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THE IMPORTANCE OF THE ROLES OF LAW IN AVIATION SAFETY

Guran Asaad TAHA

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THE IMPORTANCE OF THE ROLES OF INTERNATIONAL HUMANITARIAN LAW IN ARMED CONFLICTS REGARDING TERRORISM

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ABSTRACT

Aviation industry has been known globally as the doorway to every nation in the world, where people, goods and services are allowed to cross countries and continents in an orderly way. It has not just been a concern of individual State, it is internationally regulated by world class organized body. Nevertheless, safety in this industry has been a concern of every party involved in this industry. From facts, record has it that air transport is the safest means of transportation, however, to forestall and ensure no loss of life and property, rules and regulations are crafted in forms of Conventions and treaties to bind States and enforce them to comply with the aviation rules and regulations.

Therefore, this study found it worthy to illuminate the importance of the roles of law in ensuring safety in the aviation industry with total rest on the bench of scholars' literature, Conventions, Articles and Statutes of States. The study concludes that even though there are other instruments to prevent incidents and accidents in the aviation industry, law still has a predominant importance in ensuring that safety is flagged as a priority in States with Aviation industries. It has the capacity, with the right enforcing agencies in place, to make States comply with the rules without excluding other Stakeholders such as the Airlines, Manufacturers, Pilots, Cabin Crew, and other Aviation Staff.

Keywords: *Aviation, Airlines, Aircraft, Accidents, Incidents.*

DECLARATION

I hereby declare that this master's thesis titled as *"The Importance of The Roles of Law In Aviation Safety"* has been written by myself in accordance with the academic rules and ethical conduct. I also declare that all the materials benefited in this thesis consist of the mentioned resources in the reference list. I verify all these with my honour.

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ABBREVATIONS

AAIB: Air Accident Investigation Branch

ACAC: African Civil Aviation Commission

AFTN: Aeronautical Fixed Telecommunication Network

ANC: Air Navigation Commission

ATC: Air Traffic Control

ATCO: Air Traffic Controllers

ATM/ANS: Air Traffic Management/Air Navigation Services

ATSB: Australian Transport Safety Bureau

CAA: Civil Aviation Authorities

CASA: Civil Aviation Safety Authority

CIANA: Convention Ibero-Americano De Navegacion Aerea

CICA: Convention on International Civil Aviation

CINA: Commission International De La Navigation Aerienne

COA: Certificate of Airworthiness

EASA: European Aviation Safety Agency

EC: European Commission

EU: European Union

FAA: Federal Aviation Authority

FAR: Federal Aviation Regulations

ICAN: International Commission for Air Navigation

ICAO: International Civil Aviation Organization

IFR: Instrument Flight Rules

JAA: Joint Aviation Authorities

NCAA: Nigeria Civil Aviation Authority

NTSB: National Transportation Safety Board

PIC: Pilot-In-Command

RPAS: Remotely Pilot Aircraft Systems

SARPS: Standard and Recommended Practices

TC: Type Certification

UAS: Unmanned Aerial Systems

USOAP: Universal Safety Oversight Audit Program

VFR: Visual Flight Rules

VMC: Visual Meteorological Conditions

CHAPTER ONE: INTRODUCTION

1.1 Background of study

In the history of aviation, accidents have been one of the dangers that have colored the sector. According to an ironical statement credited to an aviation magazine, "Aviation safety is excellent--but accidents will occur", it is very scary when considering how dangerous flying in the air could be. Why is it that accident must occur? How can safety in aviation then be in excellent mode? What instrument has been used to achieve this excellence?

Just to mention a few, on the 9th of May 1987, the last words of the pilot of the LOT Polish Airlines, flight 5055 according to NTSB investigative group are "Goodnight, Goodbye, We Perish". Another statement "there it goes, there it goes! Oh no!" was said by the pilot of American Int. Airways on the 18 of August 1993. On 4th of April 2010, the Continental Express pilot of flight 3407 said "we are down" (gpo.gov, 2010). It is very unfortunate that safety is 100% not guaranteed but fortunately, safety has been effectively buffered since the industry is now responsive to all hazards revolving round the air transportation and has become safer as more knowledge and experience is being acquired. Since the inception of the tracking of accident rate by ICAO, it is estimated over the previous six years in the trend of accident rate that 2009 had 4.1 accidents per million departures. In 2010, 2011, 2012 and 2013 it was 4.2, 4.2, 3.2 and 2.8 accidents per million departures respectively. This fact and figure seem interesting as it can be seen that there is a reduction in rate of accidents as year goes by. This is a feat even though death is still recorded each year. Just in 2014, there were approximately 2.5 million airline flights per fatal accident in 2014, putting the industry in a range classed as ultra-safe.

Furthermore, there would be very few accidents if the elementary rules of flying were rigidly observed and stupid risks avoided (cilnice.search-manuals.co.uk, n.d.). So many instruments have been used to keep aviation safety in the present state it is and one of the instruments used that this study will address is law. Law in the shape of rules and

regulations has helped to make air transport the safest means of transportation. Rules and regulations have been made to enforce laws; both federal and state governments have joined hands together to enact statutes and create administrative agencies to regulate air traffic and ensure safety (plane-crash-aviation-attorneys.com, n.d.). So many international meetings and conventions have been held unifying rules and regulations to ensure safety.

Has it has been known that "air safety has improved greatly" (Marion, 2011), the understanding of the influence of law in aviation safety that has provided a framework that keeps the aviation industry safe (aviation-safety-bureau.com) would be the focus of this study in the area of civil aviation which is the flights and aircraft used for personal and business purposes, such as transporting goods or passengers, rather than for military purposes (dictionary.cambridge.org, n.d.)

1.2 Statement of Problem

In any atmosphere where Humans are carrying out daily activities whether with primitive or sophisticated techniques, it is highly imperative that both the humans and non-humans are given the appropriate checks to ensure that one is not affected by the action of the other.

According to facts, flying is the safest means of transportation, which is due to the deployment of modern equipment and well-trained personnel who work according to set procedures and responsibilities. In addition, air traffic has doubled over the last twenty years and the number of accidents has not increased in this respect. All the glory to the implementation of rules and regulations made by national and international bodies in improving aviation safety.

The focus of this thesis is to carefully examine the safety administration in its dimensional structure with the lens of law. It will critically discuss who implements and

enforces rules and regulations for safety in the aviation world and how the laws or Acts have been used to ensure safety by States.

Responsibility is a key factor that determines how safe everyone can be and sustainability of policies to keep safety at highest peak. Hence, this study tackles issues bothering (legal) rights and responsibilities of airlines, aircraft manufacturers, airline employees, pilots, and passengers.

Some important factors that are making the aviation safety not effective includes lack of maintenance of infrastructure and equipment, lack of resources to improve safety, corruption, bureaucratic failures, lack of efficient and safe airport infrastructure required to support the projected traffic growth, safe navigation and air traffic control systems (link.springer.com, n.d.). This work reveals the importance of the role of law as a tool at national and international level in exercising and correcting these deficiencies and making safety an inevitable model.

1.3 Purpose of the study

a. To dissect the nature and roles of safety in aviation;
b. To check in details what does safety involves;
c. To critically examine what rules and regulations are in place to ensure safety in aviation;
d. It will analysis the civil and criminal law that affects aviation safety;
e. It will explore the aviation safety agencies;
f. What roles States play to align with ICAO
g. To examine the right and responsibilities of the airliners, aircraft manufacturers, airline employees and passengers.

1.4 Significance of the study

The significance of the study is to bring out the understanding through the assessment of the role of law in dealing with the susceptibility of the aviation industry to the inherent risks of flight, and all possible safety measures from legal perspectives.

1.5 Methodology

Correlative research method of deductive reasoning would be adopted. Also, the source of data to be used will be both primary and secondary sources of information. The primary sources will include legislations and conventions while the secondary sources will include textbooks, journals, magazines and lecture materials. Articles from the web would be used.

1.6 Structure of the study

This work is set into five chapters, which would simply be sequentially labelled. The first chapter envelops the introduction, which gives the overview of the main points of this thesis. It carries along with it the background of study, which has set the general tone and theme of this study. The statement of problem is embedded in this chapter coupled with purpose of the study, significance and methodology used.

Chapter two delves into the definition of aviation law hanging by its side the explanation of the meaning, role and nature of safety in the aviation industry cum the meaning of civil aviation. It briefly highlighted the evolutionary historical events in aviation safety in timelines. It included the aviation safety regulatory agencies at all levels.

In chapter three, the basic concept of law in aviation constitutes this chapter. The meaning of law, in inclination to the legal framework for safety in civil aviation industry is the focus of this chapter. The safety laws, standards, rules, regulation applicable to the

aviation sector are subset of this chapter. The fundamentals of aviation regulations and the regulatory structures are not exempted. Majorly and finally, this chapter explored the Chicago Convention Articles, Annexes and Appendixes that centres on aviation safety.

Chapter four accentuates legal responsibilities and rights of airlines, airlines employees, pilots, passengers and States. It discusses their liabilities.

Chapter five broadly focuses on the implementation and enforcement of safety laws. It addresses the role of ICAO and some national agencies that regulates aviation safety. It will not fail to treat investigative processes carried out by States. Then this chapter ends with summary, conclusion and recommendations.

CHAPTER TWO: AVIATION LAW

This highly specialized field of law encompasses most facets of air travel, as well as the operation and regulation of business issues relating to air travel, which requires a comprehensive knowledge of FAA regulations, specific laws regarding flight, and an in depth understanding of aviation (Hg.org, 2015). It governs the operation of aircraft and the maintenance of aviation facilities (Hg.org, 2015). Aviation law pertains to nearly all individuals connected to the operation and maintenance of aircraft (Hg.org, 2015). Air traffic regulation polices, in both federal and state government, has created laws and administrative agencies with certain restrictions preventing states from regulating routes, services, or the rates of all air carriers authorized to provide interstate air transportation by the Federal Aviation Acts (Hg.org, 2015).

Through Laws, aviation industry been organized in terms of their activities and professionalism prohibiting all acts that may endanger airplanes, airports or any facility related to aviation services (Wam.ae, 2015). The law obligates aviation workers to obtain permit or license from recognized bodies, with penalties and fines to be imposed for violations (arabianaerospace.aero, 2015). The law has been utilized to assess and screen all aviation exercises and aeronautics specialists, and may additionally characterize any demonstrations that constitute hazard on aviation facilities, air operations, airplanes, air travelers and air traffic (Wam.ae, 2015).

To cut it short, the law that has to do with aviation is 'Aviation law' and this is the branch of law that governs the legalities and business aspects of flight and air transport, such as air traffic rights, aviation safety and security, economic regulations of airlines, and the operation of airports (Aviation-safety-bureau.com, 2015).

2.1 Aviation Safety

A remarkable means of mobility is one of the skeletal make up of a modern society. Every means of transportation connects with each other. They perform a same function

at different dimensions. Out of all the means of transportation, air transport is the safest in regards to the ratio between the number of accidents and that of passenger/kilometers. Another issue is that when incidents or accidents occur such as plane crash, with casualties, all ears are aware about it and this gets the attention of the government. It is therefore not new or surprising that every State government priorities and give attention to it more than other means of transportation. One of the key elements to increase the public confidence in air transport is put in place a standard impeccable level of safety in the Aviation Sector through law.

Aviation safety is not an agenda of a group or a sect of people; it's a universal concern that needs an international attention and enforcement. It is just simply the very important issues on a world stage. Being able to critically interpret the word 'safety' in the aviation is very important.

What does safety means? According to Merriam-Webster definition, safety itself means the condition of being safe from undergoing or causing hurt, injury, or loss (Sonoco-europe.com, 2015). This definition, if applied to the aviation world, would totally picture the idea of 'do not go against the fundamental principle of nature since the law of gravity is universal and machines (which is prone to technical fault) are not human.' Another definition made it clear that safety is a mechanical device designed to prevent inadvertent or hazardous operations. This could mean that if we go against the laws of nature, devices with high technological concepts can be used to carry out operations of high risk with the tendencies of circumventing inevitable catastrophes. A source gave another definition of safety as a complete understanding of your work and knowledge of every step that must be taken and the realization that mistakes could be costly to yourself and to the company (Arubaports.com, 2011). This in actual sense could mean that every personnel in the (aviation) industry must be completely learned and adequately trained always towards every operation going on in the industry and not having believe in luck but having the right mind to handle any sudden hitches that may come up briskly. More so, safety could mean remembering the safety rules set up by a company and applying them every minute when on the job (Arubaports.com, 2011). It can be finally concluded, with the understanding of air transportation, according to the definition given by ICAO

Air Navigation Commission that 'aviation safety is a state of freedom from unacceptable risk of injury to persons or damage to aircraft and property" (oxfordjournals.org, n.d.). This meaning is very comprehending as it indicates that mistake(s) that lead to fatal accidents would become an intolerable hazard, for lessons must be learnt and since safety is not a rigid concept, it has to be flexibly and exposed to changes in synchronism with technological and innovative advancement. What caused power failure, wire sparks, or technical problem in last year's crash must not repeat itself in the present year. According to the ICAO definition of aviation safety, everything must be put or set right and there must be a zero or insignificant risk before operations.

