monitoring." This advance planning is typically accomplished through Airport Safety and Security Guidelines the establishment of a security plan specific to the airport. While security plans can vary in size and complexity depending on the airport and threat, they will typically include communications, access control, perimeter control, procedures, as well as other site specific requirements.

Generally, an airport emergency action plan should address emergencies that occur or directly impact property within the airport's authority and responsibility, or may present a threat to the airport because of the proximity of the emergency. The Airport Manager should include community and agency involvement in the development of an emergency response plan because it will include the assistance of local fire and EMS authorities in the response effort. It will provide essential guidance to airport managers and staff on best practices, the latest technology, new equipment and procedures and regulations which are applied to the safe and efficient operation of the airside environment.

Benefits

- Provides practical and up-to-date tools for managing safety at airports
- Enhances expertise on safety standards implementation in airport operations
- Indicates safety factors identification, control and maintenance
- Provides overview on all safety operations at airport

No persons or goods are permitted to enter the Sterile

Area (SA) of the airport without passing through the main screening point on the ground floor. Security screening is in place to ensure that no weapons or prohibited items are carried onto an aircraft. Security screening consists of screening any bags/loose items or clothing on an X-Ray machine and then walking through a metal detector. Random and continuous Explosive Trace Detection (ETD) is also carried out at the screening point as an additional security measure. As an airport worker you must still undergo all security screening and refusal of any of the security processes will result in denial of access to the Sterile Area. All flight crew on aircrafts departing from the RPT, regardless of the access control permissions they may have, must pass through the main security screening point prior to boarding their aircraft.

The aviation industry as a whole may be at its safest since the beginning of flight, but airline travel still requires a leap of faith for passengers who must trust airlines and regulators to keep them safe. All travelers are afraid about airplane crashes but still people like to travel by air. Because travel by air is the most interesting way of travel. In this research I also discuss about how to avoid airplane crashes.

1.4 RESEARCH HYPOTHESIS

The hypothesis of this research is, due to the lack of safety in airport and airline will result in accidents, malicious harm, crime, terrorist attack and other threats. This research is conducted to find out the safety in and around airport and airline and help we to find out what safety measures are taken by the airport and airline for the safety of passengers.

CHAPTER2: LITERATURE REVIEW

Literature review

A literature review is a text of a scholarly paper, which includes the current knowledge including substantive findings, as well as theoretical and methodological contributions to a particular topic. Literature reviews use secondary sources, and do not report new or original experimental work. Most often associated with academic-oriented literature, such as a thesis, dissertation or peer-reviewed journal article, a literature review usually precedes the methodology and results section. Literature reviews are also common in a research proposal or prospectus (the document that is approved before a student formally begins a dissertation or thesis). Its main goals are to situate the current study within the body of literature and to provide context for the particular reader. Literature reviews are a staple for research in nearly every academic field. A systematic review is a literature review focused on a research question, trying to identify, appraise, select and synthesize all high quality research evidence and arguments relevant to that question. A meta-analysis is typically a systematic review using statistical methods to effectively combine the data used on all selected studies to produce a more reliable result.

2.1 REVIEW AREA BROAD

Airport security attempts to prevent any threats or potentially dangerous situations from arising or entering the country. Airport security refers to the techniques and methods used in protecting passengers, staff and aircraft which use the airports from accidental/malicious harm, crime and other threats. Large numbers of people pass through airports every day. This presents potential targets for terrorism and other forms of crime because of the number of people located in a particular location.

Similarly, the high concentration of people on large airliners, the potential high death rate with attacks on aircraft, and the ability to use a hijacked airplane as a lethal weapon may provide an alluring target for terrorism, whether or not they succeed due their high profile nature following the various attacks and attempts around the globe in recent years. If airport security does succeed in this, then the chances of any dangerous situations, illegal items or threats entering into both aircraft, country or airport are greatly reduced. As such, airport security serves several purposes: To protect the airport and country from any threatening events, to reassure the traveling public that they are safe and to protect the country and their people.

The Airport Safety and Operations Division includes the Safety and Certification Program. The division holds primary responsibility for the safety and certification of airports; airport operations and safety practices, including aircraft rescue and firefighting and the mitigation of wildlife hazards; promotion of emergency operations, emergency management planning, and damage control at civil airports; and Federal activities at airports and their restoration after attack or a natural disaster. A successful Safety Management System reduces the rate and cost of accidents and incidents, improves communication and productivity, and helps your airport meet its legal responsibility to manage safety. Learn how to implement an efficient Safety Management System at your airport and promote a safety culture within your organization. Understand the relevance of risk management in relation to Safety Management System and learn how to evaluate, prioritize and mitigate risk. Analyze the impact human factors

have on safety and develop your skills in detecting, controlling and preventing errors in an airport environment.

A Safety Management System (SMS) is an essential part of operating in today's aviation industry.

This advanced course introduces participants to the key tools to manage a performance-based SMS. The processes examined are equally applicable to airline, airport, Air Traffic Management and other aviation operations. Participants will be able to streamline the operational and business processes of their companies and demonstrate improved safety performance to their Board of Directors, insurance underwriters, their clients and customers, and the regulatory agencies that oversee them. Managers and staff from Safety Offices will particularly benefit from the course, as will representatives from Civil Aviation Authorities.

Some incidents have been the result of travelers being permitted to carry either weapons or items that could be used as weapons on board aircraft so that they could hijack the plane. Travelers are screened by metal detectors. Explosive detection machines used include X-ray machines and explosives trace-detection portal machines. In the United States the TSA is working on new scanning machines that are still effective searching for objects that aren't allowed in the airplanes but that don't depict the passengers in a state of undress that some find embarrassing. Explosive detection machines can also be used for both carry on and checked baggage. These detect volatile compounds given off from explosives using gas chromatography.

A recent development is the controversial use of backscatter X-rays to detect hidden weapons and explosives on passengers. These devices, which use Compton scattering, require that the passenger stand close to a flat panel and produce a high resolution image. A technology released in Israel in early 2008 allows passengers to pass through metal detectors without removing their shoes, a process required as walk-through gate detectors are not reliable in detecting metal in shoes or on the lower body extremities. Alternately, the passengers step fully shod onto a device which scans in under 1.2 seconds for objects as small as a razor blade. In some countries, specially trained individuals may engage passengers in a conversation to detect threats rather than solely relying on equipment to find threats.

A single backscatter scan exposes the target to between 0.05 to 0.1 micro-sievert of radiation. In comparison, the exposure from a standard chest x-ray is almost 100 times higher. Generally people are screened through airport security into areas where the exit gates to the aircraft are located. These areas are often called "secure", "sterile" and airside. Passengers are discharged from airliners into the sterile area so that they usually will not have to be re-screened if disembarking from a domestic flight; however they are still subject to search at any time. Airport food outlets have started using plastic glasses and utensils as opposed to glasses made out of glass and utensils made out of metal to reduce the usefulness of such items as weapons.

In the United States non-passengers were once allowed on the concourses to meet arriving friends or relatives at their gates, but this is now greatly restricted due to the terrorist attacks on September 11, 2001. Non-passengers must obtain a gate pass to enter the secure area of the airport. The most common reasons that a non-passenger may obtain a gate pass is to assist children and the elderly as well as for attending business meetings that take place in the secure area of the airport. In the United States, at least 24 hours notice is generally required for those planning to attend a business meeting inside the secure area of the airport. Other countries, such as Australia do not restrict non-travellers from accessing the airside area, however non-travellers are typically subject to the same security scans as travellers.

Sensitive areas in airports, including airport ramps and operational spaces, are restricted from the general public. Called a SIDA (Security Identification Display Area), these spaces require special qualifications to enter. Systems can consist of physical access control gates or more passive systems that monitor people moving through restricted areas and sound an alert if an restricted area is entered. Throughout the world, there have been a few dozen airports that have instituted a version of a "trusted traveler program". Proponents argue that security screening can be made more efficient by detecting the people that are threats, and then searching them. They argue that searching trusted, verified individuals should not take the amount of time it does. Critics argue that such programs decrease security by providing an easier path to carry contraband through.

Another critical security measure utilised by several regional and international airports is the use of fiber optic perimeter intrusion detection systems. These security systems

allow airport security to locate and detect any intrusion on the airport perimeter, ensuring real-time, immediate intrusion notification that allows security personnel to assess the threat and track movement and engage necessary security procedures.

The airport security in India is:-

India stepped up its airport security after the 1999 Kandahar hijacking. The Central Industrial Security Force, a paramilitary organization is in charge of airport security under the regulatory frame work of the Bureau of Civil Aviation Security(Ministry of Civil Aviation Security). CISF formed an Airport Security Group to protect Indian airports. Every airport has now been given an APSU (Airport Security Unit), a trained unit to counter unlawful interference with civil aviation. Apart from the CISF, every domestic airline has an security group who looks after the aircraft security.

Terrorist threats and narcotics are the main threats in Indian airports. Another problem that some airports face is the proliferation of slums around the airport boundaries in places like Mumbai. Before boarding, additional searching of hand luggage is likely. Moreover, other than this, the CISF has many other duties in context of Aviation Security. The cargo security/ screening is done by the Regulated Agents or Airlines/ Airports own security staff who are tested and certified by the Bureau of Civil Aviation Security (BCAS), an aviation security Regulator.

Aviation is a very safe mode of transport and aviation accidents are the exception, not the rule. Despite the growth of aviation, the number of accidents has not increased. An important goal is to learn from things that went wrong and to prevent repetition. This not only involves accidents, but also incidents not necessarily resulting in accidents, from which we can learn a great deal.

General rules for personal security

- If possible, travel with others. There is more safety in numbers.

- Avoid places that are popular with Western travelers, who are obvious targets for terrorism. Everywhere you go, have a plan, so you can act automatically in case of a bomb or terrorist attack.
- Memorize the locations and phone numbers of possible safe places to go, such as hospitals, hotels, and police stations.
- Watch for suspicious activity and report it to the local police or the nearest U.S. embassy or consulate.
- Be careful with strangers--any stranger, for example, even taxi drivers.
- Don't tell a stranger too many details about your life or your plans.
- When in conversation with someone you do trust, be aware of people around you who may be listening.
- If you see something or someone suspicious, report it to the police and the nearest U.S. Embassy or consulate immediately.
- Select your own taxi, and vary the place for doing that. Never get into a vehicle that is not clearly marked as a taxi. When you get in, take the opportunity to study the driver's face and compare it with the photo on the license displayed in the car.

