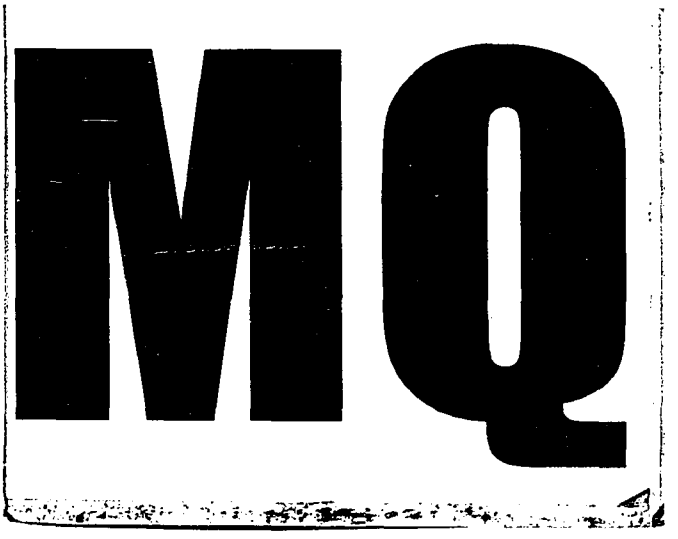

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THE TECHNICAL BOARDS OF AIRCRAFT ACCIDENT INVESTIGATION IN THE UNITED STATES OF AMERICA & FRANCE

by
CHRISTOPHE A. LAMY

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfilment of the requirements of the degree of Master of Laws (LL.M.)

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ABSTRACT

In conformity with the principles laid down in article 26 of the Chicago Convention and its Annex 13 concerning technical aircraft accident investigations, the United States and France respectively set up and developed their own investigation Boards, the NTSB and the BEA, which may be different by their organization and functioning but both aim at the same objective: the promotion of Air Safety.

To fulfil their complex mission in the best possible conditions and despite eventual pecuniary constraints, the pressure of the media, or the occasional tensions which may arise in case of concomitance with other investigations, the NTSB and the BEA rely on the renowned professionalism and high technical skills of their employees as well as on the participation in the investigation of members of the aeronautical industry who bring their expertise and contribute to the improvement of air safety.

RESUME

S'inspirant des principes posés par l'article 26 de la Convention sur l'Aviation Civile Internationale de 1944 et par son Annexe 13 en matière d'enquête technique des accidents aériens, les Etats-Unis et la France ont respectivement créé et développé leurs propres organismes d'enquête, le NTSB et le BEA, qui, tout en se distinguant par leur organisation et leur fonctionnement, oeuvrent pour atteindre un objectif commun: l'amélioration de la sécurité aérienne.

Afin d'être en mesure de mener leurs enquêtes dans les meilleures conditions possibles, et ce, malgré la difficulté de la tâche à laquelle peuvent s'ajouter des contraintes pécuniaires, les désagréments d'une cohabitation forcée avec d'autres organismes d'investigation ou la pression des médias, le NTSB et le BEA s'appuient sur la rigueur, le professionnalisme reconnu et les hautes compétences techniques de leurs employés auxquels se joignent certains acteurs de l'industrie aéronautique dont la participation à l'enquête représente un atout considérable.

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My dear FAMILY,
for their strong support and confidence in me

THOMAS, my good old friend,
who took the risk to give me his computer after mine gave up the ghost

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INTRODUCTION

"We cannot afford either ethically or financially to wait for an accident to occur. Aviation is an inherently dangerous and unforgiving business if you make a mistake and fail to learn from it"[1].

At a time when aviation is presented as the most reliable means of transportation, the brutal occurrence of air accidents is perceived as a cruel twist of fate which suddenly sows confusion in people's mind and brings back to them that, despite the considerable progress of aeronautical systems within the last decades, the improvement of air safety still constitutes a major stake.

For countries such as the United States and France, air safety is a matter of national importance, firstly because it is in the public interest to avoid to the greatest extent feasible the endangering of human lives and secondly because, as world-leaders in the commerce of wide-body aircraft (Boeing, Airbus), these two countries find it to their advantage to provide aircraft with maximum reliability.