However, marriage between safety and security cannot be sundered. No matter the highest precautions put in place to ascertain safety in a situation, such situation must be secured. The September 11, 2001 attack on US was not as a result of default in safety, it was the ability of the terrorists to bye-pass the security instruments, which nullified the effective safety mechanisms that was put in place. To make aviation safety at its optimal level, aviation security must be kept and treated as a subset to it.

Every airline company has a duty to comply with the rules and regulations of the States Aviation Regulatory Bodies. Likewise, no State Aviation Authority is autonomous, they must be under the international body, which gives and determines rules that all aircrafts and airlines must comply with before flying.

The role of aviation safety is but not limited to prevention of accidents but covers all scopes but this study will focus on just the legal dimensional aspect of it. It has been noted that safety is not limited to accident prevention, but should be considered in a broader term as risk management (Lofaro and Smith, n.d.) Keeping the aviation industry safe is just the law, which sets right the right things to put in place to ensure safety. For example, the Federal Aviation Agency (Boksberger, 2011) which is saddled with the responsibility to regulate airlines in US has embraced safety as its core mission with the statement "Our mission is to provide the safest, most efficient aerospace system in the world and our mantra is to improve the safety and efficiency of aviation, while being responsive to our customers and accountable to the public" (surfingincognito.com).

Equally in, the EU, the European Aviation Safety Agency, EASA, which is the centrepiece of the European Union's strategy for aviation safety has its mission, which states that "to promote the highest common standards of safety and environmental protection in civil aviation (Easa.europa.eu, 2015)." They mainly draft legislation that centres on aviation safety and works hand in hand with the national authorities, which continue to carry out many operational tasks, such as certification of individual aircraft or licensing of pilots (Center, 2008). Additionally, in Nigeria, the most populated black nation in the world, has Nigerian Civil Aviation Authority, NCAA, as its highest aviation regulatory body that ensures that all stakeholders in the sector comply with the aviation safety regulations. Where safety rules are breeched, the NCAA takes strong corrective actions to enforce compliance which may include sanctions (ncaa.gov, 2015).

As it is conspicuous that every democratic government must have a 3-arm component, which constitute of the executive, legislature and judiciary, it is also not new that they must function as a sovereign entity. They can make laws that would solely affect them and form ties with friendly nations with treaties of economic and political importance. As it is extremely pertinent for states to be free of any form of external aggression, it will be disturbing and dangerous to leave some issues in the hands of States to regulate fully without some international bodies influencing them. In as much that citizens of State 'A' can have the freedom to choose another State of interests to visit for any good reasons, then safety doctrines that is regimented by international bodies would save State 'B' from the possible safety negligence from State 'A's aviation sector. Since law is a product of drafting of bills, passing the bills and giving assent to it and implementing it, it can be seen that when laws dealing with aviation industry, having in mind that there are rules of international standards which binds all, every legislative arm of a State have the duty to marry the national laws with the international rules such that the world will have a safe air transport system.

2.2 Civil Aviation

It is among the most widely controlled sector in the world. Every single technical personnel, equipment and airport must be certified and monitored by competent regulatory agencies known as Civil Aviation Authorities (CAAs) (Ncaa.gov.ng, 2015). Indeed, the International Civil Aviation Organization (ICAO) and other global bodies thus evaluate even the CAAs themselves (ncaa.gov.ng, 2015). The working standards, rules and measures used in civil aviation have Standards And Recommended Practices (SARP) of ICAO and stipulated National laws and regulations as there working template (ncaa.gov.ng, 2015).

2.3 History of Aviation Safety

It is very important to always have a fine connection between the past, present and the future. Aviation safety did not just become an issue of concern today. It can be dated back to when humans began to add air to the means of transportation.

History of airplane can be traced to the age of the Wright Brothers who went against all odds to air-control an aircraft that was engine-powered for 12 seconds in 1903.

However, the ideas of these brothers were tailored to meet the aims of victory that spelt doom to the generations in the World War I (1914 - 1918). This ushered in a new era of flight (Kidsinflight.org, 2015). There came into existence the invention of flights instruments, airplanes were equipped with radar, the first jet engine was already in production.

Technological advancement bringing about improved aerodynamics, high-powered engines and aircraft (fabric) metals enabled these flying machines to go on high cruising altitudes and bringing about transoceanic flights. After the ending of the World War II, jet airliners began. Airline companies such as Pan Am and airplane manufacturers, for example, Boeing are into air transporting meeting the fast mobility need of uncountable number of passengers all over the world. Fear was an element that gripped people in

regards to their safety. In course of making sure that public confidence is buffered, aviation safety became the channel by which the establishment of ICAO came into being.

Regulations were put in place, which happens to be the earliest form of legislation, to make sure that everyone on the ground not aboard is safe from the aircraft impact on the ground. This however became or was seen as a biased legislation, which did not consider those on-board. Aviation Law that has to do with safety got a new face when in 1819, France enacted a law which required that man-flight balloons be equipped with parachutes which can be seen as to incorporate not only safety on the ground but also safety on board aircraft. In Paris, the year 1889 gave birth to first international aeronautical congress in which Brazil, Mexico, France, United Kingdom and United States were in attendance. In this convention, issues such as aeronauts' certificates; liability of aeronauts towards passenger, the public and landowners; salvage; and the use of aircraft in war were discussed.

Another conference was held in 1910 in France attended by nineteen states but suffered no adoption of a single convention due to the fact that the participants could not agree on the kind of treatment to be extended to foreign and national aircraft in regards to over flight freedom. This convention happens to be the first international air law conference that displayed the very much eagerness to make provision for a regulatory regime of global standard for civil aviation. However, in 1913, precisely, July 26 1913, France and Germany signed the first bilateral agreement, which allowed for airships from Germany to enter French airspace and remained in France.

The first legal instrument to enter into force in the world of aviation was the Paris Convention of 1919, which is enclosed with a recognised comprehensive and exclusive sovereignty of states over the airspace (Link.springer.com, 2015). This convention enjoyed ratification by 32 nations. Few of the features of this convention was the generally acceptable definition of aircraft; CINA, the *Commission International de la Navigation Aerienne* , was established in Article 34 (Bae, 2012), which got a far-reaching regulatory powers chiefly directed towards technical matter. ICAN, the

International Commission for Air Navigation was established by this Convention of Paris (Link.springer.com, 2015), which dealt exclusively with the regulation of international air navigation and in particular public international air law (Link.springer.com, 2015). In law the ICAN was placed, and remained, under the direction of League of Nations, in practice direction was replaced by friendly cooperation (Icao.int, 2015). The League never attempted to exercise any authority on the ICAN, and the ICAN never attempted to break away from the League; cooperation was mostly carried on through the League's Committee on Transit and Communications (Icao.int, 2015). This Committee and the ICAN were represented at each other's meetings, when any question of common interest was under discussion (Icao.int, 2015). It also provided for innocent passage of the aircraft of other jurisdictions in times of peace and prohibited aircraft from carrying explosives or weapons (Duhaime, 2015). The Paris Convention was starved with universal acceptance, which should have been the desired goal that coloured aviation safety. Like it was said above that this Convention got a 32-state-ratification, however, giant states; Russia, Germany, China, United States were absent in this States' ratification of the Convention.

In Madrid, the Ibero-American Convention on Air Navigation (which is also referred to as Convenio Ibero Americano de Navegación Aérea, or CIANA, also called the Madrid Convention) (Icao.int, 2015) was formed which seems to succeed the Paris Convention. This Convention came up due to the growth of aviation activity between Spain and South-America and as a result of the failure by the USA and most Central and South American States to adhere to the Paris Convention, Spain decided to initiate a diplomatic counteraction and invited all Latin American and Caribbean States and Portugal to the Ibero-American Conference to be held in Madrid from 25 to 30 October 1926 Icao.int,. (2015). This Convention suffered neglect because at no point in time was it registered with any international body. It was labelled unsuccessful; reason being that at the time it was being formed, aircraft of the period were not sufficiently developed to tie together Iberia and Latin America (Icao.int, 2015). Another factor that made this Convention to lack success was Spain's political environment during the period was very unsettled, deteriorating into Civil War (Icao.int, 2015) and the change of focus of Latin America energies on North America keeping them distracted away from Iberia.

1927 marked the year when the United States commenced the drafting of an air navigation Convention for the Americas identified as Pan-American Convention. It was not signed until 1928 at Havana. It can be said that the modelling of the Pan-American Convention was after Paris Convention being applicable to not government aircraft but only Private aircraft. Mutual freedom of air passage was orchestrated by this Convention with stone-rules for aerial traffic as the principal structures lacking technical standards of uniformity and Annexes. This Convention however did not help ICAN but weakened it. Unfortunately, after the World War II, it became out-dated due to the mammoth improvement of aerial transport in the period of war.

On 7th of December 1944, some 50 states signed the Chicago Convention couple with two agreements annexed to it, which are the International Air Services Transit Agreement, and the International Air Transport Agreement (icao.int, 2015). This Convention was a replacement for the Paris Convention and became an heir to the safety framework set by the Paris Convention, in fact, Chicago Convention would not have been what it claimed to be if not for the residues of previous conventions, conferences and all-important statement of aerospace sovereignty (Duhaime, 2015). Even though there is no such Convention that is stable and universally accepted, Chicago Convention seems to be a package of agreements that is use today. It is widely known formally as *Convention on International Civil Aviation (CICA). Without mincing words,* it created an independent agency identified as the International Civil Aviation Organisation, which succeeded International Commission for Air Navigation (ICAN) (Jakhu, Sgobba, & Dempsey, 2011). This Convention is pregnant with sub-agreements listed below: The right to fly across another's territory without landing (Duhaime, 2015);

1. The right to put down passengers and cargo taken on in the territory of the aircraft's nationality;
2. The right to take passengers and cargo destined for the territory of the aircraft's nationality; and
3. The right to take on passengers and cargo, and to drop-off passengers and cargo destined for, or coming from the territory of any state signatory to

the Chicago Convention The right to land for non-traffic purposes (such as to re-fuel) (Duhaime, 2015).

2.4 Aviation safety Regulatory agencies

With a specific end goal to meet the prerequisites for safe air transport benefits, various organisations and foundations have been set up at worldwide, regional and national levels to create basic guidelines, regulations, benchmarks and methods on safety and administer their execution over all aviation jurisdictions (Skybrary.aero, 2015).

The administrative system and safety necessities have been developed over decades and are persistently being changed or amended and upgraded to accomplish a perpetually expanding safety execution and to meet future difficulties postured by the usage of new air navigation ideas and the need to guarantee manageable advancement of civil aviation (skybrary.aero, 2015).

Before distinguishing the three basic layers of safety regulations, it is important to state that all administrative regulatory agencies perform the functions of making of rules, enforcement of the rules, or adjudication. The rulemaking function is very much like the legislative process performed by the Congress; enforcement is the same sort of process performed by the executive branch of government and adjudication is essentially the function performed by the judiciary (Raymond, 2013).

The three basic levels of aviation safety regulations are:

1. International regulatory arrangements and requirements, established and promulgated by the International Civil Aviation Organisation (ICAO),
2. Regional regulatory arrangements and requirements,
3. National regulatory arrangements and requirements, promulgated in national legislations and other normative acts by the designated State authorities (Skybrary.aero, 2015).

2.4.1 International Regulatory Arrangements

The standard global aviation regulatory organ is the International Civil Aviation Organization (ICAO). ICAO is an agency of the United Nations and was set up in 1944 through the Convention on International Civil Aviation, identified as the Chicago Convention (Skybrary.aero, 2015).