The following suggestions are based on information provided by the U.S. Department of State to help travelers abroad minimize their visibility and increase their awareness in the age of terrorism. While no plan is foolproof, these precautions may provide some degree of protection and can serve as practical and psychological deterrents to would-be terrorists. When traveling by air:

- Schedule non-stop flights, or at least avoid flights that stop in high-risk locales.
- Wear clothing that doesn't stand out. Dress for invisibility.
- Avoid adding distinctive markings to your luggage, even though this is a recommended way to discourage luggage theft. Bright markings on your luggage make you more visible and mark you as a tourist at a time when it's better to avoid being noticed.
- After checking in for your flight, go immediately to the secured areas of the airport.
- When you arrive at a destination, get your baggage and leave the airport as quickly as possible.

- Scan your surroundings whenever in an airport, looking for abandoned briefcases, packages or suspicious items, and report them to airport authorities. Then leave immediately.

Mostly airplane crashes are due to the following factors and reasons:

1.Environmental Factors

Weather plays a key role in flight safety. Poor visibility, lightning, cloud bursts, and other inimical weather conditions hike up the risks of an aviation accident. Bird hits may also cause damage to the craft and the airfoil. A number of airports across the world are deficient in bird-search radars and do not deploy audiovisual aids to scare birds.

2.Technical Factors

Technical factors contributing to a crash could include lack of adequate radio-navigational aids, mechanical problems with the engine/avionics, or parts malfunctioning during flight. Technical errors include system issues. The Boeing 787 Dream liner suffered from a number of fires on board related to its lithium-ion batteries.

3.Human Error Factors

The human error factor is the most poignant and important among all the causes for crashes. Pilot/ground crew fatigue, experience, mental-physical strength are all contributing factors. Competent air traffic controllers and pilots with adequate English language skills are imperative to effective radio communication as well.

A major disaster was averted when First Officer Jason Dowd took over and locked the captain out of the cockpit to make a safe landing. The captain was hospitalized and placed in a mental health facility upon landing.

REASONS ARE :-

1.Mechanical Error

The second most common cause of plane crashes is mechanical error, which accounts for about 22% of all aviation accidents. Mechanical error differs from pilot error, because when a

critical system fails, the pilot may be at the mercy of the plane. Some mechanical errors occur because of a flaw in the plane's design. For example, in 1974 a Turkish Airlines flight to France crashed because of a design flaw in the latch of the cargo door. A West African Airways flight to Nigeria crashed in 1955 because a flawed wing design led to metal fatigue cracks and wing failure.

Sometimes, mechanical failure occurs when outside circumstances damage the plane. The causes of these failures can be pretty bizarre. For example, in 1962 a United Airlines flight crashed because it was struck by a single swan that tore off the plane's left horizontal stabilizer. Birds have caused at least seven plane crashes to date.

2. Weather

Around 12% of all plane crashes are caused by weather conditions. Although flights are often grounded when weather conditions are deemed hazardous, storms, heavy winds and even fog can sneak up on pilots and air traffic controllers. Lightning strikes can be especially dangerous. When lightning hits a plane, it can disable it in many ways. Aviation accidents have happened because lightning caused electrical failure, because it ignited fuel tanks and pipes, and even because the flash itself caused temporary blindness.

But even milder weather conditions can cause plane crashes. During a flight to Lebanon in 1977, the pilot encountered a thick fog as he prepared to land. Circling back, he retried the landing several more times before fuel ran out and the plane could no longer stay aloft. In 2010, an Indonesian plane carrying 103 passengers crashed when inclement weather conditions caused the pilot to overshoot the runway. The plane skidded into a pool of water at the end of the runway and crashed into a nearby hillside. The impact of the crash caused the jet to break in half.

3. Sabotage

Plane crashes that are caused by sabotage draw the most media attention, but they only account for about 9% of total plane crashes. Some sabotaged flights crash because of hijackers, and of course the most notable examples are the three flights that were hijacked on September

11th. But despite increasingly strict TSA regulations, some passengers still manage to smuggle bombs or firearms onto planes. When they're successful, a single passenger can bring down a jet, killing hundreds of people.

Although terrorists, extremists or militia groups are usually responsible for attacks like these, that's not always the case. Mentally ill passengers have been known to attack both pilots and passengers, and some have even detonated bombs in an attempt to commit suicide while in flight.

4. Other Human Error

The bulk of the remaining plane crashes, about 7%, are caused by other kinds of human errors. Some plane crashes are inadvertently caused by air traffic controllers. Air traffic control mistakes have caused planes to crash into mountains, to land on occupied runways and even to collide in midair. When a plane is loaded, fueled or maintained incorrectly, that's human error too.

One of the more common fatal mistakes caused by humans is something called "fuel starvation" – but this isn't always the result of an improperly filled fuel tank. A Coastal Airlines flight in 1948 crashed because the fuel valves were positioned incorrectly, causing both engines to pull fuel from a single tank. An Air Mali flight crashed in 1974 when a diversion and navigation error caused it to circle the wrong city until it ran out of fuel.

Common Causes Of Airplane Crashes

The most common causes of aircraft crashes include the following:

- **Defective Design and/or Materials** - Defects in this category can cause metal fatigue, cracking, and/or in-flight failure of critical components.

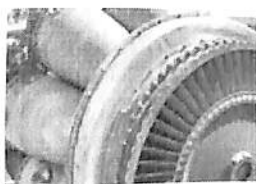


fig.1

- **In-Flight Instrument or Avionics Failure** - Cockpit instruments such as attitude indicators, altimeters, and autopilots can fail in flight without warning, with catastrophic results to pilots and passengers.



fig.2

- **Negligent Maintenance or Repair** - Maintenance records and log books are kept to record an aircraft's maintenance history, and are an important part of any post crash investigation.



fig.3

Pilot Error - A pilot's failure to exercise due diligence can be a principle or partial cause of a crash. Half of all plane crashes are caused by pilot error. That may seem like a very high statistic, but it makes perfect sense when you think about everything that a pilot must do. Pilots must navigate through dangerous weather, respond to mechanical issues and execute a safe takeoff and landing. Some plane accidents are caused when pilots misread equipment, misjudge weather conditions or fail to recognize mechanical errors until it's too late.

Sometimes too, plane crashes happen when pilots become incapacitated during critical points of a flight. In 2005, a Helios Airways flight to Greece crashed because the flight cabin depressurized, incapacitating the entire flight crew. In 1976, a South African AW flight crashed when the captain suffered a heart attack and his first officer couldn't control the plane in time. Some pilot errors can even be the result of mental problems. A flight to Tokyo crashed in 1987 because a pilot who was known to have serious psychological problems put the plane's engines into reverse mid-flight.



fig.4

- **Air Traffic Control Errors** - Failure to follow proper air traffic control rules and procedures can lead to disaster.

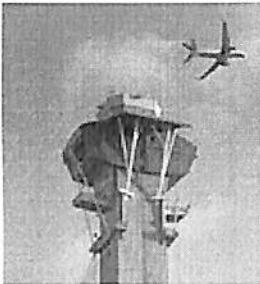


fig.5

- **In-Flight Icing** - Icing is a contributing or causal factor in numerous fatal aircraft crashes.



fig.6

- **Fueling Errors** - Fuel mismanagement such as starvation, exhaustion, or contamination often results in crashes.



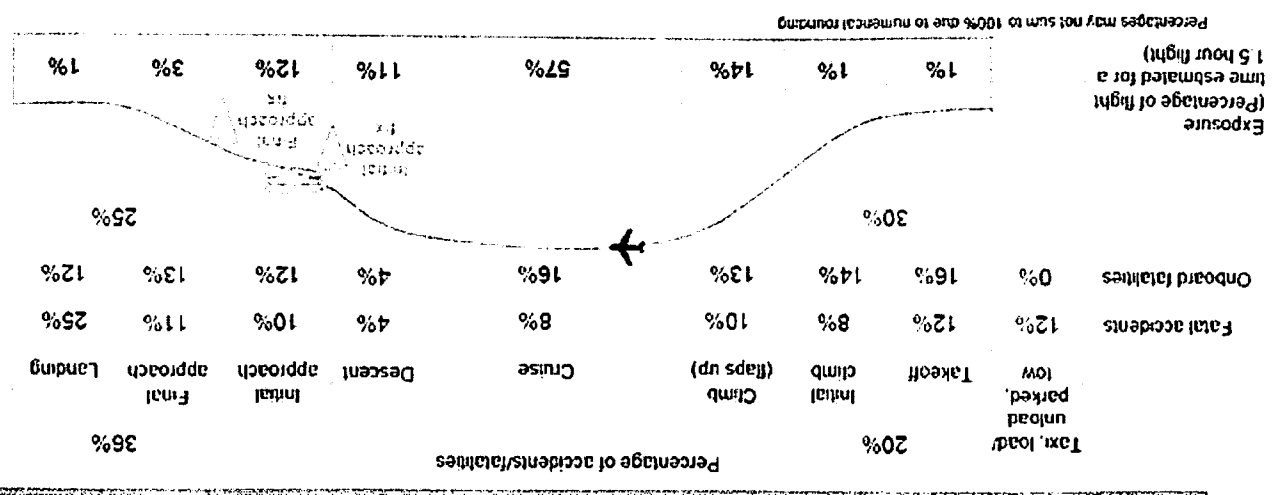
fig.7

We would be honored to put our specific experience in these types of cases to work for your family. At such a difficult time, it is so important to have legal counsel you can trust to handle your case with the special professional care it deserves.

- Facilities to summon assistance at designated arrival points, such as at terminal entrances, at transport interchanges and in car parks
- Assistance to reach check-in
- Help with registration at check-in
- Assistance with moving through the airport, including to toilets if required
- Help with getting on and off the plane
- Free carriage of medical equipment and up to two items of mobility equipment
- A briefing for you and any escort or companion on emergency procedures and the layout of the cabin
- Help with stowing and retrieving baggage on the plane
- Assistance with moving to the toilet on the plane (some planes will have an on-board wheelchair)

These services should be available at all European airports if you have a sensory, physical or learning disability which affects your mobility when using transport:

Services provided by the airline and airport for passengers with disabilities



- Someone to meet you off the plane and help you reach connecting flights or get to the next part of your journey

Reduced mobility

Airports are responsible for providing assistance to passengers to enable people with disabilities and others with reduced mobility to board, disembark and transfer between flights.

What it means to travelers with disabilities

Airport operators are required to provide an assistance service to enable reduced mobility passengers to board, disembark and transit between flights. Airlines are required to provide certain assistance to passengers whilst onboard the aircraft. Costs will be recovered through a charge on airlines proportionate to the total number of passengers they carry to and from the airport, with no charges to the passenger requiring assistance. Passengers needing assistance must not be charged and airports must publish quality standards so that passengers can measure the service they receive against these standards. Regulations require all staff providing direct assistance to passengers to be suitably trained - all staff will need disability awareness training.