As a matter of fact, the U.S. and France have their own "Air Safety Boards" which relentlessly work to prevent the occurrence or recurrence of air disasters by

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[1] See Peter Tait, Director of the CHIRP (Confidential Human Factors Incident Reporting Programme) Charitable Trust, UK, "Address" (Second Global Analysis and Information Network (GAIN) Conference hosted by the Royal Aeronautical Society, London, UK, 27-28 May 1997) online: <http://nasdac.faa.gov/gain> (date accessed: 3 September 2000). For further details on GAIN, see FAA report accompanying Assistant Administrator Christopher Hart's speech "Using information proactively to improve aviation safety" online: <http://nasdac.faa.gov/gain (date accessed: 3 September 2000):

> [T]he United States Federal Aviation Administration (FAA) proposed the Global Aviation Information Network (GAIN) as a voluntary, privately owned and operated network of systems that collect and use aviation safety information about flight operations, air traffic control operations, and maintenance to improve aviation safety worldwide. Improved technology has enhanced the aviation community's capability to obtain information about adverse trends, and experience has demonstrated that the systematic collection and sharing of this information can facilitate the correction of those trends before they cause accidents or incidents. The concept of using information proactively to improve aviation safety recently received support in the U.S. from the highest levels – the President and Congress.

investigating and determining the cause(s) of aircraft accident/incidents, and issuing safety recommendations. These Boards are known as the National Transportation Safety Board, (NTSB) in the U.S. and the Bureau Enquêtes-Accident, (BEA) in France.

Today, both NTSB and BEA are reputed world-wide for their professionalism, efficiency and expertise in the conduct of air accident investigations which they perform free from any political, commercial or hierarchical influence. The U.S. and French Air Safety Boards actually owe such reputation to their outstanding capacity for adaptation to the constant evolution of aviation systems and the changing needs of air safety.

Yet, NTSB and BEA are about to be put to a severe test as a result of the explosion of international air traffic which has been predicted over the next ten years.

The purpose of this presentation is to carry out an assessment of the distinctive features of the U.S. and French Boards on the eve of such "explosion of international air traffic" and to see in what terms these Boards have anticipated the future challenges imposed by the necessity to improve air safety.

After having described the main elements of the international legal regime governing air accident investigations, this presentation will focus on the way France and the United States implemented such international regime and instituted their own air accident systems. Thereafter, an overview of the current human and financial resources of the Boards will be presented followed by an expose on the obligation of these Boards to co-operate or co-exist with other governmental agencies during the investigation. Eventually, this presentation will give an insight on one of the main new challenges of Air Safety Boards: the management of information.

CHAPTER 1. THE INTERNATIONAL LEGAL FRAMEWORK OF AIRCRAFT ACCIDENT INVESTIGATIONS

In its early beginnings, aviation was confined to a few enthusiasts who, regardless of the law of danger, soared skywards on board rudimentary flying machines. Since air traffic density was low, the risks of aircraft collision were minimal and the improvement of air safety was not a major concern. Still, scattered attempts were made to regulate air accidents on an international scale.

SECTION 1. EARLY ATTEMPTS TO REGULATE AIR ACCIDENTS ON AN INTERNATIONAL SCALE

As early as 1911, the "Comité Juridique International de l'Aviation" made a first attempt to agree on the notification procedures of aircraft accidents. It was suggested that, after having salvaged the wreckage without delay, the competent authorities should notify the accident to the owner of the flying machine who, in turn, could claim the wreckage within a year and would have to pay the salvage costs plus a finder's reward of 10 % of its value.[2]

However, this initiative was bogged down due to the political tension which started taking hold of Europe as a prelude to the outbreak of war between France and Germany.