Through the cooperation of complying states, ICAO creates Standards and Recommended Practices (SARPs) that cover all parts of aviation, incorporating safety. SARPs give the establishment of all safety organizational administrations at a worldwide scale (Skybrary.aero, 2015). There are currently over 10,000 SARPs reflected in the 19 Annexes to the Chicago Convention which ICAO oversees, and it is through these provisions – as well as ICAO's complementary policy, auditing and capacity-building efforts – that today's global air transport network is able to operate close to 100,000 daily flights, safely, efficiently and securely in every region of the world (Iawa.org, 2015).

By being a signatory to the Chicago Convention, a state concurs that the entrenched standards will be effected in its own (Skybrary.aero, 2015) constitutional domains, and if there is any conflict or variance, ICAO must be aware of it. As a matter of fact, ICAO does not concern itself with military aviation, which embodies combatant and non-combatants aircraft and facilities, which are solely operated by member States' military force. As of late the aviation service provider organ and aircraft administrators have stretched the ICAO provisions out to necessitate usage of a formal safety management.

ICAO directs the advancement of safety regulatory structures by Member States through the Universal Safety Oversight Audit Program (USOAP) that was set up in 1999 to guarantee the uniform use of ICAO standards (Skybrary.aero, 2015). These safety guiding structures are the "International Standards and Practices" which stands to be of advantage and profit to signatory nations.

According to the United Nations Charter Articles 57 and 63, via the United Nations Economic and Social Council, ICAO became declared an autonomous Intergovernmental organisational (alexcollier.org, 2015).

Members States who are having membership in ICAO are 191 at present (Icao.int, 2015). Based on the institutional structures, ICAO consist of a plenary body, the Assembly; a stable body accountable to the Assembly, the Council; and the Secretariat headed by the Chief Executive Officer of the Organization, the Secretary General (Huang, 2009). The Council has 36 member States, which is responsible to the assembly. One of the required safety tasks of the Council is the selection and correction of the Annexes to the Chicago Convention, which contain inter-national standards and recommended practices (legislation.gov.uk, 2007). The Annexes are continually looked into and corrected to keep pace with new improvement and propelled innovation.

At the flip side of the range, ICAO has seen solid regional and national activities to re-uphold the safety administration for civil aviation.

2.4.2 Regional regulatory arrangements

Considering the topography, environmental conditions, climatic situations, natural disturbances and other salient factors, there must be needs to be flexible with measures to ensure safety. ICAO as the international body that regulates all aviation industry of all States' Aviation Sectors has delegated responsibilities to regions, which allows or gives room for regions to come up with regulations in accordance with ICAO doctrines that would facilitate safety in the air and on the land. These regional regulatory organizations are directly under ICAO and they include African Civil Aviation Commission, FAA, and EASA and so on. For the purpose of this study, EASA shall be discussed below:

2.4.2.1 European Aviation Safety Agency

EASA is an Agency of the European Union. As a Community Agency, EASA is a body governed by European public law; it is distinct from the Community Institutions (Council, Parliament, Commission, and so on.) and has its own legitimate identity (Easa.europa.eu, 2015). EASA was set up by a Council and Parliament (Regulation (EC) 1592/2002 cancelled by Regulation (EC) No 216/2008 and corrected by Regulation (EC) 1108/2009) and was given (Easa.europa.eu, 2015) particular to ensure a high and uniform level of safety in civil aviation, by the implementation of common safety rules and measures (Skybrary.aero, 2015).

EASA has assumed control over the obligations of the previous Joint Aviation Authorities (JAA) framework, which ended on 30 June 2009 (Skybrary.aero, 2015). On the other hand, it is not a successor body in lawful terms since it works straightforwardly under EU statute; the primary distinction between EASA and the JAA is that EASA is Regulatory Authority, which uses NAAs to actualize its Regulations while the JAA depended upon the active involvement of NAAs to apply its orchestrated regulations without having any intensity of law at source, since it is self apparently difficult to make another Regulatory System "overnight" EASA has needed to acknowledge expansive parts of the JAA framework as its own particular whilst it builds up the new blended framework needed under EU statute (Skybrary.aero, 2015).

European Aviation Safety Agency is, in addition, actually responsible to giving of advice to the EU when new laws that concern aviation are drafted. The entire safety rule, which does not exempt inspecting EU member States, are developed, implemented and monitored by the EASA. They are known for Certification of organisations located outside the territory subject to the EC law and responsible for providing ATM/ANS services or ATCO training in the Member States where EC law applies; and the Safety analysis and research, including publication of an Annual Safety Review (Skybrary.aero, 2015).

EASA is also an agency that helps the Community legislature to design common standards to guarantee the most elevated conceivable levels of safety and protection of

the environment. They guarantee that all the standards are complied with in Europe and that any important safety measures are all carried out and it ensures the adoption of these standards around the world.

Since the inception and operation of the Basic Regulation, EASA is the equipped and eligible Community Aviation Authority to see into the safety in air transport (easa.eu, 2015). Aftereffects or outcome of air incidents and accidents investigation is to be treated and followed up on as an issue of direness, specifically when they have connection with inadequate aircraft design or plan and/or operational matters, keeping in mind the end goal to guarantee public confidence in air transport without ill reference to the Community law; consequently, EASA is the beneficiary of safety suggestions within its remit (Easa.europa.eu, 2015). Under international and community law, all safety recommendations must be given full acknowledgement by the element to which they are directed to (easa.eu, 2015).

At whatever point the investigation is carried out in an EU Member State, EASA displays an advisory role to guide the Investigator in control. Outside an EU Member State, EASA also advise the European Accredited Representative delegated by the State where the vital spot of business of the aircraft producer is (Easa.europa.eu, 2015).

2.4.3 National regulatory arrangements and requirements

A national safety regulatory capacity is built up in every state. There is an extensive variety in the execution of the international safety regulations at the national level (Easa.europa.eu, 2015). It takes into consideration elasticity at all regional levels but it as well amounts to some irregularities. Numerous safety regulatory requirements seem hard to execute, both in countries that has restricted prior safety guideline and countries that are well-grounded regulatory systems. Making sure that national regulatory structures are consistently in line with each other is difficult to achieve most times. Despite all this, there is still broad consensus that the matter of safety is global in nature,

and that ICAO should remain the world regulatory authority for the safety of civil aviation (Huang, 2009).

It is also noteworthy to say that before there can be in existence an international service airline operation to a designated State, the State with the airline must enter into treaty with the government of the designated State. This type of treaty is termed as Bilateral Air Service Agreements.

CHAPTER THREE: LEGAL FRAMEWORK FOR SAFETY IN CIVIL AVIATION

3.1 Safety Laws, Standards, Rules and Regulations Applicable To Aviation

Laws are actually rules and guidelines that are set up or made by government official to govern behavior (Differencebetween.info, 2015). It sets out standards, procedures and principles that must be respected and not to be broken (Differencebetween.info, 2015). Breaking them subjects the accused to be prosecuted in the court of law. Under aviation, laws are framed as aviation law.

It is normally acceptable that there is a need for rules and regulations in any industrial sector to ensure that the management, workers, consumers and all other stakeholders are aware of the expectations of the organization. On this ground, those who oversee the affairs of such industry must put up a framework that would direct and be guidance to all stakeholders in every quarter. It is likewise important that everyone involved in such industry need to have a comprehensive knowledge of their position in this sector and the potential expectations. An order that will effectively sustain the industry from incidents and accidents is important.

Regulations can be used to define two things; a process of monitoring and enforcing legislations and a written instrument containing rules that have law on them (Differencebetween.info, 2015). In consequence, they are needed to touch every area such as resourcing of personnel, the working standard of every personnel, personnel training, safety standards and so on. Similarly, there is a need for systems to give a background, which takes into account ideas of hierarchical equity and correspondence.

Sometimes, some of the rules and regulations set up in an industry may be clichéd and irrelevant but it can be effective in protecting and enhancing the safety of everyone involved in the activities of the industry. Going against them could mean a serious incident or accident, which will amount to a serious offence. Under aviation sector, regulations are wrapped in the forms of certification, personnel licencing, airworthiness of aircraft, aircraft accident and incident investigation, safety management and so on

(icao.int, 2015). The most noteworthy purpose behind acceptance of any rules and regulations is for individual safety and safety of customers and co-workers. This has been confirmed important in a sector such as the aviation sector where aircrafts with passengers and good are always at the mercy of aviation personnel. Neglecting the safety rules and regulations in this sector could result in incidents or accidents with serious injuries, loss of lives and properties. As said earlier, going against these set of rules and regulation could result to a very serious offence that attracts severe punishments depending on the State of concern.

It is a thing to note that the international rules and regulations for civilian aviation extend throughout the world and are promoted by the UN organization for civil aviation, the ICAO (Lfv.se, (2014). The civil aviation regional regulatory bodies the EASA which acts as an umbrella organization for all EU member states' civil aviation authorities; (Link.springer.com, 2015). Federal Aviation Authority (FAA) which covers all the territories of United States and African Civil Aviation Commission (ACAC) which covers almost all African States such as Egypt, Nigeria, Tunisia, Ukraine etc.

In the aviation sector, laws, standards, rules and regulations constitute the legal foundation for the mission of facilitating safety and protecting the public. There are a number of federal, state, and local laws; international regulations and standards that pertain to the aviation activities that affect safety. What are the basis for aviation regulation activities, why they are made, who they affect, and the Articles, Annexes, Chapters and Appendices of concern will be reviewed briefly in this chapter.

3.2 Fundamentals of Aviation Regulations

The aviation industry is what it is today not in spite of, but rather because of, the law that regulates it. A world of aviation in the absence of laws that regulate it is a total calamity. There are some very imperative and latent basics that form the required foundation of regulations in the aviation, which is the protractor for a sound safety.

1. **Effective Legislation:**

   A succinct explanation of the federal legislative and regulatory procedures may be useful here. Legislative activity gives birth to 'Law'. Lawmakers or representatives to achieve a desired result, for example usually propose legislation. The lawmakers often know laws by their file numbers, for example, W.xyz or H.O.xyz. Supporters of proposed legislation make themselves available to the public for comments. Once a law is passed, its Public Law number is known. It is clearly stated and structured with the intent to accomplish the statutory objectives, which is in line with the aims of the State.

2. **Competent agencies for regulation:**

   There is a requisite for an effective and operational regulatory authority, and it is fundamental that is legitimately prepared, resourced and dedicated experts are given the authoritative instruments by which they can put in place the statutory goals with which they have been endowed.

3. **A Culture of Compliance within the Aviation Industry:**

   There is a necessity for backing and understanding from those who these regulations are meant for. It is the duty of the competent agencies to effect its statutory objectives while it's the duty of those who are regulated to cooperatively allow the collective aims of the regulatory bodies to be accomplished.

The competency of regulatory agencies and the compliance of the regulated in the aviation industry is just as important as oxygen to humans. It has a short-term and long-term benefit. At the mention of the objectives to be achieved collectively, the public or air transport users have higher tendencies of going through a risk-free transport system. It's an industry that needs not a self-regulatory method but international regulatory instruments where responsibility for determining and enforcing standards will not be left in the hands of operators but in the hands of internationally recognised regimes.

3.3 Regulatory Structure

A number of sources constitute the platform for the creation of systems to regulate and oversee the affairs of the aviation industry. The aviation regulatory system is unique by global standards and the international aviation law that has developed is inextricably linked and founded upon the underlying regulatory structure. The sources of international aviation regulations and the institutions that establishes it includes:

1. International conventions;
2. Treaties;
3. Customs and customary laws;
4. Court decisions;
5. Legal instruments;
6. General laws;
7. States domestic laws.

Out of all these sources and institutions, the most widely recognised and important ones are conventions and treaties. When sovereign States enters into an agreement with another State, upon the endorsement of the treaty into the States' national laws involved, it becomes a Convention. These agreements can be bilateral which involves just two States or multilateral which involves at least three States. In the chapter two of this study, bilateral agreements and the States of examples were discussed.

Conventions can also come in the form of the acceptance of States to partake in the discussion of issues of international significance, which has been sponsored by an international body. In regards to the legislative system and national procedures of the States in attendance, a State becomes a party to the Convention and Optional Protocol by signing and ratifying either instrument or by acceding to them (United Nations, & Byrnes, 2007: p. 39). By signing the Convention or Optional Protocol, States or regional integration organizations indicate their intention to take steps to be bound by the treaty at a later date and it also creates an obligation (United Nations, & Byrnes, 2007: p. 39),

in the period between signing and ratification or consent to be bound (DeMarco, 2011: p. 565), to refrain from acts that would defeat the object and purpose of the treaty (DeMarco, 2011: p. 565). The international body to be discussed here is ICAO, which creates safety and technical regulations for the aviation sector to keep the sky safe.