Airlines must carry passengers' medical equipment and up to two pieces of mobility equipment free of charge. They must also carry assistance dogs free of charge (on permitted routes). For passengers, this will mean consistency across airports. Whereas previously standards may have differed, they are now set and passengers are entitled to full assistance regardless of the airport they are travelling from. Where this is not provided, they are able to take their complaints to the Consumer Council.

Health, safety and security hazards:

- Terrorist attacks/hijackers
- Protestors, e.g. anti-airport etc
- Unattended luggage

- Unruly or aggressive passengers
- Fire (especially bin fires)
- Manual handling (especially heavy bags)
- Health epidemics e.g. foot and mouth
- Crowds
- Bomb threats warnings
- Carriage of dangerous/prohibited items
- ID/passport fraud (false documentation)
- Employees (if gained work with false information)
- importation of illegal food substances (spread of disease)
- Smuggling (drugs, money, excise evasion)
- Passenger anxiety (about flying); heart attacks, strokes, fainting

Health, safety and security risks airside:

- Noise
- Jet blast/propeller wash
- Ingestion
- Reversing vehicles
- Falls from height
- Aircraft fire
- Slips, trips and falls

Health hazards

- Noise (prolonged exposure; hearing damage)
- Deep vein thrombosis (DVT)
- Air sickness
- Re-cycled cabin air
- Spreading of bacteria through air conditioning system
- Panic/anxiety
- Food poisoning
- Cabin depressurization
- Jet lag

Safety hazards:

- Jet blast and ingestion
- Birds and wildlife
- Foreign object debris (FOD)
- Falls from height
- Falling luggage
- Fire on board aircraft
- Aircraft emergency
- Emergency evacuation using slides
- Aircraft depressurisation
- Turbulence
- Fuel problems

- Re-fuelling with passengers on board
- Weather
- Technical failures
- Pilot error
- Air Traffic Control (ATC) errors

Security hazards:

- Hijack
- Terrorist attack
- Dangerous goods/cargo
- Air rage
- Stowaways
- Unaccompanied baggage/reconciliation of baggage with passengers on board
- Bombs/bomb threats Unit

The airport and airline industries have many different health, safety and security hazards and a sound understanding of these is essential for anyone working in travel and tourism.

The aim of this research is to understanding of the health, safety and security hazards present in the airport and airline sector. The main health, safety and security hazards are considered in the context of an airport terminal, the airside areas of an airport and then finally in the operation of an aircraft. This research gives the opportunity to investigate current airport/airline issues in health, safety and security and also considers the key general and industry specific legislation affecting the sector.

USE OF AIR TERMINAL HIGHWAYS

Air Terminal highways may be used as a means of ingress and egress by vehicles to, from and between the streets and highways outside Air Terminals with which such highways connect and the various buildings and land area at the Air Terminal abutting upon such highways; and sidewalks along such highways (and other portions of such highways when designated for that purpose) may be used by pedestrians as a means of ingress and egress to, from and between various portions of the Air Terminal.

B. USE OF AIR TERMINALS

1. Use of any area or portion of an Air Terminal in a manner contrary to law or a manner contrary to the Airport Rules and Regulations may result in a withdrawal of permission to enter or remain in such air terminal by the Port Authority.
2. Nothing herein contained shall be construed to limit the use of any area or portion of any air terminal by officers or employees of the Port Authority, or by Port Authority contractors, or to prevent any Police Officer, Fire Officer or other public officer or employee from entering upon any part of the air terminal when properly required so to do in the performance of his official duties.
3. The Port Authority may prohibit any conduct that violates any requirement for, or condition of, the receipt of federal grant in aid funds, the approval of the imposition of Passenger Facility Charges, or any other governmental program in which the Port Authority participates to obtain funds for use at an Airport.

AIRPORT SECURITY

A. ADHERENCE TO SECURITY REGULATIONS & PROCEDURES

All persons entering an Air Terminal shall comply with all applicable security regulations and procedures as established by the Port Authority pursuant to 49 CFR,

with the exception of Teterboro Airport, at which security regulations established separately by the Teterboro Airport Manager are applicable.

B. MANAGER'S RIGHT TO RESCIND ACCESS

The Manager shall have the right to rescind permission for the use of any access control device and confiscate any Airport ID previously given to any individual for any lawful reason, including but not limited to violations of airport security and violations of Airport Rules and Regulations.

C. VALID IDENTIFICATION & ESCORT REQUIREMENTS

No person may enter or be in the Airport Operations Area (AOA) or Security Identification Display Area (SIDA) unless he or she is:

1. Displaying a valid Airport ID indicating that he or she has unescorted access privileges; or,
2. In the case of a location subject to an Exclusive Area Agreement, which allows the use of an Air Carrier ID for limited access to the AOA or SIDA, displaying a valid approved Air Carrier ID; or,
3. In the case of aircraft crewmembers, dressed in the full uniform of his/her company, displaying a photo ID issued by an authorizing airline; or,
4. In the case of an FAA Aviation Safety Inspector conducting his/her assigned duties, displaying an FAA Form 8000-39 with photograph; or,
5. Under the escort of an individual not employed by the same company as the person being escorted who has a valid Airport Operator Identification Card indicating that he or she has unescorted access privileges and privileges to escort others.

D. FLIGHT CREWS

1. Flight crew members may, when wearing a valid ID as noted herein, dressed in the full uniform of his/her company, and when performing the duties of their flight crew

assignment, have unescorted access to certain areas of the AOA or SIDA only:

- a. To travel directly from the terminal building to the aircraft to which they are assigned and/or,
- b. To perform necessary assigned flight checks on an aircraft, but only while remaining within 25 feet of that aircraft; and,
- c. No unnecessary diversions are made when traveling as described in a. and b. above.

If any flight crewmember requires access to the AOA or SIDA for reasons other than those stated herein, or if it is impossible for a flight crewmember to follow the regulations as stated herein, an escort is required.

E. DISPLAYING VALID IDENTIFICATION

While in the AOA or SIDA, individuals who are not under escort must display the approved ID in full view, above waist level, on their outermost garment. Such approved ID must be presented upon demand in response to a challenge made pursuant to paragraph H below.

F. AIRPORT IDENTIFICATION (ID) RESPONSIBILITIES

1. Caring for Airport ID

It is the responsibility of the individual to whom an Airport ID is issued to secure and care for that card. An expired, mutilated, defaced, misused and invalidated identification card will be confiscated and/or suspended and/or revoked.

2. Reporting the Misuse of Airport ID

It is the responsibility of every individual to whom an Airport ID has been issued to report any one displaying an expired, mutilated, defaced, or otherwise invalid Airport ID to the Port Authority Police without unreasonable delay.

G. ESCORT PROCEDURES

1. Escorting People

The required procedure for escorting people on the AOA or SIDA is to accompany and supervise any individual who does not have unescorted access authority in a manner sufficient to take action should the individual engage in activities other than those for which the escorted access is granted. While under escort, the person being escorted must continuously be within the line of sight of the person performing the escort. Escorting of people will be conducted for business purposes only.

2. Escorting Vehicles

Vehicles without PANYNJ plates, and drivers who do not have an Airport ID with driver privileges, must be escorted while on the AOA by an individual who:

(i) Possesses a valid Airport ID with driver and escort privileges, and

(ii) Uses a vehicle that is in full compliance with these Rules and Regulations.

a. The operator of an escorting vehicle shall remain in close proximity to an escorted vehicle until the escorted vehicle leaves the AOA.

H. RESPONSIBILITY TO CHALLENGE

It is the responsibility of every individual issued an Airport ID that allows unescorted access to the AOA or SIDA:

1. To challenge the authority or purpose of a person without proper escort who attempts to enter the AOA or SIDA and who is not displaying a valid Airport ID that allows that person access to the area, and to prevent him or her from entering the AOA or SIDA if that individual does not offer valid Airport ID, or to report the incident to the Port Authority Police as soon as possible while attempting to keep the individual within view; and,

2. To challenge the authority or purpose of a person who is in the AOA or SIDA and who is not displaying a valid Airport ID that allows access to the area, and escort him or her from the AOA or SIDA if that individual does not offer a valid Airport ID, or to immediately report the incident

to the Port Authority Police as soon as possible while attempting to keep the individual within view.

I. FIREARMS, EXPLOSIVES, MUNITIONS & PYROTECHNICS

No person shall carry any firearms, explosives, munitions, or pyrotechnics into the SIDA or AOA except:

1. Persons authorized to do so by an Airport ID with the appropriate privileges issued by the Port Authority Security ID Office; or,
2. Persons under escort by Port Authority Police; or,
3. Persons authorized by the Manager to use firearms, explosives, munitions, and pyrotechnics for animal control activity at the Air Terminal or in the AOA.

J. EMPLOYMENT OF SECURITY SERVICES

Any one who employs any person, company or corporation for the purpose of providing security services at an air terminal shall notify the Manager of the nature of such services. Such person must also furnish the name, business address, and telephone number of such person, company or corporation to the Manager together with a copy of the license or other government authorization of such person, company, or corporation as may be required to perform such service in the city and state in which the Airport is located.

K. VEHICLES & DRIVERS

All vehicles operating on the AOA, except those vehicles under escort according to the procedures required by these Rules & Regulations, must display valid Port Authority issued Vehicle Identification tags (PANYNJ plates) and must be operated by an individual who is authorized to drive on the AOA. AOA driver privileges will not be granted unless the applicant possesses a valid state driver's license from their state of residence, and has successfully passed the Port Authority approved airport specific Airfield Driver Training Course.

L. OTHER SECURITY PROCEDURES

Employees will adhere to all other security procedures issued by the Transportation Security Administration, Airport Manager, and all security procedures and obligations, as applicable and outlined in the Airport Security Program, Exclusive Area Agreements, Guard Post Instructions and Building Security Plans. Applicable security procedures and obligations are available on a need to know basis in the Manager's Office. The following items may not be allowed into the sterile area: Knives of any kind, including steak knives and pocketknives. Rounded blade butter knives and plastic knives are permitted for use by restaurant employees and patrons. Cutting instruments of every kind including carpet knives, box cutters and other folding or retractable blades, regardless of blade length or composition, even those less than four inches, whether metallic or non-metallic.

Child safety : keep your little one when you fly

About Child Restraint Systems (CRS)



fig.8

A CRS is a hard-backed child safety seat that is approved by the government for use in both motor vehicles and aircraft. FAA controls the approval of some but not all CRSs. Additional information is available on the [National Highway Traffic Safety Administration website](#). Not all car seats are approved for use in airplanes. Make sure your CRS is government

approved and has "This restraint is certified for use in motor vehicles and aircraft" printed on it. Otherwise, you may be asked to check the CRS as baggage.