According to Aart van Wijk, the first effective international agreement dealing with aircraft accidents was reached in 1923 at the 16th session of the International Aeronautical Conference (C.A.I.)[3] which established that the notification of the accident to the interested foreign authorities and the institution of an investigation

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[2] H. Geut, "Accident/Incident Investigation in Civil Aviation: some fundamental elements" (Dec. 1997) IFALPA International Quarterly Review. Vice-Chairman of IFALPA Captain Henk Geut, points out that "[i]n present day terms this could make you a millionaire by finding the wreckage of a 747!".

[3] Aart Van Wijk, *Aircraft Accident Inquiry in the Netherlands: a comparative study* (Kluwer, The Netherlands, 1972).

should be incumbent upon the aeronautical authorities of the State where the accident occurred. [4]

This first step towards the setting up of a system of air accident investigation was followed by the adoption in 1926 of a resolution by the "Commission Internationale de Navigation Aérienne"[5] which recommended that where the aircraft of a Contracting State was involved in an accident, the State of occurrence should hold a technical investigation which should be entirely independent from police, judicial or other procedures and that "in no case shall the records of such investigation be communicated to third parties".[6] It was actually the first time that the importance of having independent air accident investigations and confidentiality of records was recognized.

During World War I, the use of aircraft as a strategic weapon induced substantial technical improvements in the field of aviation which resulted, once the fighting was over, in the intensification of air transportation, particularly in Europe where commercial passenger air transport experienced a considerable development to make up for the impossibility of using the roads as a means of communication since they were largely damaged by the war.

Along with such intensification of aviation, the risks of aircraft collision rose significantly, especially on the most profitable routes, which made the drawing up of rules-of -the-air appear essential. The International Commission on Air Navigation (ICAN) was hence set up at the 1919 Versailles Peace Conference, marking a turning point in the coordination of civil aviation standards.

Still, the necessity to set up an international regime of aircraft accident investigations was only addressed after WWII, at the 1944 Chicago Conference which delegates from 52 countries including the United States and France attended. The outcome of this conference was the ratification by all member States of the Convention on International Civil Aviation which, among other things, creates the International

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[4] *Ibid.*
[5] ICAO's predecessor.
[6] *Infra* note 3 at 3.

Civil Aviation Organization (ICAO) and sets forth the fundamental principles governing aircraft accident/incident investigations.

The "Chicago Convention" constitutes the cornerstone of most aviation safety systems in the world.

SECTION 2. THE REGULATION OF AIR ACCIDENT INVESTIGATIONS ACCORDING TO THE CHICAGO CONVENTION

The regime applicable to aircraft accident investigation as established by the Chicago Convention is based on two major provisions:

- Article 26 of the Convention which is implemented by Article 37 of the Convention, and
- Annex 13 to the Convention.

A. ARTICLE 26 OF THE CHICAGO CONVENTION

1. Meaning of Article 26

Article 26 requires the Contracting State in the territory of which an aircraft accident "involving death or serious injury, or indicating serious technical defect in the aircraft or air navigation authority" occurs "to institute an inquiry into the circumstances of the accident."

Article 26 *in fine* compels the State holding the inquiry "to communicate the report and findings in the matter" of the accident to the State of registry of the aircraft, which may "appoint observers to be present at the inquiry."

While it carries out the inquiry, the State of occurrence is invited, "so far as its laws permit" to follow "the procedures which may be recommended by the International Civil Aviation Organisation."[7]

The use of the expression "so far as its laws permit" underscores that the domestic law of the Contracting States prevails over any procedure which may be recommended

[7] See Section 1 Part B, below, for more on this topic.

by ICAO in terms of air accident investigation.[8] In other words, the Contracting States are only requested to follow the Standards and Recommended Practices of Annex 13 when those do not appear incompatible with their domestic law.

Although it is not an absolute obligation, the Contracting States shall nevertheless endeavour to comply as much as possible with the air accident investigation procedures determined by ICAO. This is confirmed by Article 37 of the Convention which reads as follows: "each contracting State undertakes to collaborate in securing the highest degree of uniformity in regulations, standards, procedures and organisation in relation to aircraft, personnel, airways and auxiliary services in all matters in which such uniformity will facilitate and improve air navigation."