3.4 Safety Standards and Technical regulations in Civil Aviation

The aviation industry is subject to strict regulations, standards and legislation. One of the main tools, which have made the aviation industry to experience development, is the regulation, which cover standard and technical issue. In the historical evolution of ICAO, it can be fathomed, through its regulations, that this special agency of the United Nations has been a vehicle for the cooperation and coordination of the civil aviation with the priority of upholding the ethics and values of the Chicago Convention (Müller, 2011: p. 226).

ICAO's safety standards, which all world's nation have infused into their national laws to make the sky safe have so much created a sense of responsibility and accountability to States. In just a day, millions of air transport users fly trans continentally while behind this impeccable system, there are also millions of aviation employees keeping everything safe and reliable. The employees are found in various areas such as the manufacturing of aircrafts and parts, maintenance and checking of all aircraft spare parts coupled with other services. This complex web in the aviation industry has been made very easy to forestall any incident and accident through the existence of universally accepted standards known as Standards and Recommended Practices, or SARPs. SARPs, which cover all technical and operational aspects of international civil aviation (icao.int, 2015), such as safety, personnel licensing, operation of aircraft, aerodromes, air traffic services, accident investigation and the environment (air-valid.co.uk, n.d.). ICAO is the body saddled with the responsibility of designing and upgrading SARPs. It is the Council (36-States), a component of ICAO that approves and integrates the SARPs as Annexes to the Convention on International Civil Aviation. In all the

technical areas, the Air Navigation Commission (ANC) assists the Council (authorSTREAM, 2015).

The safety aspects of international civil aviation are adopted in part by the principal provisions of the Chicago Convention and in part by the SARPs (Sciencedirect.com, 2015), which are 18 Annexes, which continuously undergo amendments, and developments so as to keep its effectiveness in line with all regulatory requirements.

For the regulation and upholding of safety, three principal provisions of the Chicago Convention are of relevance. They are Article 12, 31 and 32. For the effectiveness and high operative nature of ICAO fashioned out in the Articles, the Chicago Convention empowers the ICAO to create technical SARPs. The technical specifications are divided into two categories, which are two types, which are 'Standards' and 'Recommended Practices', and in clear terms, it is called SARPs (Ronald & Bartsch, 2013).

Before a detail discussion on the three Articles and some Annexes, some terms would be defined and they are:

Standard: it is defined as any specification for physical characteristics, configuration, material, performance, personnel or procedure, the uniform application of which is recognized as necessary for the safety or regularity of international air navigation (ultraconsortium.eu, 2012: p. 155). The contracting States will adjust as per the Convention; in the occasion of difficulty in the possibility of agreement, as stated by Article 38 which additionally and expressly noted that the Council must be notified.

Recommended Practice: any specification for physical characteristics, configuration, material, performance, personnel or procedure, the uniform application of which is recognized as desirable in the interest of safety, regularity or efficiency of international air navigation, and to which Contracting States will endeavour to conform in accordance with the Convention (COSCAP-GS, 2010: p. 8).

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3.5 Chicago Convention

Popularly identified as Convention on International Civil Aviation, as described in previous chapters as, (founded the International Civil Aviation Organization (ICAO)), a specialized agency of the United Nations charged with coordinating and regulating international air travel (World Bank, 2005). The Convention establishes rules of airspace, aircraft registration and safety, and details the rights of the signatories in relation to air travel; it also exempts air fuels from tax (Skybrary.aero, (2015). Fifty-two (52) states became a signatory to the Convention December 7, 1944 and this Convention became a force on the 4th of April 1947. It is not surprising that Chicago Convention understands the sovereignty of States in their respective territories; however, it has been a source of States' domestic aviation law. It has served as a minimum standard for aviation safety yardstick. States have the whole right to completely adopt it or go outside some part of the Convention which must be done with due notification.

This Convention constitutes of 96 Articles and 18 Annexes, which made provisions for freedoms of States to operate air transport systems, the adoption of International SARPs used in regulating air navigation, system of air navigation facilities. Also, as part of the reason for the Chicago Convention, managing of potential sources of risk is regarded as one of its purpose, which includes good quality of aircraft and the crew flying them. Every State are compelled to take full responsibility of their skies and making sure that their foreign partners comply with all standards before admitting them to fly into their territory. The normative effect of that demand for assurance were seen in Article 11 of the 1919 Paris Convention which mandated that every aircraft engaged in international aviation be provided with a certificate of airworthiness by the State whose nationality it possesses (icao.int, 2012). This requirement was backed up by Article 12, which requires that States which its nationality the aircraft claims must issue valid certificates of competency to the commanding officer, pilots, engineers and its crew members (Milde' [2008]) and going by Article 13, other Contracting States must consider it valid and it can as well be denied for safety purposes of aircrafts and ensuring that the operators are competent. Hence, Articles 11, 12 and 13 declared that a State's obligation for safety issues which is a fundamental framework for the Chicago Convention through Articles

31, 32, 33. As it has been noted previously that ICAO determines its safety yardsticks via issuance of SARPs, which are embedded in Chicago Convention Annexes, almost all of the Annexes touched safety concerns but the ones that unswervingly applies to Safety in the aviation includes Annex 1 which gives provision for personnel licensing, Article 12 which states the guidelines for the rules of air, Annex 6 which makes provision for the aircraft operation standards. Annex 8, Annex 13 and Annex 18, which respectively deal with airworthiness of aircraft, aircraft accident and incident investigation and the safe transportation of good that are dangerous by air (ICAO Circular 328-AN/190, 2012: p. 22).

Meanwhile, as a matter of scope of this study, which has to do with safety, just the Articles that directly concern safety shall be dealt with and the annexes to them shall not be excluded.

As a matter of fact, upon the signing and ratification of this Convention and its Annexes, a sovereign State becomes a party to it. This is also applicable to regional organizations such as EU. When a regional integration organization signs and formally confirms or accedes to a Convention and its Annexes, it becomes a party. In consequence, to the signing, it means such sovereignty States or nations in the region of the integrated organization have indicated their intention to take steps to be bound by the treaty at a later date, in other words, there is the willingness to undertake the legal obligations under the instruments (Disability, U. N., 2007: p. 40). All said and done, sovereign States have the whole responsibility to amend their current national laws or introduce very new laws so as to put the Convention into existence (Disability, U. N., 2007: p. 54).

3.5.1 Rules of the Air

Article 12 – which is labeled as –Rules of the air –, the Chicago Convention (Swedavia-McGregor & Company, 1988: p. 34) requires that States have the duty to insure that all aircraft within its territory and every aircraft (Dempsey, 2004: p.51). of their own territory – wherever such aircraft may be – shall comply with the rules (Kenyalaw.org,

2016) of the air there in force and also have the duty to prosecute all individuals that goes against the relevant regulations (Milde, 2008). This is the very first part of this Article. Annex 2 detailed it that it shall apply to aircraft bearing the nationality and registration marks of a Contracting State (Abeyratne, 2013). These rules do not exempt Remotely Pilot Aircraft Systems (RPAS), which is the official ICAO term for Unmanned Aerial Vehicles and Unmanned Aerial Systems (UAS) and drones (Abeyratne, 2013).

The second facet says each contracting State undertakes to keep its own regulations in these respects uniform, to the greatest possible extent under the Convention, with those established over time. (Swedavia-McGregor & Company, 1988: p. 23). The third is that "over the high seas, the rules in force shall be those established under this Convention (Abeyratne, 2013). Each contracting State undertakes to insure the prosecution of all persons violating the regulations applicable (Abeyratne, 2013). All these three facets are connection directly to the activity of the Council in fulfilling the Chicago Convention giving respect to the rules of the air (Abeyratne, 2013). Article 12 will not be activated without the understanding of Annex 2 (Rules of the Air). According to Annex 2, there are two categories of rules of air that aircrafts must comply to and they are: Visual Flight Rules (VFR) and Instrument Flight Rules (IFR) (aviationchina.com, n.d.). The explanatory note to article 2.2 of Annex 2 clearly expresses that pilot of an aircraft may elect to fly in accordance with flight rules in visual meteorological conditions (aviationchina.com, n.d.). The category of rules, in clear terms, is determined by the weather condition; one of the two rules would have to be opted for by the pilot. For a pilot to VFR, he must avoid flying through cloud so as to have a clear view in the sky and keep a safe distance from incoming aircrafts so as to avoid collision. Flying under VFR allows a pilot to choose any flight pathway and countries like Spain, for safety reasons, do not permit VFR while Germany allows. On the other hand, in a situation where Visual Meteorological Conditions (VMC) cannot be sustained, such that the weather is so cloudy and visibility is opaque, IFR would have to be employed.

In chapter 3.1 of Annex 2, negligence or recklessness in the operation of aircraft must be avoided to protect lives and property. It also echoed that congested areas or a dense area

where people are inhabited must not be flown over by aircrafts. This may only happen at a stipulated height, which lies in the hands of the aviation authority of such area with high preference to undue hazard to property and lives on ground. Unmanned free balloons shall be operated in such a manner as to minimize hazards to persons, property or other aircraft and in accordance with the conditions specified in Appendix 4 (aviationchina.com, n.d.).

In the Appendix 4, heavy unmanned balloons have to operate in accordance to the same provision for aircrafts in areas that has to do with height over congested areas of settlement (Annex 2 ICA). Part of the equipment requirements in this Appendix is that all unmanned balloons must be equipped with at least two payload flight termination devices or system (aviationchina.com, n.d.). From the look of things, RPAS also use these devises or systems and from the pattern of operations of RPAS, according to Annex 2, pilots are obliged to make sure collision is averted. Note to Annex 2 explains that it is important that vigilance for the purpose of detecting potential collisions be not relaxed on board an aircraft in flight, regardless of the type of flight or the class of airspace in which the aircraft is operating, and while operating on the movement area of an aerodrome (Dcaa.slv.dk:8000, n.d.). Thus, it can be established that pilot using any of the two categories of flight rules must do everything possible to have a view of its pathway and avoid any collision.

3.5.2 Operation of Aircraft

The Chicago Convention that expressly addresses the (Abeyratne, 2015) standardization of operation of aircraft in international air transport is Annex 6 to the Convention of International Civil Aviation (BEA, 2005: p. 54). This Annex promotes effective safety methods in the aviation industry. To actually avoid incidents and accidents, standard operation of aircraft is very imperative. Under chapter 3 of Annex 6, it states that an operator shall ensure that all pilots and other members of the flight crew are familiar with the laws, regulations and procedures, pertinent to the performance of their duties, prescribed for the areas to be traversed, the aerodromes to be used, the air navigation

facilities relating thereto (Longhurst, 1999: p. 1) and the performance duties in the operation of the airplane (keiknowledge.com, n.d.). Also, operators must properly instruct them of their functions and duties and the connection of these duties to safe operations as a whole (ICRC, Annex 6). This ensures and confers operational control responsibility of maintaining safety and understanding of human-machine interactions. For example, when there is a loss of communication, knowing the procedures to communication and sleeping receiver would be of help. It is believed that ATC's inability to contact an aircraft experiencing a radio failure could lead to that aircraft's interception by military (pilot.bg, n.d.) aircraft and causing air disasters. In addition, familiarisation ensures pilots to know how to make distress calls or send urgent messages with clarity in aviation vocabs.

When a pilot is faced with distress conditions such as fire, mechanical failure, or structural damage, (epa99s.org, n.d.) which may endanger the safety of the airplane or persons, he is required to declare emergency and requesting for assistance (ftp.dot.state.tx.us, n.d.). A pilot is not meant to wait till a condition develops into an urgency condition before requesting for help. The pilot can convey safety related information if a change of flight plan is very necessary while aboard (ISRP, Annex 6). It is important that pilots try all their best not to violate local regulations or procedures. While doing so, they must write a report, which must contain the reason why there was violation within the stipulated date to do so.

Operation of flights is a key factor to be considered by operators before embarking on flight. Chapter 4 of Annex 6 made it well defined that for the safety of airplanes and safety of passengers (epa99s.org, n.d.), every facility that would be required for flight must be effective and adequately in good conditions. If any inadequacy of operation facility is noticed while aboard, the law says that immediate report must be made to the authority responsible for this, perhaps, guidelines may be given to manage the situation.