FAA-Approved Child Harness Device (CARES)



fig.9

The CARES Child Safety Device is the only FAA-approved harness-type restraint for children weighing between 22 and 44 pounds. This type of device provides an alternative to using a hard-backed seat and is approved only for use on aircraft. The CARES Child Safety Device is not approved for use in motor vehicles

Children with Special Needs

Children Under 18 with Special Needs

Most young children who use a CRS weigh 40 lbs. or less. However, there are some children with physical challenges who weigh more than 40 lbs. and need the support and security of a CRS or device so they can travel safely on an airplane. Airlines must allow a child who is under the age of 18 to use an approved CRS that is properly labeled, appropriate for the child's weight, and as long as the child is properly secured in the CRS. Many companies manufacture CRSs approved for use on aircraft that are specifically designed for larger children who are physically challenged. Additional information is available from the National Highway Traffic Safety Administration.

Adults with Special Needs

Adults (18 years or older) who have physical challenges that require the support and security of a CRS or device in order to travel safely on an airplane may request an exemption to the FAA's regulations that require each passenger to be properly secured by a safety belt. This request may also be made by an airline on the passenger's behalf. Several companies manufacture restraint systems for adults with physical challenges.

Top 10 Airline Safety Tips

While airline passengers have to deal with constant changes in airport security, airline baggage rules, and even in the kinds of items that are prohibited and restricted from airline flights, a lot of the basic common sense suggestions for flying safely and with minimum hassle haven't changed much at all.

1. Fly on Nonstop Routings

Most airliner accidents happen during the takeoff, climb, descent, and landing phase of flight, so the easiest way to reduce your chance of getting in an accident is to take fewer flights. If you have a choice, and there isn't much difference in price, flying nonstop would not only reduce exposure to the most accident prone phases of flight, but it will probably take quite a bit of time off your trip too.

2. Choose Larger Aircraft

Currently, aircraft with more than 30 passenger seats were all designed and certified under the strictest regulations. Also, in the unlikely event of a serious accident, larger aircraft provide a better opportunity for passenger survival. If you review Air Safe. com's list of fatal airline passenger events by aircraft model, you'll see that larger aircraft models tend to have better survival statistics.

3. Pay Attention to the Preflight Briefing

Although the information seems repetitious, the locations of the closest emergency exits may be different depending on the aircraft that you fly on and seat you are in. Some passenger safety briefings include a few words about the position to take in an emergency landing, and AiSafe.com has put together a video below that goes into much greater detail, showing six common crash positions.

4. Keep the Overhead Storage Bin Free of Heavy Articles

Overhead storage bins may not be able to hold very heavy objects during turbulence, so if you or another passenger have trouble lifting an article into the bin, have it stored elsewhere. A heavy bag falling out of an overhead bin can cause a serious injury, so if one is above your head, try to move the bag or change your seat.

5. Keep Your Seat Belt Fastened While You are Seated

Keeping the belt on when you are seated provides that extra protection you might need to help you avoid injuries from flight turbulence.

6. Listen to the Flight Attendants

The primary reason flight attendants are on an aircraft is for safety, so if one of them asks you to do something like fasten your seat belts, do it first and ask questions later. You can also take other steps to improve your safety and comfort in the cabin like wearing comfortable clothes. You should also get up a walk around on longer flights to help avoid problems like deep vein thrombosis.

7. Don't Bring Any Hazardous Material

There are rather long lists of hazardous materials that are not allowed, but common sense should tell you that you shouldn't bring gasoline, corrosives, poisonous gases, and other such items on the aircraft unless they were allowed by the airline and shipped in a proper

container. While the list of banned materials is too long to remember, you should take the time to find out about the most common prohibited and hazardous items you should not bring on board.

8. Let the Flight Attendant Pour Your Hot Drinks

Flight attendants are trained to handle hot drinks like coffee or tea in a crowded aisle on a moving aircraft, so allow them to pour the drink and hand it too you.

9. Don't Drink Too Much

The atmosphere in an airliner cabin is pressurized to about the same altitude as Denver, so any alcohol you consume will affect you more strongly than at sea level. Moderation is a good policy at any altitude, and in the air limiting your drinking is a good way to reduce the chance of an air rage incident involving you or someone else. Also, you may want to find out more about the long-term effects of alcohol abuse.

10. Keep Your Wits About You

In the unlikely event that you are involved in an emergency situation such as a precautionary emergency evacuation, follow the directions of the flight attendants and flight crew and exit the aircraft as quickly as possible. Bonus tip: You might find that wearing hearing protection during your next flight may relieve ear popping and pressure, and make your next flight more quiet and comfortable.

SECURITY AT AIRPORTS

At the security checkpoints, all passengers and their hand luggage must be checked for liquids in addition to other prohibited articles. In the hand baggage only small quantities of liquids and gel-based products (healthcare products and cosmetics) are allowed with the following regulation:

- Liquids must be in containers with **maximum capacity of 100 milliliters each (1/10 liter) or equivalent.**

- All containers must be carried in a transparent, re-sealable plastic bag with a **maximum capacity of one liter (e.g. a bag with dimensions cm 18 x 20)**.
- Only one bag per passengers (included infant) is permitted.
- Medication and special foodstuff needed during the flight can be carried outside the plastic bag. They must be anyway checked at the security point.
- Duty-free articles purchased in an European airport or on board an aircraft registered in the EU may be carried on board inside a special bag that must be sealed by the duty-free shop staff.

In order to help the checkpoint staff, it is necessary to:

- Present all liquids at the checkpoint for examination.
- Remove laptops computers and large electrical devices from the hand baggage for the security screening.

AIRPORT SAFETY CONCEPTS

“Flying is the safest form of transport” - a common expression of which the aviation industry is justifiably proud. The safety and security of our air transport system is no coincidence. Throughout the history of flight, safety has been top-of-mind. While most people know that the industry is safe, people who do not work in aviation are seldom aware of the extraordinary lengths gone to by airport operators, airlines, pilots, aircraft manufacturers, air traffic control organizations and service providers to retain this good record and continually strive for improvement. This dedication to safe operations is seen across the whole aviation sector, from the huge progress in aircraft design including avionics, engine and system reliability, to less well-known matters such as dimensional standards for airfield layouts. The safety culture is an integral part of the industry and takes on many forms, including standard operating procedures, adoption of new technology and ensuring that safety is the driving force behind airport operations. ACI strongly believes that safety is who we are and what we do, not just any day, but every day.

Certification of Airports

ICAO Annex 14 – Aerodromes, Volume 1, Aerodrome Design and Operations, contains Standards and Recommended Practices that prescribe physical characteristics and obstacle limitation surfaces to be provided at airports, and certain facilities and technical services normally provided at an airport. It also contains specifications dealing with obstacles outside those limitation surfaces.

ICAO Annex 14 - Aerodromes, Volume 1 does not include specifications relating to the overall planning of airports, impact on the environment, or to economic or non-technical factors that need to be considered in the development of an airport. Information and / or guidance on these subjects is included in the ICAO Airport Planning Manual

Safety Around Aircraft

Essendon Airport is home to a range of aircraft types. There are larger jet aircraft, both large and small aircraft powered by propeller driven engines, a variety of helicopters and the occasional 'lighter than air' blimp / balloon. Each of these aircraft requires different safety precautions to ensure the safety of all personnel and equipment. An aerodrome is a complex and busy environment. While an aircraft is on the ground there are often several different procedures being undertaken simultaneously. Passengers are embarking and disembarking, baggage and freight is loaded and unloaded, the aircraft is refueled and personnel are performing maintenance inspections and general aircraft servicing. All this activity creates an environment, which can be susceptible to incidents and accidents. Therefore a high level of personal diligence and appropriate procedures are required to ensure aircraft operations can be conducted safely.

General aircraft safety rules

- It is the responsibility of aircraft owners to ensure their aircraft are tied down or chocked to prevent uncontrolled movement.
- No unauthorized person is to approach any aircraft without the direct permission of the aircraft owner or Pilot-In-Command.
- Never park or stand within 3 meters of any aircraft unless you are directly involved in the servicing of that aircraft.
- Never park or stand within 15 meters of a refueling aircraft as fuel overflow vents may

discharge fuel at any time.

- No equipment should be so parked that it would block another vehicle gaining access or egress to or from an aircraft in the event of an emergency.
- Aircraft always have right of way over vehicles, equipment and pedestrians.
- No bicycles are to be ridden on the airside area at any time.
- Mobile phones are not permitted within 15 meters of a hydrant point or aircraft that is being refueled.

AERODROME SECURITY

Essendon Airport is classified as a security controlled airport under the Aviation Transport Security Act 2004 and the Aviation Transport Security Regulations 2005. This means that the airport is gazette as a restricted area and is afforded additional powers than would otherwise occur outside an airport environment. Essendon Airport manages a Security Committee, which includes members of the Federal and State Police and Representatives from various airport operators. This Committee is responsible for ensuring the Transport Security Plan (TSP) of the airport is suitable for the current security climate. Aircraft operators are responsible for ensuring that their aircraft is secured at all times. A perimeter fence encloses the airside area of Airport and the boundary is clearly marked with signage. In addition CCTV system monitors activity around the airport 24 hours a day. EAPL staff, Office of Transport Security Inspectors, specialized security officers and the Australian Federal Protective Services conduct regular inspections of the airside area. Airside access through EAPL gates is controlled through a security access system. Access through these gates is via an access card, issued and controlled by EAPL Management. The control of airside access, and all other security matters, through a facility, which adjoins airside and landside, is the responsibility of the leaseholder of the building or site. Under the Regulations, all airside facility operators must prevent unauthorized access to airside through their leased area. It is a condition of your access to airside that all security incidents, or suspicions are reported to EAPL staff immediately, in addition to contacting the relevant authorities if necessary.

AERODROME MARKINGS, MARKERS, SIGNALS AND SIGNS

The following markings, markers, signals and signs must be obeyed while on airside.

Taxiway Guideline

Aircraft place the nose wheel on the taxiway guideline to ensure that the aircraft is safely within the taxiway limits. Vehicles on a taxiway should always travel along the taxiway guideline to ensure that other aircraft and vehicles can observe the vehicles movements.

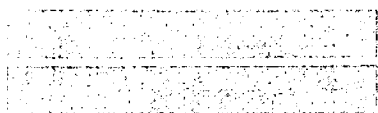


fig.10

Taxiway Edge line

The taxiway edge line defines the edge of a taxiway surface. Unauthorized persons should not travel off a designated taxiway, as soft surfaces may be present.



fig.11

Helicopter Landing and Lift-Off Area

The helicopter landing and life-off area is designed for the use of helicopters only. No people, other than those directly involved in helicopter operations are permitted within 30m of this area.

fig.12

Helicopter Parking Position Marking

Helicopter parking position markings are areas specifically for helicopter parking. No other aircraft or vehicle is permitted to park or stand in this area.