For the safety of passengers onboard, seat beats, emergency exits, life jackets, oxygen dispensing equipment, and other emergency equipment (COSCAP-BAG ICAO, 2010: p. 90) shall be shown, and explanation of how to use them (at appropriate circumstances)

must be well illustrated. The operator shall as well ensure that, during takeoff and landing and whenever considered necessary by reason of turbulence or any emergency occurring during flight, all passengers on board an aero plane shall be secured in their seats by means of the seat belts or harnesses provided (bazl.admin.ch, n.d.).

Before the commencement of flight, according to Annex 6, a satisfactory report must have been stated by the Pilot-in-Command (PIC) that the airplane is worthy to fly. Instruments such as airspeed indicator, altimeter, magnetic direction indicator, tachometer for each engine, oil pressure gauge for each engine using pressure system, temperature gauge for each liquid-cooled engine, and oil temperature gauge for each air-cooled (Administrative Order No. 91, Series, 2002: p. 33) engine must have been mounted suitably for the flight. Also, a maintenance information about the simple information of the repairs carried out, the date it was done, a means of identification of the maintenance organization and the identification of the person signing the release (pilotuskola.lv, n.d.). All goods in the cargo must be properly arranged safely and it must not alter the center of gravity of the aircraft and must not exceed the required mass to carry. In case of circumstance unforeseen, PIC just have to plan a take-off alternate aerodrome according to what Annex 6 stated.

Pilots have had to make emergency landings because they were running low on fuel according to the Civil Aviation Authority (ISRP Annex 6, 2012: p. 6-3). One of the reasons why it is important to carry a sufficient amount of usable fuel to complete a planned journey is because of unexpected circumstances (ISRP Annex 6, 2012: p. 6-3). According to Annex 6, a calculation must be carried out as to the total possible volume of fuel to be consumed before takeoff (taxi fuel); a volume of fuel to be consumed from takeoff point to destination point putting in consideration unexpected event (trip fuel); contingency fuel which shall not be below 5% of the total of the trip fuel (this contingency fuel is to compensate for any unexpected events while in the sky); destination alternate fuel which is available should there be a need to alter designated aerodrome; the final reserve, additional and discretionary fuel. A distress fuel emergency condition message must be declared by broadcasting "MAYDAY FUEL" when the calculated fuel that was predicted for safe landing cannot be sufficient again (ISRP

Annex 6, 2012: p. 6-3).

Although, accidents associated with refueling operations are rare (Skybrary.aero, 2015), Annex 6 made it expressly known that an aircraft must not be refueled with passengers boarding, onboard, disembarking except its carried out by qualified professionals and effective procedures such as the evacuation of all occupants as fast as possible, minimizing the possibility of ignition, keeping the environment where passengers would be to be cleared of equipment and obstacles, easy access of fire fighters to the environment where the refueling is taking place and generally complying with the requirements of relevant authorities.

The human body system cannot do without oxygen. As the altitude increases, the consequent decrease in pressure reduces the amount of oxygen the human body can absorb when breathing and to enable flight at high altitudes either the aircraft cabin has to be pressurised, to replicate the pressure at a lower altitude, or the occupants of the aircraft have to be given supplemental oxygen Skybrary.aero,. (2015). In the provision of Annex 6 of the ICAO SARPs, it was said that passengers must be made acquainted, by the operators, with the position and usage of the equipment for supply of oxygen if there is the need. It also clearly affirmed that until all the oxygen storage equipment for dispensing in the personnel compartment are all in place in an aircraft planned to be operated at flight altitudes at which the atmospheric pressure is less than 700 hPa, it shall not take off (bazl.admin.ch, n.d.)

More so, as stated in Annex 6, a flight to be operated at flight altitudes at which the atmospheric pressure in personnel compartments will be less than 700 hPa shall not be commenced unless sufficient stored breathing oxygen is carried to supply (caapakistan.com.pk, n.d.):

a) all crew members and 10 per cent of the passengers for any period in excess of 30 minutes that the pressure in compartments occupied by them will be between 700 hPa and 620 hPa ; and

b) the crew and passengers for any period that the atmospheric pressure in compartments occupied by them will be less than 620 hPa (caapakistan.com.pk, n.d.).

Besides, a flight to be operated with a pressurized aeroplane shall not take off until a sufficient quantity of stored breathing oxygen is carried to supply all the crew members and passengers, as is appropriate to the circumstances of the flight being undertaken, in the event of loss of pressurization, for any period that the atmospheric pressure in any compartment occupied by them would be less than 700 hPa (caapakistan.com.pk, n.d.); in addition, when an aeroplane is operated at flight altitudes at which the atmospheric pressure is less than 376 hPa (caapakistan.com.pk, n.d.), or which, if operated at flight altitudes at which the atmospheric pressure is more than 376 hPa and cannot descend safely within four minutes to a flight altitude at which the atmospheric pressure is equal to 620 hPa, there shall be no less than a 10-minute supply for the occupants of the passenger compartment (easa.europa.eu, 2009: p. 124).

Another safety standards, which Annex 6 addressed, includes available and sufficient medical supplies (which are first aid kits), portable fire extinguisher, berth, seat belt, communication gadgets and spare electrical fuses and so on.

Appropriate aircraft care is necessary for maintenance of aircraft and its parts so as to be in finest state, and guaranteeing the safety of pilots, crew, and passengers. Regularly scheduled plane maintenance and inspections seems to be a major area the chapter 8 of Annex 6 gives an insight to. It saddled operator with responsibility of maintaining each airplane in an airworthy condition in line with programmers for maintenance. It also compelled operators to keep all flight operational and emergency equipment serviceable before any flight. However, validity of the airworthiness certificate must be taken as a priority for each airplane. To repair or replace parts of airplanes, such action must be in compliance with requirements of airworthiness, which is satisfactory to the State of Registry.

On the part of States, safety lies in the hands of the State, and in regards to this, they must form safety programmers to this effect.

Annex 6 made provision for the qualification procedures for the operation of airplanes. It states that an operator shall not assign a pilot-in-command or a co-pilot to operate (ISRP Annex 6, 2012: p. 4-6) at the flight controls of a type or variant of a type of airplane during take-off and landing unless that pilot has operated the flight controls during at least three take-offs and landings within the preceding 90 days on the same type of airplane or in a flight simulator approved for the purpose (dgca.nic.in, 1999: p. 58).

It also provided that before an operator would assign a pilot to be a pilot-in-command of an aircraft on a route for which the pilot is not qualified to fly, such pilot (ISRP Annex 6, 2012: p. 9-3) must have displayed (in the path to be soared and aerodrome to be utilized) the adequate skills (caapakistan.com.pk, n.d.) and knowledge of the terrain and minimum safe altitudes, seasonal meteorological conditions, communication and air traffic facilities, services, search and rescue procedures, and navigational facilities and procedures (ISRP Annex 6, 2012: p. 9-3). Without getting it twisted, a pilot must have shown an adequate ability to execute emergency procedures on each type of aircraft

In an aeroplane, cabin crew are part of the personnel on board for the safety and welfare of passengers. They are also known as flight stewards or flight attendants. If there were no services of food or drink during a flight, there would still have to be a minimum presence of Air Hostess for safety, which is a legal requirement (Aeromedi.com,.2015).

Chapter 12 of the Annex 6 stipulated that for each aircraft assigned for flight, the seating capacity of the aircraft shall determine the number of cabin crew members to be present. In event of emergencies, they are there to calm passengers and ensure they follow safety instructions. At take-off and landing point when the aircraft passenger door is opened, they must always be there to make coordinate the entry and exit of passengers into and from the aircraft safely.

Before the flight takes off, they engage in a brief meeting with the PIC and after this, they inspect the aircraft, ensuring the safety equipment is in place and working properly and in a situation that a piece of equipment, such as a fire extinguisher, is found

unserviceable, the cabin crew member must replace the item prior to takeoff (sokanu.com, 2015).

They too need some level of safety. This Annex 6 covered this aspect. It states that each cabin crewmember shall be seated with seat belt or, when provided, safety harness fastened during takeoff and landing and whenever the pilot-in-command so directs (caapakistan.com.pk, n.d.).

As they have the duty to handle numerous emergencies such as cabin fires or first aid situations and other miscellaneous events, it is important the operators of airlines organise safety-training programmes (approved by the State of the Operator) for them before being assigned as a cabin crewmember (airsafety.aero, 2011).

3.5.3 Airworthiness of Aircraft

Annex 8 of SARPs, under Part II, explained the procedures for certification and continuing of airworthiness, which is applicable to aircrafts. Chapter one of Annex 8 is labelled Type Certification (TC) and by definition, aircraft TC is the process of evaluation and approval of aircraft type design data against designated airworthiness standards that culminates in the initial issue of a TC (casa.gov.au, n.d.). The design aspects of the appropriate airworthiness requirements, used by a Contracting State for type certification in respect of a class of aircraft or for any change to such type certification, shall be such that compliance with them will ensure compliance with the Standards of Part II of this Annex and, where applicable (ISRP Annex 8, 2011: p. 1-1). It is very important, in features that aircraft designs must be safe for operations and when such design features reduce the safety confidence of an aircraft airworthiness, suitable requirements must be put in place by the Contracting States that would give a minimum level of safety. To know if an aircraft is airworthy, after it has been approved that the design is in compliance with the appropriate requirements, it must have been inspected on ground and in air. It is however in the discretion of a Contracting State to withhold a design approval of an aero plane if it seems to have some dangerous

characteristics that can minimize safety. Before a Contracting State would issue an approval of design, repair or replacement of parts of an aircraft, according to Annex 8, the aircraft must have complied with the airworthiness standards (which was used for the issuance of TC) satisfactorily. Until there is a satisfactory report indicating that an aircraft has satisfied the desires of designs, the State of Design must not issue a TC to define the design and to signify approval of the design of the aircraft type (ISRP Annex 8, 2011: p. 1-1).

The chapter 2 of the SARPs 8th Annex addressed the issue of aircraft production and its parts. It simply states that every products of aircraft producer must be airworthy which must be scrutinized by the Contracting State in charge of design approval. The Contracting State has a duty of making sure that the aircraft production company is working according to the airworthiness standard production requirements. In fact, according to the level of emphasis made by Annex 8, every information about the parts and products going out to the aviation market must be properly recorded. Irrespective of the difference in location or place of manufacturer and location or place of design, there shall be an agreement acceptable by both States such that (Bureau, A. T. S., 2002: p. 167) aircraft manufacturer would have the easy access to data for the approved design (caa.govt.nz, n.d.).

After an airplane has satisfactorily complied with design requirements for airworthiness and approved, it shall be due for an issuance of a Certificate of Airworthiness (CoA) by the Contracting State (ISRP Annex 8, 2011: p. 1-1). It is added in Annex 8 that A Certificate of Airworthiness shall be renewed or shall remain valid, subject to the laws of the State of Registry, provided that the State of Registry shall require that the continuing airworthiness of the aircraft shall be determined by a periodical inspection at appropriate intervals having regard to lapse of time and type of service or, alternatively, by means of a system of inspection, approved by the State, that will produce at least an equivalent result (ISRP Annex 8, 2011: p. 3-1). A different Contracting State other than the Contracting State of CoA issuance has the (caas.gov.sg, 2010) power to re-consider the previous valid CoA of an aircraft if it complies with the standards proscribed by Annex 8. This is a very good aspect of double-checking the airworthiness of an aircraft

should it escape a technical inspection in the former Contracting State. In the course of aviation business, if an aircraft did not consistently keep up to the airworthiness requirements, it shall forfeit such operation eligibility until necessary its worthy again.

Safety has its highest priority in the aviation industry. In as much as all requirements are complied with, it will keep the repute of the industry at high level. The State of Registry of an aircraft has a duty in maintaining safety requirements are complied with. For example, they judge the eligibility of an aircraft for airworthiness approval after it has suffered some damages. Their decision counts and it's final. If the aircraft suffered damages in the territory of another Contracting State, the appropriate authority of such State shall prevent it from (ISRP Annex 8, 2011: p. 1-1) flying with the due consent of the State of Registry. According to the Annex 6, the State of Registry of the aircraft must prevent the aircraft from flying until it is restored (ISRP Annex 8, 2011: p. 1-1). However, if the damage is such that the aircraft can still fly with no risk, the State of Registry will allow such aircraft to resume flying. This is one of the agreements enjoyed by Contracting States to keep aircraft airworthy and maintaining safety in the sky.

Another responsibility of Contracting States has to do with continuing airworthiness. The State of Design of an aircraft must communicate with every Contracting State (CAA Bangladesh, 2015: p. 22-1) information that may be useful for ascertaining that an aircraft is continuously airworthy which is for the purpose of aviation safety. Coupled with this responsibility is the organisation of programmes for safety in civil aviation.

3.5.4 Protection of Evidence, Custody and Removal of Aircraft

Annex 13 of the ICAO SARPs spells out the aircraft accident and incident investigation. Under chapter 3, the responsibility of the State where (ISRP Annex 13, 2011: p. 3-1) an incident or accident occurs ranges from protection of evidence to custody and removal of the aircraft (CAR & CAD Maldivian, 2009: p. 9-10). When a crash, as an example of unfortunate incident or accident, occurs, the territory of the State where it occurred shall protect every potential evidence by preserving them from being damaged or lost and

take a full custody of all evidence so as to avoid more damage or unauthorised contact till proper investigation is completely carried out.

While the State of Occurrence have a more job to do, other key players that must be involved in this incident or accident include State of Registry, State of the Operator, State of Design or State of Manufacturer (CAR & CAD Maldivian, 2009: p. 9-10). Without any form of delay whether through telephone, email, Aeronautical Fixed Telecommunication Network (AFTN) or facsimile, the State of Occurrence must notify the above players of this unfortunate incident or accident (ISRP & PANS Annex 10, 2015). However, when the State of Occurrence is not aware of a serious incident, the State of Registry or the State of the Operator, as appropriate, shall forward a notification of such an incident to the State of Design, the State of Manufacture and the State of Occurrence (ICAO, 2013: p 6-2). While the notice had been gotten, it must be acknowledged as soon as possible. Alongside this notification, they must give the State of Occurrence required information that details the aircraft identity, the flight crew and passengers on board. They may wish to send delegates for inspection. The State of Occurrence must be aware of the identity of the delegates by their names, contact details and also when they would be arriving the State of Occurrence. Any request forwarded to the State of Occurrence for the proper preservation of all evidence till there delegates or representatives show up to inspect must be granted so as to facilitate the conduct of investigation. Once a proper investigation has been conducted and there is no need of keeping the aircraft of concern in custody, the State of Occurrence must release custody to the delegates of interest.

As it has been illustrated above, the safety processes in case of incidents or accidents in a State of Occurrence, must as well be replicated if it happens in a State of Registry; should there be dangerous goods on board the aircraft (aaib.gov.mn: p. 19), a State of Operator must immediately send detailed information to this effect upon the receipt of notification of the incident or accident.

3.5.5 Responsibility for Instituting and Conducting Investigation

Concurring to the recommendation in chapter 5 of Annex 13, the State of Occurrence should establish an investigation into the occurrences of a serious incident (ISRP, 2001: p. 5-1) which could be done by delegating the whole or any part of the conducting of such investigation to another State or a regional accident investigation organization by mutual arrangement and consent (aaib.gov.mn: p. 5-1). To facilitate the effectiveness of this investigation, the State of Occurrence must use all available mercenaries for it.

In a situation where an incident or accident had occurred in the territory of a non-Contracting State and such a State is not willing to carry out investigation (caa.lk/newcaa, 2012) on this occurrence, the State of Registry must take it up. However if both refuse to do so, the State of Operator, Design or Manufacture shall establish and carry out a proper and cooperative investigation with the State of Occurrence (or even without them if they are not interested as well)

Accident or incident may occur outside the territory of any State. If this happens, the nearest State (aaib.gov.mn, 2015: p. 5-1) to this location must assist in conduct of investigation and give response to the request forwarded to them by the State of Registry.

In the process of carrying out accident or incident investigation in the scene of the accident or incident (COSCAP-BAG ICAO, 2010: p. 90), total independence and unhampered access to the wreckage and other relevant material (which may include flight recorders and ATS records) (caa.lk/newcaa, 2012) must be given to authority in-charge of the investigation. Total independence shall be given when gathering and recording data and when conducting analysis on the relevant information. They can issue recommendations and reasons behind the cause of accident or incident. Before a report is compiled to finalize the investigation, autopsy examination and medical examination can be carried out by the State conducting the investigation.

It is very important that the State conducting investigations facilitates the coordination between the investigator-in-charge and the judicial authorities (aaib.gov.mn, 2015: p. 5-

1). Should there be conflicts between them, whether on the custody of flight recorders and its recordings or the custody of the wreckage, it must be resolved respectively by allowing a judicial authority official to keep custody of it and can as well move the recording to a recognised and qualified place to do a read out and also for the wreckage, such official or any official appointed shall monitor the movement of the wreckage to the place of examination.

Interference during investigation is an unlawful act. If such is noticed, the investigator-in-charge must notify the aviation security of the State(s) of concern to take action. Confidentiality of information acquired during investigation is very vital. It must be kept classified for the purpose of accident or incident investigation unless the appropriate authority for the administration of justice in that State determines that their disclosure outweighs the adverse domestic and international impact such action may have on that or any future investigations (transportstyrelsen.se, n.d.). At the end of all these, the investigation report must feature all these that are relevant to the incident or accident in the appropriate sections or appendices. Others may not be disclosed. In addition, names of the persons involved in the accident or incident shall not be disclosed to the public by the accident investigation authority (aaib.gov.mn, 2015: p. 5-1).

When an investigation has been finalized and closed, it will only be re-opened by the State, which conducted the investigation if there is new evidence worthy of importance. However, when the State, which conducted the investigation, did not institute it, that State shall first obtain the consent of the State, which instituted the investigation (aaib.gov.mn, 2015: p. 5-1). Besides, if an aeroplane that was declared lost was found, the case may have to be re-opened again.

As it is been discussed, information is very important in the conduct of investigation. In regards to this, the State conducting investigation are permitted to request for information relevant to the investigation from any State having such information for facilities or services in connection with the aeroplane featured in the incident or accident. This is also applicable to State of Registry and State of the Operator (Abeyratne, 2012); they have the responsibility of making provision for flight recorder

records and pertinent information on any organization whose activities may have directly or indirectly influenced the operation of the aircraft when demanded by the State conducting investigation (aaib.gov.mn, 2015: p. 5-3).

When it comes to participation in the investigation, it is made glaring in the Annex 13 that the State of Registry, the State of Operator, the State of Design, and the State of Manufacture have the right to appoint authorized representative to form part of the investigation (aaib.gov.mn, 2015: p. 5-6). A State that have directly provided information, facilities or expert, on request, to the State carrying out an investigation shall be part of the investigation team through who they appoint (aaib.gov.mn, 2015: p. 5-6).

Most times when there is an air-crash, the location of crash may suffer serious fatalities, which affects lives and properties of people who are not on board but are citizens of another State. In a case like this, the State of concern may appoint their representatives to join the investigation who will go to the location of incident or accident coupled with having access to relevant information of public interest and a duplicate of the final report of investigation. With the full involvement of the State, they have the right to release relevant information to the public, which gives identification of victims. Should there be any survivors, they can conduct meetings with them.

3.5.6 The Final Investigation Report

According to Annex 13, in chapter 6, the State, which conducted the investigation, has the sole right to declare a report of investigation to be circulated, published or made accessible. No other participating State must release such document without the permission of the State that conducted the investigation. While concluding the report, a draft copy shall be given to the State that started the investigation, the State of Registry, State of Operator, State of Design, State of Manufacture and other States which were among the investigation team (caa.lk/newcaa, 2012). Within sixty days starting from the day of receiving the draft, any of the above States can make comments on the draft

report in which would be considered by the State compiling the report and if the State so wishes the comment is attached. When the report is ready, all the above States who got the draft report of the investigation must get a duplicate of the final report. Also, the party that suffered serious loss of lives and properties and the States that made provision for important information, substantial facilities and experts must also get this final report. Within the time frame of twelve months, this report should be available to the public via Internet or in form of hard copy in the interest of safety. In an event where the State conducting the Investigation cannot make the report available to the (ISRP Annex 6, 2012: p. 5-1) public within twelve months, they must make an interval statement publicly annually on the day of anniversary of the occurrence, which must explain the present state of the investigation, and other things attach to it. In addition to where the final copies of report would be sent to, ICAO must also get a copy of the report of accident involving an aircraft with a minimum mass of 5700kg.

The purpose of this report has to do with measures to prevent subsequent accidents from happening. And a State must institute and continue an accident and incident database to enable the operative analysis of information on the actual or possible safety insufficiencies and to regulate any preventive action needed (iraqcaa.com, 2013: p. 23).

3.5.7 The Safe Transportation of Dangerous Goods by Air

Article 18 of the SARPs of the ICAO made provision for the carriage of dangerous goods (aacm.gov.mo, n.d.). States of Origin and States of Operator shall only give approval to an aircraft when the safety proscribed by the technical instructions is attained. This is also the possibility of getting exemption from the standard set by the technical instructions if the need to transport the dangerous goods is extremely urgent, no other means of transporting it or when full compliance with the proscribed requirements is contrary to the public interest (ISRP Annex 18, 2011: p. 2-1). Full compliance is very important for Contracting States to ensure when it comes to following the Technical Instructions meant for transporting dangerous goods. In a situation where a Contracting State acts differently from what the Technical Instructions

states, it must quickly inform ICAO about this.

States should make provisions to enable dangerous goods intended for air transport and prepared in accordance with the ICAO Technical Instructions to be accepted for surface transport to or from aerodromes (ISRP Annex 18, 2011: p. 2-2). To ensure facilitate the compliance with the rules behind transporting dangerous goods, each Contracting States shall elect and indicate an authority to be responsible for this to ICAO.

Dangerous goods need to be packed well. According to the Chapter 5 of the Annex 18, packaging used for the transport of dangerous goods by air shall be of good quality and shall be constructed and securely closed so as to prevent leakage, which might be caused in normal conditions of transport, by changes in temperature, humidity or pressure, or by vibration (caap.gov, n.d.). Whether the content is directly in contact with the dangerous goods or not, the packaging must be suitable for with no reaction with it as well. According to the provision set in the Technical Instructions, packaging must be test so as to know if it meets the material and construction specification. It is important that all breakable or leakable goods must be well packed, secured or cushioned such that at normal condition, it will not break or leak during transportation. In addition, the materials used in packaging must have no reactive potentials with the goods. Re-using already used packaging must be free of damage and stains of corrosive elements and operator must not allow it to contaminate prospective goods to be packed with it.

Labeling with the standard labels must be placed on every bundle of dangerous goods, which must be in consonance with the provisions in the Technical Instructions. Unless otherwise provided for in the Technical Instructions, each package of dangerous goods shall be marked with the proper shipping name of its contents and, when assigned, the UN number and such other markings as may be specified in those instructions (lewczuk.com, n.d.). Also, until a dangerous good meets the required specification proscribed by the Technical Instructions, it must not be marked. As regards the language of markings, English is the preferred language.

According to Chapter 5 of Annex 18, before a person offers any package or over pack of dangerous goods for transport by air, that person shall ensure that the dangerous goods

are not forbidden for transport by air and are properly classified, packed, marked, labeled and accompanied by a properly executed dangerous goods transport document (caa.md, 2014). Except otherwise stated in the Technical Instruction, it is mandatory for the person transporting the dangerous goods by air to provide a document of declaration written in English language (that certifies that the goods are well described by their proper shipping names, classified, packed, marked, labeled, and in proper condition (bahamas.gov, 2009) according to the relevant regulations) to the operator which has been completed, well signed and provide (caacdgc.org, 2012).

Here appears the responsibility of the operator that there must be no acceptance of dangerous goods without the completed declaration document, with the signature of the person transporting it. More so, the container containing the dangerous goods must have undergone inspection as well before it is accepted for transportation by air. The operator can guide himself with a developed checklist for acceptance to know if there has been compliance.

For radioactive elements, what was proscribed in Technical Instructions must be complied with. It must be inspected to ascertain it is free of leakage damage before loading and stowing. If there is a leakage or damage, the operator shall call for its removal by appropriate authority and ensure that all containers are perfectly arranged before flying (ISRP Annex 18, 2011: p. 8-1). While after transportation, it is observed that where the radioactive elements or any dangerous goods were stowed had been contaminated, it shall be inspected and appropriate action must be taken to handle the contamination. Such action includes taking the aircraft out of operation until it is ascertained that the radiation level is low at an accessible level and the non-fixed contamination are not more than the values specified in the Technical Instructions (caapakistan.com, 2001). Except in permitted circumstances, Dangerous goods shall not be carried in an aircraft cabin occupied by passengers or on (Longhurst, 1999: p.1) the flight deck of an aircraft (The Aircraft Act, 1934).