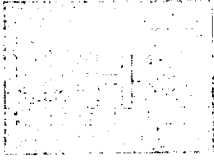


fig.13

Helicopter Apron Edge Markings

Helicopter apron edge markings define an area specifically for helicopter operations. No other aircraft or vehicle is permitted to access this area without approval.

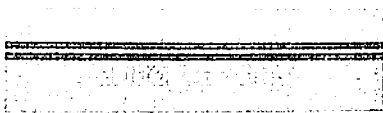


fig.14

Parking Clearance Line

The parking clearance line separates the manoeuvring area (only accessible to persons holding a category 2 AIRSIDE DRIVERS LICENCE) and the apron. This limit line must not be traversed without an EAPL approved escort.

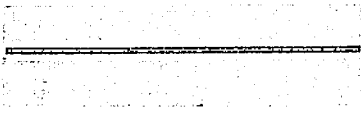


fig.15

Equipment Storage Line

The equipment storage line defines an area specifically for the storage of operational equipment.



fig.16

Equipment Clearance Line

The equipment clearance line defines an area, which must remain clear under all circumstances. Parking vehicles or equipment in this area may result in the item being permanently removed from airside.

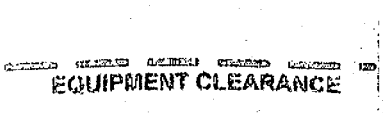


fig.17

Apron Service Road

All vehicles must follow the apron service road until the point where that vehicle must leave the roadway to approach their specific destination. For example, the most direct possible route from the roadway to the aircraft or hanger must be followed. All drivers must use the landside roads to minimize airside traffic where appropriate.

fig.18

Tow bar Disconnect Point

The tow bar disconnects marking identified the point where a tug must disconnect from an aircraft being pushed back onto a taxiway or taxi lane.



fig.19

Apron Limit Line

The Apron Limit Line separates the apron from the Maneuvering Area (Taxiways and Runways). This line also separates Category 1 and Category 2 Airside Drivers License Area



fig.20

Live Taxiway Crossing

A Live Taxiway Crossing identifies an area when an apron service road crosses a taxiway or apron taxi lane. Vehicles must use a Live Taxiway Crossing to cross an active taxiway and must come to a complete stop prior to crossing the taxiway.

fig.21

AERODROME EMERGENCIES

An aerodrome emergency is an actual or imminent occurrence, which may endanger the safety or health of any person or may destroy or damage property. There are many possible emergency situations at an airport however those emergencies specifically involving aircraft are defined by two categories, which determine the level of response required. These categories are:

- **Full emergency:** A situation declared by either the Pilot in Command or Air Traffic Control, when it is known that an aircraft approaching the airport is, or is suspected to be, in such trouble that there is danger of an accident requiring the response from off-airport agencies. An Airport Emergency Plan activation is required for response to this situation and will involve participation from all agencies.
- **Local Standby:** A situation declared by either the Pilot or Command or Air Traffic Control to be initiated when an aircraft approaching the airport is known or is suspected to have developed some defect but the trouble is not such as would normally involve any serious difficulty in effecting a safe landing. An Airport Emergency Plan activation is required for response to this situation however it usually only involves airport-based agencies.

During a local standby all operators and contractors may continue their business as normal. When a full emergency is declared all unnecessary contractors must be removed from airside. Operators may continue their business as normal unless otherwise advised by EAPL, ATC or a combat agency such as the Victoria Police. If an aircraft crash occurs on the airport all operators and contractors should expect the airport to be closed until further notice. Operators are responsible for ensuring all personnel and contractors are within lease boundaries during an emergency. Operators are requested to use caution when speaking to media. All media enquiries should be forwarded to the Victorian Police or the Chief Executive Officer.

Incident, Accident and Hazard Reporting

Airport emergencies include the following events:

- Personal injuries
- Damage to aircraft

- Vehicle accidents
- Damage to airport infrastructure
- Fuel, oil or hazardous material spills

All airport incidents, accidents and hazards must be reported to the Aerodrome Operations Manager by submitting the confidential Incident/Hazard Report Form.

The final model of airport surface safety assesses the functional relationship between accidents and incidents and their underlying critical factors in order to outline effective safety mitigation strategies. The model considers the viewpoints of all relevant aviation stakeholders and accounts for data quality issues (i.e. weighting of different databases). All models are validated through accident/incident data and observational data at selected representative US and European airports.



fig.22

The steady growth in air traffic has been one of the major features in transportation over the last 50 years and forecasts indicate a further growth for at least the next twenty years. In addition to problems associated with congestion and delays, this growth has considerable safety impacts. One major area highlighted by a number of aviation authorities is that of airport surface safety, in particular runway and taxiway safety.

Although previous and current initiatives increasingly emphasize this topic, the industry is characterized by a piecemeal approach and surface safety rarely considered in an integrated manner. To address this issue, this research proposes to develop a model of airport surface safety.

2.2 REVIEW AREA NARROW

Safety is the state of being "safe", the condition of being protected against physical, social, spiritual, financial, political, emotional, occupational, psychological, educational or other types or consequences of failure, damage, error, accidents, harm or any other event which could be considered non-desirable. Safety can also be defined to be the control of recognized hazards to achieve an acceptable level of risk. This can take the form of being protected from the event or from exposure to something that causes health or economical losses. It can include protection of people or of possessions.

Airports are very busy places. Sadly, accidents and incidents occur on a daily basis. There are various reasons for this:

- Technical breakdown or system failure.
- Human error: when someone makes a mistake, is distracted or impeded in their work
- Organizational failure as a result of inadequate oversight or defective procedures.

Safety

Safety means preventing injury to people or damage to aircraft, vehicles or infrastructure due to human error or technical failure.



fig.23

Security

Security means preventing criminal acts deliberately committed at an airport. Security procedures are designed to prevent illegal penetration of the aviation system.

Accidents in operational zones are almost always due to human error and failure

to comply with operational procedures and rules. There are many factors affecting the way employees go about their work. Many airport staff works shifts, which regularly causes problems. These can be due to inadequate communication when shifts change, but fatigue can also be a problem, leading to impaired performance and falling asleep for a moment. All employees are responsible for ensuring that they go about their work as safely as possible. This can mean refusing tasks that put their own safety or that of the airport at risk.

Airports are vital national resources. They serve a key role in transportation of people and goods and in regional, national, and inter-national commerce. They are where the nation's aviation system connects with other modes of transportation and where federal responsibility for managing and regulating air traffic operations intersects with the role of state and local governments that own and operate most airports. Research is necessary to solve common operating problems, to adapt appropriate new technologies from other industries, and to introduce innovations into the airport industry.

In recent years a great deal of effort has been devoted to understanding how accidents happen. It is generally accepted that most accidents result from human error. It would be easy to conclude that these human errors indicate carelessness or lack of skills on the job, but such a statement is not accurate. Accident investigators are finding that the human error is only the last link in a chain that leads to an accident. Accidents cannot be prevented by changing people; they can be prevented only when we address the underlying causal factors.

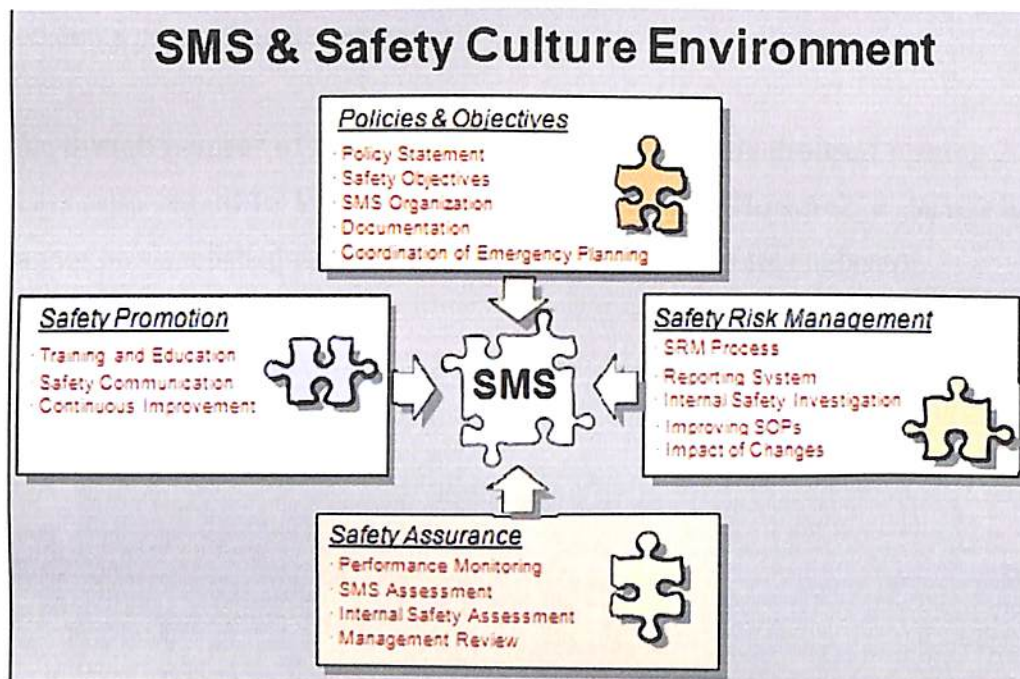
There are two ways to think about safety. The traditional way is that safety has been about avoiding costs.

In this sense, many aviation organizations have been bankrupted by the cost of a single major accident. This makes a strong case for safety, but the cost of occurrences is only part of the story. Efficiency is the second way of thinking about safety. Research has shown that safety and efficiency are positively linked. Safety pays off in reduced losses, enhanced productivity, and lower insurance costs. In 2006, the Port of Seattle opened a ramp tower to assist with ramp operations and improve safety and efficiency. The Port's insurance company agreed that the liability had been reduced due to the ramp tower and lowered the insurance costs. This is an excellent example of how safety, efficiency, and costs are linked.

An SMS will provide an airport with the capacity to anticipate and address safety issues before they lead to an incident or accident. An SMS also provides management with the ability

to deal effectively with accidents and near misses so that valuable lessons are applied to improve safety and efficiency. The SMS approach reduces losses, improves productivity, and is generally good for business.

Airports are key parts of the aviation industry, together with the airlines, air traffic organizations, and aviation service providers. Accident rates can decrease only if each of these parts takes Safety Management Systems for Airports initiatives to improve safety. SMS provides a link between the safety professionals (focused on accident prevention) and the operators (focused on production). This teaming is vital for safety improvement.



A specialized agency of the United Nations, the International Civil Aviation Organization (ICAO) was created in 1944 to promote the safe and orderly development of international civil aviation throughout the world. ICAO sets the Standards and Recommended Practices necessary for aviation safety, security, efficiency and environmental protection on a global basis. It serves as the primary forum for co-operation in all fields of civil aviation among its 191 Member States.¹

Improving the safety of the global air transport system is ICAO's guiding and most fundamental Strategic Objective. The Organization works constantly to address and enhance global aviation

safety outcomes through the following coordinated activities:

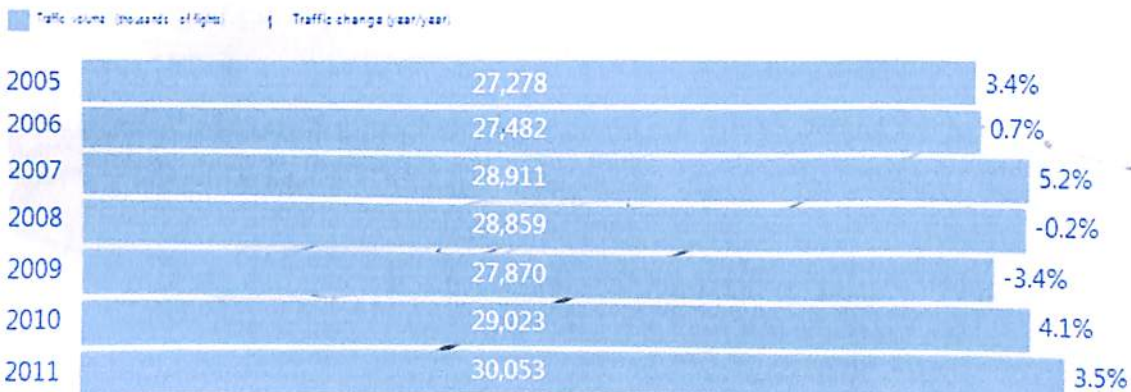
- Policy and Standardization initiatives.
- Monitoring of key safety trends and indicators.
- Safety Analysis.
- Implementing programmes to address safety issues

The number of accidents attributed to scheduled commercial flights increased in 2011 to 126, compared to 121 in 2010. This increase is consistent with the related increase in traffic and therefore did not significantly affect the global accident rate which remained stable at 4.2 accidents per million departures.

The overall number of fatalities in 2011 has significantly dropped making 2011 one of the safest years with regard to loss of life for the last decade. However, a decreasing trend in fatalities cannot be established at this time due to the volatility of this indicator.

Worldwide Traffic Volume: 2005–2011

Scheduled commercial flights



Airport safety

The Air Navigation Commission has recently completed its final review of a comprehensive amendment to Annex 14, Volume I – Aerodrome Design and Operations, for review and adoption by the Council in early 2013. These amendments are aimed at enhancing

aerodrome safety, in particular runway safety. These mainly include:

1. RESA and Arresting System

The amendment strengthens the RESA requirement to cover small aerodromes (with code 1 and 2 non-instrument runways) and, more importantly, introduces arresting system as an alternative means to mitigate runway overrun risks, subject to acceptance by States. The amendment provides for safety enhancement with more flexible, performance-based measures.

2. Runway Surface Condition Assessment and Reporting

The amendment (including consequential amendments to Annex 15 and PANS-ATM) aims to strengthen existing provisions concerning the assessment, measurement and reporting of runway surface contamination at aerodromes which represent a major runway excursion risk factor. The main objective is to report runway conditions by aerodrome operators in a standardized manner such that flight crews are able to accurately determine aircraft take-off and landing performance safely and efficiently.

3. Emergency response and Rescue and Fire Fighting

The amendment deals with emergency response and rescue and firefighting at an aerodrome. On emergency response, a modular concept of testing emergency plans at an aerodrome would result in a longer interval for a full-scale exercise, providing increased flexibility to States and operators. This is particularly pertinent for those States and operators having difficulty in seeking collaboration with mutual aid agencies. On aerodrome rescue and firefighting, a new generation of performance level "C" foam for fighting aircraft fires has been introduced. The level "C" foam requires less water for foam production, a lesser discharge rate and is more efficient in its extinguishing ability than current generation of foams. On average,

based on the quantities of water required, it is 52% and 20% more efficient than current performance level "A" and "B" foams. The use of the new foam should result in either a reduction in the size of new fire vehicles or an increase in firefighting capabilities when using existing vehicles.

4. Simple Touchdown Zone lights

The amendment provides specifications for a lighting system that identifies the end of the touchdown zone for relatively short and high angle of approach runways where full touchdown zone lights are not installed. This would improve safety by increasing flight crew situational awareness as to their position in relation to the touchdown zone, helping to prevent runway excursions due to pilots landing too far down the runway.

5. Use of LED Technology for Visual Aids at Aerodromes

The amendment provides for new specifications on color boundaries for the color "white" for the specific application of white LEDs for visual aids. This would improve safety by ensuring that white LEDs are perceived as white in regard to human performance issues of flight crews. This would also promote the use of LEDs which save aerodrome operators up to 80% in electrical power costs.

Safety in airlines

Passengers can take some responsibility for their own safety by following all airline and airport rules. One of the most important warnings is to never leave luggage unattended or carry luggage or items for other people. Submit to inspections gracefully while remembering these inspections are for our own safety. Wear clothing for comfort and safety instead of style.

Natural fibers such as cotton are preferable as these do not melt into skin in situations of extreme heat or fire. Opt for clothing which protects your body instead of skimpy, short

outfits. If traveling with children, consider buying them their own seat and have them keep their seat belt on at all times.

Mechanical failure is responsible for only 22 percent of fatal accidents in commercial flight, with the biggest factor being human error at 50 to 56 percent, with some statistics saying as high as 80 percent. Take off accidents account for 20 percent of fatal accidents and landing for 36 percent. Only 8 percent of flight accidents occur during the longest part of a flight while the airplane is actually cruising.

Terrorism in the air is not a new safety concern nor is it exclusive to any one nationality. In 1955, Jack Gilbert Graham put a bomb in his mother's suitcase as she traveled from Denver to Portland, killing 44 people. The most common form of terrorism in the air is hijacking, a form of air piracy. The first recorded history of hijacking occurred in 1930 when Peruvian revolutionaries hijacked a Pan Am mail plane.

Safety measures such as not flying at night unless absolutely necessary and keeping planes in top mechanical repair are important towards improving safety. The TSA attempted to implement a plan forcing private jet companies and pilots to utilize similar safety measures as commercial flights --checking all passengers against watch lists and disallowing weapons on board. Yet, after complaints from private pilots and aviation groups and even opposition from Homeland Security, the plan must be re-written.

Passenger safety information

1. Before you are flying

Before booking a flight, a lot of people want to know if the airline they are going to fly with is a safe one. However it's very difficult to say if an airline is 'safe' or 'unsafe' just by looking at fatal accident statistics. Thus, a ranking of airlines by for example fatalities per passenger kilometer flown does not say anything about the safety of the airlines listed. Apart from the fact that there are, luckily, too few fatal accidents to serve as a basis for reliable statistics, safety not always depends on the airline itself. Other factors could include the environment an airline operates in (mountainous terrain or frequent storms) and factors like

airport security in cases of hijackings, bombing attempts etc.

2. During the flight

On board the aircraft there are some things you have to remember,

- Pay attention to the flight crew safety demonstration/video
- Carefully read the safety briefing card
- Know where the nearest emergency exit is and know how to open it in case of emergency (refer to the safety briefing card).
- Always keep your seatbelt fastened when in your seat (Clear Air Turbulence can be unexpected and can cause serious injuries)

Accident Statistics

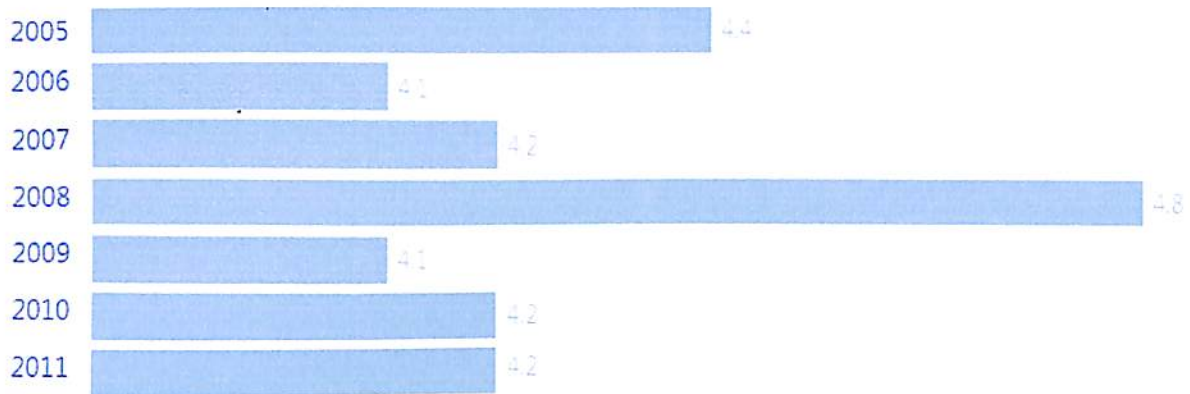
As its primary indicator of aggregate safety in the global air transport sector, ICAO studies the accident rate based on scheduled commercial air traffic with a Maximum Take-off Weight (MTOW) above 2250 kg. Aircraft accidents are categorized using the definition provided in Annex 13 to the Chicago Convention—Aircraft Accident and Incident Investigation.

Exposure data is comprised of scheduled commercial operations that involve the transportation of passengers, cargo and mail for remuneration or hire. The chart below shows the change in the accident rate since 2005, with 2011 having an accident rate of 4.2 accidents per million departures.

In addition to the global accident rate as calculated historically, ICAO is committed to working with its partners through the Global Safety Information Exchange (GSIE) to develop a harmonized accident rate, based on common criteria. Details on the GSIE harmonized accident rate can be found later in this report.

Global Accident Rate

Accidents per million departures



In the case of an accident involving a large and/or complex aircraft, a large team of investigators is usually required to conduct the investigation. The effective conduct of a major investigation requires a management system based on comprehensive plans, checklists and flow charts to track the progress of the investigation; this is called Investigation Management System.