Most times, reactive goods can start interaction with each other when together. When there are two or more dangerous goods having the possibility of reacting with each

other, they shall not be kept close to each other or not allowed to be kept in a position that would be dangerous if there is leakage. Humans, animals, undeveloped films must be a good distance away from where the packages of radioactive goods are stowed.

When dangerous goods subject to the provisions contained herein are loaded in an aircraft, the operator shall protect the dangerous goods from being damaged, and shall secure such goods in the aircraft in such a manner that will prevent any movement in flight which would change the orientation of the packages (Longhurst, 1999: p.1).

With the aim of making sure operators comply with all the safety regulations, Contracting States shall put in place inspection, surveillance and enforcement procedures and failure on the part of operators to comply with regulations shall attract serious penalties.

And finally, to avoid recurrence of dangerous goods accidents and incidents, each Contracting State shall establish procedures (ISRP Annex 18, 2011: p. 12-1) which must be in line with the provisions of the Technical Instructions for investigating and compiling information concerning such accidents and incidents which occur in its territory and which involve the transport of dangerous goods originating in or destined for another State (Longhurst, 1999: p.1).

CHAPTER FOUR: THE ROLE OF AVIATION LAW IN AVIATION SAFETY

4.1 The Legal Relationship between Rights and Responsibility of Airlines, Airline Employees, Pilots and Passengers

Airlines schedules flight arrangements and which aircraft and equipment are fit for flight operation This is done in compliance with aircraft certification and operating requirements (Aucklandairport.co.nz, 2015). Airlines set procedures for operations according to what best fits the business standards and practices. They determine which type of aircraft should be operated and timing for usage of aircrafts. Airlines do not guarantee their schedules and there are many things that makes flights impossible to arrive on time which are unpredictable and beyond the airlines' control such as bad weather, air traffic delays and mechanical issues (Airconsumer.ost.dot.gov). Airlines sometimes do not have the power to predict how long a delay may be if there is a deteriorating weather condition or a mechanical fault in the airline turning out to be a complex one. There should not be in existence compromise between safety and passenger's rights protection.

No airline will hastening their departure if the problem is coming from a local weather or the Air Traffic Control (ATC). If it will turn out that an airline will no longer be fit to continue a trip, the airline will have to rebook and transfer the passengers into another airline. They are not required to compensate passengers whose flights are delayed or cancelled when the situation is a natural cause. Under the EU law, there are consequences for delay and cancellation of flights by airlines compared to U.S. law where airlines are allowed to delay flights or even cancel with little or no consequences. In delays of two hours in "short haul" trips up to 1,500 km, three hours in "medium haul" trips up to 3,500 km, and four hours in "long haul" trips greater than 3,500 km, the former will make provision for meals and refreshments, two free telephone calls, emails or faxes where there is a sufficient delays where delay (Americanbar.org, 2015). Where the delay is five hours or more, passengers are entitled to compensation of the full cost of the flight ticket together with a return flight to the first point of departure at the

earliest opportunity (Americanbar.org, 2015). When a flight is canceled, the passenger is entitled to cash payment based on the length of the flight (short haul, €250; medium haul, €400; long haul, €600 (Americanbar.org, 2015).

Air passengers deserve to be informed about all safety activities in the aircraft. And if there is going to be or if there is a service interruption, airline must put in efforts to keep passengers frequently up-to-date. Also, passengers have the responsibility to listen, remember and follow all safety related instruction in a flight. All these instructions may turn out to be unworkable if not followed and remembered when needed. Some instructions have to start from listening to the pilot's briefing and instructions, how to use seat belt, fire extinguisher, oxygen gas usage and so on.

For goods or bags that are damaged or lost, the owner of such must report to the airline before leaving the airport with a proper follow up. Airlines will normally compensate for damages caused to bags or goods while on board if it is repairable. Airlines will not compensate for damages due to the owners inadequate packing procedures or when there is no evidence of external impact on the bags or goods.

Also, airlines prohibits smoking in the aircraft. In flights where smoking is not prohibited by law, for example, charter flights, there must be a section for smoking and another for non-smoking. In the U.S. airlines, Section 401 amended the smoking prohibition set forth in 49 U.S.C. 41707 to clarify that the prohibition applies to passenger flights, both domestic and international.

Furthermore, airline, from legal view points, may deny or eject a passenger from a flight after a passenger has followed the due processes to secure a seat in the aircraft if:

1. The airline must act in accordance with any government regulation or request for emergency transportation in connection with national defense;
2. There is inclement weather or some other conditions beyond the power of the airline;
3. The passenger says no or rebuffed being searched for carriage of explosives or weapon;

4. There is no reasonable identification to move across international borders;
5. The conduct of the passenger calls for violence or likelihood of misbehaviour due to the influence of hard drugs or alcohol;
6. Suspicious or provocative fashion statement that may offend other passengers;
7. There are attempts by a passenger to assault member of crew or may put the safety of the aircraft at jeopardy. (airmaritime.gr, 2015)

More so, employees in the aviation industry have some rights and responsibilities attached to their capacities which are connected to safety integrity of the aviation industry. It is important to say that cabin crew, mobile airline staff are restricted to flying time to 900 hours and total working time of 2000 hours accumulated over a year. Airline crew must be given nothing less than seven days to rest every month of the year. To ensure an efficient performance of airline crew, they are entitled to rest before and while on shifts.

One area where employees in aviation industry are hit hard is where there is hostilities or war. For safety reasons, traffic to war regions always decrease and which in turn gives birth to low income for the sector and retrenchment of aviation industry employees. Iraq airline, for example, Northwest airline have put up a plan to lay off 4, 900 workers; United Airlines are planning to "temporarily reduce its worldwide schedule by approximately 8 percent, due to the continuing effects on future bookings of the military conflict in Iraq (Schindelheim, 2015).

A pilot or a flight captain is high responsible for the safety while on-board coupled with safe and on-time operation of the flight. They must at all time work against situations that will cause life threatening situations for everyone on-board. In an aircraft, there may be more than three pilots but there must be a pilot in command (PIC). According to the definition given by Federal Aviation Regulations (FARs), PIC is responsible for the safe operation of the flight (Aopa.org, 2015). To become a PIC, must possess a valid medical certificate with endorsement and ratings. The PIC must have up-to-date experience of the aircraft to be flown and flight condition of the flight to be used for operations. With all reference to appropriate procedures, there must be an agreement on who to be an

acting PIC before operations commence. The PIC may allow anyone whether legally eligible or not to pilot an aircraft or help lighten the work-load of the pilot in areas like radio communications, map-reading, changing of frequencies on navigation aids (Speciale & Venhuizen, 2008) but such PIC will always remain responsible and accountable for safety and operations of the flight (aopa.org, 2015). The case of *Administrator* v *Takacs* sets a general rule for PIC's responsibility. The NTSB stated that "pilot-in-command is responsible for the overall safe operation of the aircraft. If however, a particular task is the responsibility of another, if the PIC has no independent obligation (e.g., based on operating procedures or manuals) or ability to ascertain the information, and if the captain has no reason to question the other's performance, then and only then will no violation be found (ntsb.gov, n.d.).

A PIC has a responsibility to ascertain the airworthiness of an aircraft before its operation. According to FARs position on this, it states that no person may operate an aircraft that is not airworthy and that "a pilot in command of a civil aircraft is responsible for determining whether that aircraft" he or she is operating is in airworthy condition. A PIC has the high control of his position on the state of an aircraft. He can suspend a flight from operating if there is a mechanical, electrical or miscellaneous situations that can halt its operation during flight.

4.2 Legal Rights and Responsibilities of States

It is very important that governments do not underestimate there rights and full responsibilities of safety in the aviation industry. Government must comply with the principles of ICAO in setting standard basic to safety which airlines and pilots must follow to ensure safety of the industry and the consumers.

Government must highly consider a safe trip for individual citizens who pay for flights daily. As under the Montreal Convention, obligations on operating air carriers should be limited or excluded in cases where an event has been caused by extraordinary circumstances which could not have been avoided even if all reasonable measures had

been taken. Such circumstances may, in particular, occur in cases of political instability, meteorological conditions incompatible with the operation of the flight concerned, security risks, unexpected flight safety shortcomings and strikes that affect the operation of an operating air carrier (users.telenet.be, 2015). Till date, Iraq and Syria have been inflicted by the sting of terrorism for years with more political and religious inclinations. Of recent, according to the military intervention of Russia to tackle terrorism in Syria, there have been long range firing of missiles at rebel sites in Syria by Russian cruise from Caspian Sea across busy air corridors between Europe, the gulf and Asia (Huggler, 2015). The British government has released an advice for airlines to adjust its flight plans. British government have been known to always ensure the safety of its aviation industry. Before the Malaysian Airlines flight MH17 was shoot down by pro-Russian separatists, British government had advised all its airlines to stop flying over Ukraine. Also, France and some other countries warning all their airline to change routes and a void the war suffering regions. EASA have always been releasing bulletins when it has concerns about anything from anti-freezing to plane parts (Petroff, 2015). Although, changing of routes may be expensive, but it places safety at minimal threat when the right thing is done to avert problems that could emanate from the war zones.

Some countries have taken their responsibilities to a high level by putting bans on international airlines from Africa, Middle East and so other regions from entering their airspace. An example of an airline is Iraqi Airways. It has been banned from flying the entire EU airspace due to safety breach (Batchelor, 2015). It has been reported that Iraqi Airways and Iraqi CAA have failed to comply with applicable safety standards of ICAO. This ban has been helpful to some countries as they have been working so hard to improve on their safety standards.

4.3 Liability in case of accidents

4.3.1 Civil liabilities

The minimal guilty level of liability is simple negligence. It has been said to mean failure to apply "ordinary care in the circumstances." Liability has no connection to some misconduct except the major cause of injury or damages is as a result of negligence. When duty to exercise ordinary care is breached, there must have been in existence a form of some violations of set standards and regulations and non-compliance with operating practices to ensure safety.

4.3.2 Criminal liabilities

Federal and State statutory instruments forms the criminal liabilities in aviation industry. Every country with has its forms of law with criminal sections which may be different from other countries own type of criminal law. No country would be prevented from passing laws to execute criminal sanctions on individuals that forms the element of the industry who are found wanting for reckless acts that constitute serious incident or accident.

Charges have been lodged against the maintenance personnel for the mislabeling and mishandling of hazardous materials and false statements which could result in jail time and large monetary fines.

4.3.3 Strict Liabilities

Breaches of most of the provisions of the Civil Aviation Regulations and the Civil Aviation Safety Regulations, and a few of the provisions appearing in the Civil Aviation Act, are offences of *strict liability* (Team, 2015). According to CAR 157 (1) and (2) that made provision for height of flying and strict liability, it states that the minimum height

to be flown by a pilot should be at least 1000 feet high when flying over a city, town or populated area and flying below this height is a strict liability offence. Whether the pilot recklessly or negligently or deliberately violated this regulation by flying below 1000 feet, and it is evident and can be proved beyond reason doubt, then such person would be found guilty.

Mostly pilots seems to be blamed most for any incident or accident in the aviation industry. However, mechanical problem or component parts of an aircraft may be the cause of an incident or accident. In other words, in strict liability, not only the pilot may take up the legal blame of an incident or accident, also inclusive in any issue are the aircraft and its component manufacturer. In aviation industry, manufacturers are one key element to ensuring safety through their products. They have the duty of coming up with designs that are durable and manual for understanding the procedures for operating them. When manufacturers produces aircraft and or its components with defect, they become strictly liable with no requirement to proof that the incident or accident was caused by negligence.

If an aircraft or its component is unreasonably dangerous for use by an ordinary consumer, or did not operate safely as an ordinary consumer would have expected it to operate when used properly, the manufacturer may be held strictly liable for such defectiveness. In the shortest form, this is known as product liability which is the legal responsibility placed on manufactures and sellers of defective products.

Airlines are not exempted from liability as they are the one who offer to sell tickets to passengers involved in incidents or accidents. International flights are governed by the Montreal Convention which is an international airline treaty that was adopted by ICAO in 1999. This Convention made provision for liability of airlines. It stated the value given by IMF for special "drawing rights" per passenger to be 113, 100 if an airline is guilty of an accident cause. This value is not fixed for all States but for United States as an instance, it is $170, 000.

Close to a century now, when there is an incidence or accident involving airlines, restrictions was placed on what a victim can be compensated with which is enforced

under international laws and treaties. At present, victims can actually can sue airlines and get compensated if there is proof that the airline is guilty.

Evidence have shown that the legal issues clustering round aviation safety have enhanced the spreading of information about flight safety and stimulated pilots to fly their aircrafts more safely.

CHAPTER FIVE: THE IMPLEMENTATION AND ENFORCEMENT OF AVIATION SAFETY

5.1 Role of ICAO

Implementation and enforcement of law is very important in the real world. In the aviation industry, the development of treaties, adoption of Conventions, standards and recommended practices and provisions which has to do with aviation safety is needed to keep the industry at its accident and incidence free state. The industry is at the constant awareness of marrying different regulations together to avoid injuries of persons and loss of life and properties. Aviation Safety regulations majorly focuses on the prevention of harms originating from accidents. It has earned a high level of concern by the international communities. All activities of airlines, knowing fully well that they are complex in operations, they seem to be one of the most heavily regulated. Sequels to the functions of aviation industry which facilitates the conveyance of millions of passengers all around the world, safety regulation is essential by the industry to guarantee the safety of passengers and crew at all times.

Focusing on ICAO, which its work is known to be inclined towards aviation safety, it is however known that it functions to create space for Member States to carry out implementation role which is stated in the provisions of the Chicago Convention. In Iraq, the agency that is responsible for obligations under the provisions of Annex 9 of the Chicago Convention is Iraq Civil Aviation Authority (ICAA) (Iraqcaa.com, 2015). This body coordinates ICAO issues in Iraq's aviation industry. It also plays a huge together with some other agencies in formation and implementation of policies. As a main regulator of activities in Iraq's aviation industry, it see into the airspace policies, granting of permission for flight operations (Iraqcaa.com, 2015). Since its activities also include safety regulations and economical regulations, any airlines willing to operate in Iraq's airspace must seek approval from them before operations starts (Iraqcaa.com, 2015).

Article 12 of the Chicago Convention makes it known that Contracting States must keep its regulations uniform to the greatest extent possible with those established under the Convention. In Article 7, every Contracting States must attempt to unify in air navigation, standard, procedures, airways and auxiliary services in all matters and when there is a need to adopt and amend, it shall be done from time to time. This compels all Members States to unify their national laws, rules, and regulations to the international standards proscribed by ICAO.

With the resolution adopted ICAO to facilitate practicable and precise language that are of regulatory character, even though States still own the right to protect its skies, it is now possible that the certificate issued by a Contracting State for operations, airworthiness and other certificates will be considered valid by other States once the standards for issuing these certificates fall within the standards established by Chicago Convention. Any State that do not follow the ICAO standards for issuing these certificates, other States can prevent or disallow aircrafts flying the flags of this State from flying in their skies. Some countries with amazing aviation safety reports will not allow there standards to be ridiculed. An example is the EU Member States. They are known to have operative implementation of great standards. To improve safety further, the European Commission in close consultation with the aviation safety authorities of all Member States – has banned some airlines from carrying out flight operations in there airspace due to the fact that they are found to be unsafe and/or they are not sufficiently overseen by their authorities (ec.europa.eu, n.d.). Iraq is among the countries banned from the European Union and four other European nations following series of alleged safety lapses and inability to provide documentation to the European Aviation Safety Agency (Dron, 2015).

Even though, instruments such as powerful advance technology, well trained staff and other factors that forms the elements of aviation industry have been noted to ensure safety in the industry, law, can never be underestimated or belittled or even insignificantly considered as an instrument that has improvement of the industry as regards safety. In Article 37 of the Chicago Convention, the provision for the Council of ICAO to make standards and recommended practices that has to do with issues relating

to safety, regularity and efficiency of air navigation is well spelt. There are a number of Annexes and agency responsible for them and it includes:

1. **CASA**: they establish an independent Civil Aviation Authority (CAA). The CAA shall exercise its responsibilities consistent with the public interest which is defined as the promotion encouragement, development and regulation of civil aviation so as to best promote safety. It has the following annexes under it:
   i. Annex 01 – Personnel Licensing
   ii. Annex 02 – Rules of the Air
   iii. Annex 06 - Operations of Aircraft
   iv. Annex 07 – Aircraft Nationality and Registration Marks
   v. Annex 08 – Airworthiness of Aircraft
   vi. Annex 14 – Aerodromes
   vii. Annex 18 – The Safe Transportation of Dangerous Goods by Air
   viii. Annex 19 – Safety Management
2. **Air service**
   i. Annex 03 - Meteorological Service for International Air Navigation
   ii. Annex 04 – Aeronautical Charts
   iii. Annex 05 - Units of Measurement to be used in Air and Ground Operations
   iv. Annex 15 - Aeronautical Information Services
3. **Infrastructure:**
   i. Annex 09 – Facilitation
   ii. Annex 16 – Environmental Protection
   iii. Annex 17 – Aviation Security
4. **Airservice/CASA:**
   i. Annex 10 – Aeronautical Telecommunication
   ii. Annex 11 – Air Traffic Services
5. **Infrastructure (ATSB):**
   i. Annex 13 – Aircraft Accident Investigation
6. **Infrastructure (AMSA):**
   i. Search and Rescue

All States are obliged to cooperate towards having a uniform law as being proscribed by Article 37, yet, Article 38 gave opportunity to State to notify ICAO if they will not find it practicable to comply with the laid down SARPs. Then the Council will inform other States about this noncompliance. If the requirement for immediate notification of noncompliance is triggered by the date on which the SARPs become effective, or from the date on which they are notified of its adoption, it would seem a State would be bound it failed to make a notification about any difference immediately (Dempsey, 2004: p. 15). In the real sense, if there will be a noncompliance due to the difficulty in the requirements of SARPs, it is allowed for a State to pass he information in due time. In sixty days States are obliged to notify ICAO, according to Article 38, any difference between the State national law and an amended SARP. Failure to do so will mean compliance and bound. So in a short form, the meaning embedded in Article 37 and 38 clearly promotes harmony between State's Law and the SARPs which creates a condition that enhances safety in the aviation industry. Hence, a State that fails to inform ICAO about differences causing noncompliance would suffer non-recognition of certificates and licenses of pilots, aircrafts, airlines and airport by other States which cuts such country off the global scene. It stripes off the airlines and airport from insurance which means if there is an incident or accident, the government of such non-complying State will bear the liability.

Under Article 13, the International SARPs serve as the basis for aviation accident, serious incident and incident investigations, accident prevention and accident and serious incident reporting with the sole objective being accident prevention. As it is heavily worded, Article 13 stated that in a case of aircraft incident, investigation should be carried out by States o other bodies dedicated to such or organization that provide aviation service (skybrary.aero, 2015) and while for accident investigation power lies in the hands of the State or whoever the States wish to delegate.

According to the Iraq Regulations (2) Rules of Aircraft Accident and Incident Investigation, the Civil Aviation Authority shall designate an Appointed Head of Authority who will be responsible for aircraft accident and incident investigation within the meaning of the regulation and must ensure that sufficient funds are available to

enable the authority to properly investigate accidents and incidents that fall within the authority's area of responsibility. It can also delegate the whole or part of an investigation to another State, to a regional accident investigation organization or to a department by mutual arrangement and consent. The sole objective of this is not only to investigate serious incidents or accidents and dish out blames or liabilities, but to improve safety in the industry through the identification of safety defects coupled with introducing recommendations majorly for jettisoning its future occurrence. Other major aims of investigation have to do with having an idea of what caused the circumstance leading to investigation; ascertaining hazards and putting in place a risk assessment; suggesting recommendation to diminishing or removing undesirable risks and spreading of safety information to every quarter involved in the aviation world. The depth of an investigation and its methodologies lies in the hands of the body conducting the investigation which considers the principles and purpose of the directives and subject to the meaning attached to the circumstance for cultivating a safety culture in the industry.

5.1.1 Investigative Stages

Under the Iraq Regulations (2) Rules of Aircraft Accident and Incident Investigation, it is mandatory to make a notification of accidents and incidents. When this is done, there occurs stages to the investigation which are:

1. Constitute a team of investigation: which must be professionals and expertise. The numerical strength of the members of the team has a direct proportionality with extent of the incident or accident. Mostly, specialist are recruited to assist in the investigation;
2. Collection of vital information: which is considered relevant to the understanding of the situation must be done through professional means and any information collected are protected in accordance to ICAO standards;
3. Event re-establishment: must be done to know how connected the views of the team of investigation are to the recorded information;

4. Analysis of collected data: for evaluating the risk and giving details on factors technical and operational to it. This analysis illuminates the reason for the occurrence, gives clue to conclusion and identification of safety activities to reduce or eliminate the risk;
5. Conclusion: of investigation bases of information collected and analyzed explains the main cause and factors most important to the occurrence; knowing the possible dangers foreseeable; and other useful discoveries that would help improve aviation safety. Investigation of occurrence is actually beyond finding out what happened but the reason why it happened which explains the causative factors of the occurrence;
6. Identifying safety recommendations and actions: to be put in place to reduce or eliminate the safety laxities that is identified in the investigation; and
7. Communication of information: to every stakeholder in the aviation industry for understanding what next to do to keep safety at optimal level (skybrary.aero, 2015).

To reiterate again, States have higher responsibility for investigating accidents and to do this viably well, they have created or instituted bodies which normally called Air Accident Investigation Agencies. They are autonomous so as to act accordingly with no influence. For example in Iraq, the Civil Aviation Authority carries out investigative functions while in UK, it is the Air Accident Investigation Branch AAIB) and in USA, it is the National Transportation Safety Board (NTSB).

Final reports are mostly published online in English or the national language of the State and the recommendations in the report are considered and acted upon.

This role of ICAO and State in implantation and enforcing of aviation safety is very important. More so, the approaches to investigation has made it easy to gather, incorporate, analyze important information, evaluate hazards and create output that would enhance safety in the aviation industry.

5.2 Summary

This study examines the importance of the role of law in keeping the aviation industry safe from incidents and accidents. With the understanding that this industry is the ladder to other parts of the world with the widest space, it has well spelt out how this industry has been regulated and aligned with some standards and recommended practices by international body known and ICAO. Although, States have powers to make their domestic laws to differ from the standards and recommended practices of the ICAO, however, it is still seen that the industry is not the same like others.

With inference with the Articles discussed in this study, the international bodies have established Conventions and treaties to give a legal framework for the sake of safety of the aviation industry. This study focuses on Chicago Convention.

No State will want to joke with their skies and no State will want to spoil its aviation integrity. Hence, this has brought about n harmony in the activities of worldwide aviation and how this is done is explained in this study. Without law, in a society, everyone will leave in fear and there tend to be oppression by the mighty ones with strength and wealth. Praise to law that has protected passengers and made everyone involved in the aviation business to be liable to any negligence or breach of laws guiding the industry. Not only do the consumers in the industry have rights, they also have responsibility to perform and are discussed in this study.

There can be no hundred percent perfection, humans will always be humans and machines will never be default of faults. In that case, there will always be incidence or accidents anywhere anytime. This applies to the aviation industry as well. This study discusses the approaches, to implementation and enforcing of laws by the ICAO before incidence or accident to avoid such from happening. Should it happen, there are ways in which investigation would be done not just to blame anyone but for lessons for tomorrow.

CONCLUSION AND RECOMMENDATION

This study displays that law in the aviation industry is strong enough to improve safety.

One scholar had argued that liability in the aviation has done no good to the aviation industry owing to the fact that it has ruined some airlines and some have gone out of service. When digging deep into some technical issues of an occurrence, it is also difficult and time consuming to reach a good judgment. In other words, liabilities of airlines or aircraft manufacturer should not be too expensive and must be bearable.

Evaluating the importance of law in the industry, in the reasoning of the researcher, the privilege given to State notify for difference in their domestic laws and the ICAO regulations, makes the SARPs too mild which makes it not binding. It should be made binding on all States since they are highly recommended to achieve a safe industry.

Also, so many States have not been conforming to the ICAO SARPs due to their poor economy for establish aviation safety agencies or inability to fund them. Some government have neglected there agencies owning to the fact that they have been unserious about it and no sanctions have been placed on the yet. This has created a line between the developing States and Developed States. Creating, mandating, enforcing and monitoring the harmony in SARPs will help foster a strong relationship between States and also minimize all loopholes to its dangers.

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