2.3 FACTORS CRITICAL TO SUCCESS OF STUDY

- ❖ Achievement of results
- ❖ Satisfaction from project results
- ❖ Sustainable positive effects
- ❖ Execution of project activities
- ❖ Skilled resources
- ❖ Project management expertise
- ❖ User involvement
- ❖ Proper knowledge about the subject
- ❖ Various ideas about the books
- ❖ Manage the project scope effectively
- ❖ Cultivate constant effective communication
- ❖ Agree on the project goals
- ❖ Make sure you have management support
- ❖ Develop clearly defined plans with assigned responsibilities and accountabilities

2.4 SUMMARY

Airports are key parts of the aviation industry, together with the airlines, air traffic organizations, and aviation service providers. Accident rates can decrease only if each of these parts takes initiatives to improve safety. SMS provides a link between the safety professionals (focused on accident prevention) and the operators (focused on production). This teaming is vital for safety improvement. In recent years a great deal of effort has been devoted to understanding how accidents happen.

It is generally accepted that most accidents result from human error. It would be easy to conclude that these human errors indicate carelessness or lack of skills on the job, but such a statement is not accurate. Accident investigators are finding that the human error is only the last link in a chain that leads to an accident. Accidents cannot be prevented by changing people; they can be prevented only when we address the underlying causal factors. There are two ways to think about safety.

The traditional way is that safety has been about avoiding costs. In this sense, many aviation organizations have been bankrupted by the cost of a single major accident. This makes a strong case for safety, but the cost of occurrences is only part of the story. Efficiency is the second way of thinking about safety. Research has shown that safety and efficiency are positively linked. Safety pays off in reduced losses, enhanced productivity, and lower insurance costs. In 2006, the Port of Seattle opened a ramp tower to assist with ramp operations and improve safety and efficiency. The Port's insurance company agreed that the liability had been reduced due to the ramp tower and lowered the insurance costs. This is an excellent example of how safety, efficiency, and costs are linked.

'The safety culture of a group is the set of enduring values and attitudes regarding safety issues, shared among the members of the group. It refers to the extent to which the members of the group are positively committed to safety; consistently evaluate safety related behavior; are willing to communicate safety issues; are aware of the known risks and unknown hazards induced by their activities; are willing and able to adapt themselves when facing safety issues; and are continuously behaving so as to preserve and enhance safety.'

CHAPTER 3: RESEARCH DESIGN, METHODOLOGY AND PLAN

3.1 DATA SOURCES

There are two types of data. Primary data and secondary data. For this research I used secondary data. Secondary Sources constituted the whole of research work. There are two distinctive sources of secondary data. Internal and external sources. Some of the external sources are:-

- Directories
- Published marketing research reports
- News sources
- Internet
- Books and journals
- Research reports
- Magazines and articles

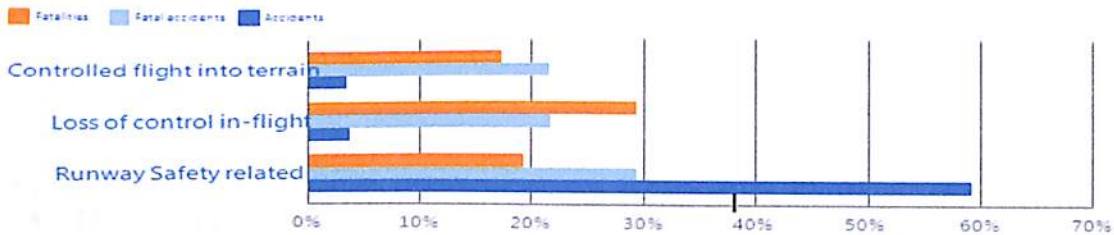
3.2 RESEARCH DESIGN

A research design is a systematic plan to study a scientific problem. The design of a study defines the study type (descriptive, correlation, semi-experimental, experimental, review, meta-analytic) and sub-type (e.g., descriptive-longitudinal case study), research question, hypotheses, independent and dependent variables, experimental design, and, if applicable, data collection methods and a statistical analysis plan. Research design is the framework that has been created to seek answers to research questions.

For this research descriptive research design is used. This design is used because in the whole project I am describing the various safety in and around airport and airline and how to avoid airplane crashes.

3.3 DATA ANALYSIS PROCEDURES

Percentage of All Accidents: 2005–2010

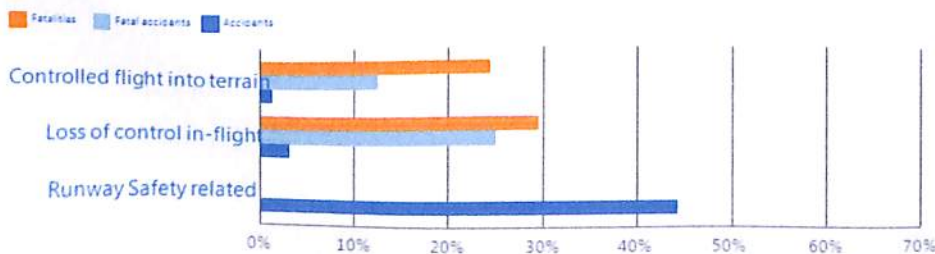


The following chart provides a summary of the distribution of accidents, fatal accidents and of fatalities related to the 3 high-risk occurrence categories from 2005–2010. Runway safety accidents represented 59% of all accidents, accounting for 29% of all fatal accidents and 19% of all related fatalities reported between 2005 and 2010.

While the loss of control in-flight occurrence category represented only 4% of all accidents, this category is of significant concern as it accounts for 22% of all fatal accidents and 29% of all fatalities.

Similarly, accidents related to controlled flight into terrain accounted for only 3% of all accidents but represented 22% of all fatal accidents and 17% of fatalities.

Percentage of All Accidents: 2011



The 2011 accidents follow broadly the same distribution as the benchmark period except for runway safety related accidents. In 2011, the total number of runway safety related accidents dropped significantly and no fatal accidents were attributed to that risk.

- Guns in the home increase risk: Rather than being used for self-defense, guns in the home are 22 times more likely to be involved in accidental shootings, homicides, or suicide attempts. For every one time a gun in the home was used in a self-defense or legally justifiable shooting, there were 4 unintentional shootings, 7 criminal assaults or homicides, and 11 attempted or completed suicides'
- Deaths: From 2005-2010, almost 3,800 people in the U.S. died from unintentional shootings. More than a third of the victims were under 25 years of age.
- Injuries: In 2010, unintentional firearm shootings caused the deaths of 606 people.iii
- More Guns = More Accidental Shootings: People of all age groups are significantly more likely to die from unintentional firearm injuries when they live in states with more guns, relative to states with fewer guns.
- On average, states with the highest gun ownership levels had 9 times the rate of unintentional firearms deaths compared to states with the lowest gun ownership levels.
- A federal government study of unintentional shootings found that 8% of such shooting deaths resulted from shots fired by children under the age of six.
- Youth and Accidental Shootings: Over 1,300 victims of unintentional shootings for the period 2005–2010 were under 25 years of age.
- For kids ages 5 to 14, the mortality rate is 14 times higher in high gun ownership states than low gun ownership states. For infants and toddlers, ages 0 to 4, the mortality rate is 17 times higher in high gun ownership states than low gun ownership states.
- The majority of people killed in firearm accidents are under age 24, and most of these young people are being shot by someone else, usually someone their own age. The shooter

is typically a friend or family member, often an older brother. □ Safe Storage of Firearms: Thirty-three percent of U.S. households contain a gun, and half

of gun-owning households don't lock up their guns, including 40 percent of households with kids under age 18.

- Both firearm prevalence and questionable storage practices (i.e. storing firearms loaded and unlocked) are associated with higher rates of unintentional firearm deaths.

CHAPTER 4: FINDINGS AND ANALYSIS

4.1 FINDINGS

In this research I found out the safety in and around airport and airline and also I found out how to avoid airplane crashes. Air travel is a fast and convenient way to reach a destination. Even if many passengers may complain of missed flights, delays during the holidays, and the number of carryon's they are allowed to bring onto the plane, air travel is an important part of quick transportation. One essential part of the airport system is security. Today, security is a major priority that airports must administer strictly. Due to the failure of safety in airports and airlines, there are increase in accidents, terrorist attack and threats. For the safety of passengers the airline and airport provide certain safety tips. Follow these simple airport safety tips to help ensure you and your traveling companions arrive safely at your destination with your possessions intact:

- Stay alert. Don't leave your bags unattended for even a few seconds. Don't allow anyone except uniformed airport personnel to handle your bags.
- Keep your photo identification and your ticket close at hand at all times.
- Do not agree to carry anything on board the plane on behalf of a person you don't know, no matter how small or insignificant the item might seem to be, or how "nice" or innocent the person asking may appear.
- If you notice any unattended items or suspicious activity in the airport or near the aircraft, report the situation to the nearest airport or airline official immediately.
- If you have a purse, carry it close to your body. If you have a wallet, keep it in an inside front pocket. Consider using a money pouch under your clothes instead of carrying a purse or wallet.

- Watch out for staged mishaps. Often, criminals will work in teams, one bumping in to you or spilling a drink to distract your attention while the other makes off with your luggage, laptop or other valuables.
- Consider attaching an electronic proximity alarm to your valuables, which will alert you with a loud alarm if a thief attempts to make off with any of your bags while you aren't looking.
- Keep a separate record of the contents of your checked bags. This will come in handy in the event they are lost or tampered with. Any especially valuable items should not be checked, but should be packed in a small carry-on that stays with you at all times.

A programme of regular aerodrome safety audits is enhanced by our continuing work to develop strategies to counter hazards that include:

- The risk of bird strikes
- The protection of runways from incursion by vehicles or pedestrians
- The safe operation of airports during extreme weather conditions.

Safety is an accumulation of knowledge about risk converted into practice, and no other mode of transportation has been as expansive as flying in incorporating what we know about the fallibility of humans and machines.. From the plane seats to the cabin air to the course and altitude of the flight, every decision in commercial aviation comes after careful consideration of its impact on safety. Here, in broad strokes, are the most significant.

More information on our airline and safety ratings can be found [here](#) or by simply clicking on the safety rating link next to each airline. The maximum rating an airline can get for safety is seven stars. We also provide information on the history, aircraft types and in-flight offering (meals, drinks, seating and in-flight entertainment) for most airlines.

Our airline and safety ratings are designed to be transparent, to encourage and promote safety throughout the airline industry for all passengers. While travel by air safety is reportedly the best its been since the 1960s, with only 23 documented fatal crashes in 2012 and

the development of tools to predict weather conditions, there are still concerns when it comes to the higher crash-rates of Latin America, Africa and developing regions. In addition, U.S. pilots are under scrutiny, as cockpit automation and increasingly congested airports may prove to become hazards.

Keeping passengers safe both in the airport and while flying remains paramount, especially in the wake of events including September 11. However, going beyond miniature liquid bottles and taking your boots off at security checkpoints, the introduction of full-body scanners has caused much controversy.



fig.24

Some airports will not let you fly if you refuse the scan, whereas others have removed the technology completely not only due to privacy concerns -- but because they slow down the security process to unacceptable levels. At some point, an acceptable balance between security and viability has to be achieved.

The pilots and the airplanes may be the stars of the show in commercial aviation, but behind the scenes, a new, almost Star Wars-like air traffic system is being built where airplanes guided by GPS will fly self-programmed routes, communicating with each other and with the ground. This is very different from the days when maps, blackboards and pencil and paper calculations were used to direct airplanes. With more than 28 million flight departures last year, it takes a pretty sophisticated process to safely and efficiently manage a huge—and still growing—number of aircraft.

Many planes today can operate in a geographic window so exact that their horizontal position remains within “a wingspan, with vertical deviation less than the height of the tail,” says Ken Shapero, director of marketing for GE Aviation. The linking of onboard and on-the-ground systems creates highways in the sky where nobody veers out of their lanes.

“Automation determines the trajectory of the airplanes, and for the most part, air traffic controllers let the airplanes fly,” notes Steve Fulton, a former airline pilot who founded the navigation company Naverus, acquired by GE Aviation in 2009. Challenging terrain, low visibility, bad weather—the kinds of hazards that can close airports and divert airplanes—will no longer cause chaos.

A report prepared for FAA by GRA, Inc. entitled A Report on Issues Related to Public Interest in Aviation Safety Data, found that "... there currently is no evidence in accident data that would support the ranking of individual airlines based on their safety records....While there may be apparent differences in carrier safety records at any particular time, due largely to the infrequent but catastrophic nature of an air accident, there is no evidence that such distinctions persist nor that they are predictive of future safety performance. Rankings of airlines based on past accident records therefore provide no information to consumers seeking to make safety-enhancing comparisons for current or future travel choices."



While flying can be lots of fun, it's important to remember that professional and

amateur aviators work in a high-risk environment. It's often possible to avoid many common accidents by following the right safety procedures; however, it can be difficult to plan for all contingencies. Because of this, pilots should always have access to the right aviation safety equipment. Pilots often find themselves flying over water or vast stretches of wilderness. While flight over these areas can be safe, it's essential to prepare for contingencies with the right flight safety equipment.

Pilot Mall offers survival kits, fire starters, flotation devices, first-aid kits and a variety of other supplies to ensure that one stays safe in the event of an accident. While landing in an isolated area can be a serious incident for a pilot and his or her passengers, the right safety equipment can be provide a valuable lifeline while waiting for help.



Adventure Medical Kits



Fire Starters



Leatherman



Life Vest & Life Rafts



Personal Locator Beacons



Rescue Lights



Tracking Devices



Survival/Preparedness

fig.25

4.2 ANALYSIS

According to my view, this research is to find out safety in and around airport and airline and also how to avoid airplane crashes. The problems faced by the airline and airport are due to the failure of safety in and around airport. For the safety of airport airside the airport managers and staff on best practices, the latest technology, new equipment and procedures and regulations which are applied to the safe and efficient operation of the airside environment. The benefit of such safety measures are:-

- ✓ Provides practical and up-to-date tools for managing safety at airports
- ✓ Enhances expertise on safety standards implementation in airport operations
- ✓ Indicates safety factors identification, control and maintenance
- ✓ Provides overview on all safety operations at air

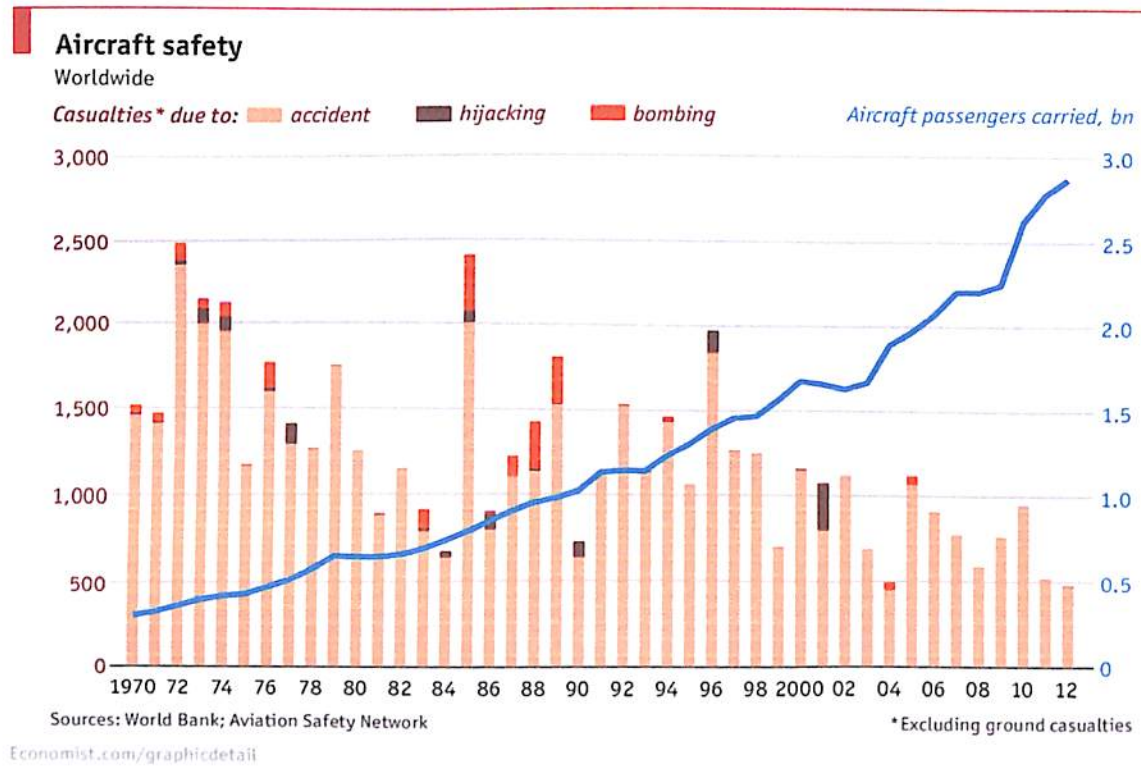
Safety Management System is proven to be an effective management tool of achieving safety within an organization and an industry as a whole. Although all organizations differ from each other, there are common benefits that can be shared among them;

- ✓ A proactive method of improving safety rather than the old reactive approach, primarily after an accident
- ✓ Reduced loss of life and injuries through prevention of accidents and incidents
- ✓ Improved employees satisfaction
- ✓ More efficient interface with regulatory authorities

AIRPORT SAFETY POLICY PRINCIPLES

- To ensure the efficiency, effectiveness and highest safety and service quality standards of flight infrastructures, systems and equipment;

- To provide for ongoing review of operational processes and procedures for maximum compliance with national and international regulations on operational safety, quality and efficiency/effectiveness;
- To implement systematic, regular and appropriate training for all personnel.



CHAPTER 5: INTERPRETATION OF RESULTS

5.1 INTERPRETATION OF RESULTS

For this research, whatever I found is true. Because, whole of this research I found only about the safety in and around airport and airline and how to avoid airplane crashes. Due to the lack of safety in airports will results in accidents, terrorist attack, and threats. Proper safety measures provided by the airport and airline will lead to the safety of passengers. Safety is the relative freedom of a person from danger, risk, or threat of harm, injury, or loss to personnel and/or property, whether caused deliberately or by accident. Airport security attempts to prevent any threats or potentially dangerous situations from arising or entering the country. If airport security does succeed in this, then the chances of any dangerous situations, illegal items or threats entering into aircraft, country or airport are greatly reduced. As such, airport security serves several purposes: To protect the airport and country from any threatening events, to reassure the traveling public that they are safe and to protect the country and their people.

5.2 Comparison of Results with Assumptions (Hypotheses)

The hypothesis of this research is due to the lack of safety in airport and airline will result in accidents, malicious harm, crime, terrorist attack and other threats. The result I found is that safety is the main factor of airport and airline. Without safety and security, an airport and airline cannot operate. All airports and airlines provide better safety measures for the safety of passengers.

CHAPTER 6: CONCLUSION AND SCOPE OF FUTURE WORK

An airport safety management system (SMS) provides a systematic, proactive approach to reducing the probability and severity of aircraft accidents/incidents on the air field. It has been shown that air accident investigations have many of the characteristics of research, and in the author's view, such investigation could be regarded as a field of research. What investigations currently lack is a formal methodology. Applying standard research methodology should demonstrate the need for sufficient time and resources to complete the research properly, and also improve the overall quality of investigations. By making the reports and recommendations more persuasive, it should enable the investigations to better serve their purpose of reducing the aircraft accident rate.

With the global trend of legal requirement for a performance-based Safety Management System (SMS), to develop and implement an SMS to deliver services has become the most important goal within the airline industry. Yet there found some discrepancies concerning the use and the manner that SMS was being explained and taught. Therefore, this research aims to develop a quantitative evaluation model, which identifies the key components of airline SMS and considers the interaction between key components. To explore the core value of SMS, an extensive review regarding SMS components are firstly conducted and summarized from major aviation organizations and authorities, and then Grey Relational Analysis is used to group and select key components.

With air travel expected to quickly recover its former growth rates, airports are facing several challenges: handling the increasing number of passengers, freight, and baggage in an efficient and cost-effective way as well as creating environmentally friendly solutions and products, plus satisfying the rising security standards required worldwide. Our efficient and green solutions mean airports and airlines are optimally prepared for an economically successful and green future. Siemens is one of the few companies in the world to offer a comprehensive green portfolio of products, solutions, and services for all airport-related processes. Our experience and expertise lie in the areas of efficient baggage and freight handling, passenger information services, green airport consultancy, safety and building management systems,

transportation equipment, energy efficiency, operations, and maintenance. Installing energy-efficient solutions will enable airports to grow on a CO₂-neutral base. The CO₂ reductions from our individual solutions can range from 10% to 100% through the use of renewable energies.

Air travel and transport are benefiting from this rapid development like no other mode of transportation. Your challenge, then, is to manage this growth efficiently, securely, and safely and in a way that is compatible with the environment. Your challenge is to bring your airport's entire infrastructure up to world-class standards and keep it there from take-off and landing through ticketing, from the safety and security of passengers and equipment to energy management and ground transportation. These are complex tasks that demand integrated solutions. Let's join forces to meet these challenges. Siemens views airports as a whole. We offer innovative solutions that work together smoothly for every part of your airport – for your entire airport. Siemens will support you with a comprehensive approach to the growing demands on your airport

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Title: Aviation Safety Programmes

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