2. Scope of Article 26

Since a convention only binds the States which signed and ratified it, the provisions of Article 26 only apply "in the event of an accident to an aircraft of a Contracting State (to the Chicago Convention) occurring in the territory of another Contracting State and involving death or serious injury."

Given that the Chicago Convention has been ratified by 187 States including the leading States in public transportation and aircraft manufacturing, it is unlikely to meet the situation where the State of occurrence or/and the State of the aircraft are not Contracting Parties to the Chicago Convention.

When the State of occurrence is also the State of the aircraft, domestic law applies.

Although the 1944 Chicago Convention had the merit of setting up the foundations of an international regime of aircraft accident investigation, certain issues of major relevance lacked precision or were not even mentioned such as the meaning of accident/incident in terms of Article 26, the purpose of the investigation, the nature of the participants to the inquiry, the conciliation of the technical investigation with

[8] See J. Cazade, *Les Enquêtes-accidents, Analyse des systèmes Américain, Français et Européen : recherche d'une solution communautaire* (Mémoire de DESS Transport Aérien Université d'Aix Marseille III, IFURTA, Sept. 1995) [Hereinafter J.Cazade, *Les Enquêtes-Accidents*]. See also C. D. Durand, *Aircraft Accident Investigation : the need for a stronger international regime* (IASL, McGill University, Canada, August 1993).

other investigations held by judicial or criminal authorities, or the possibility of entrusting specific bodies with the mission of conducting technical investigations.

The silence on such dramatically important questions acted as a brake on the harmonization of the Contracting States' air accident investigation systems. At that time, the objective of uniformity assigned in Chicago was far from being reached.

In response to the crucial need for more clarity and guidance with respect to the regulation of air safety, the Council of ICAO adopted on April 11th, 1951 "Standards and Recommended Practices for Aircraft Accident Inquiries", designated as Annex 13 to the Chicago Convention.

B. ANNEX 13 TO THE CHICAGO CONVENTION

Annex 13, which was intended to complement Article 26 of Chicago Convention, constitutes the main reference in international law as regards aircraft accident investigation procedures. This text was amended on several occasions[9] to keep pace with the evolution of civil aviation, to reflect the changes in the aeronautical technology and to constantly improve air navigation safety. However, its major features remain unchanged.

1. Definition of "accident" and "incident"

For the purposes of Annex 13, an aircraft accident is "[a]n occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked," in which :

(a) [a] person is fatally or seriously injured as a result of :
- being in the aircraft, or
- direct contact with any part of the aircraft, including parts which have become detached from the aircraft, or
- direct exposure to jet blast.

Except when the injuries are from natural causes, self-inflicted or inflicted buy other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew, or

(b) the aircraft sustains damage or structural failure which :

[9] 9 editions since 1951.

- adversely affects the structural strength, performance or flight characteristics of the aircraft, and
- would normally require major repair or replacement of the affected component

except for engine failure or damage, when the damage is limited to the engine, its cowlings or accessories; or for damage limited to propellers, wing tips antennas, tires, brakes fairings, small dents or puncture holes in the aircraft skin; or

(c) the aircraft is missing or is completely inaccessible."

An aircraft incident is defined as:

"an occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation."

2. Objective of aircraft accident investigations: the prevention of air accidents/ incidents

Article 3.1 sets up a fundamental principle: "[T]he sole objective of the investigation of an accident or incident shall be the prevention of accidents and incidents. It is not the purpose of this activity to apportion blame or liability."

This provision operates a clear distinction between the Annex 13-type of investigation (technical investigation) which exclusively aims at improving air safety and the judicial investigation of which the purpose is to determine the liabilities related to aircraft accidents/incidents.

The principle laid down in article 3.1 is taken up by ICAO' s Manual of Aircraft Investigation which states that "[t]he nature of the inquiry into an aircraft accident should not be accusatory as the object is to take remedial rather than punitive action; similarly the assessment of blame or responsibility should not be included in the duties of the accident investigation authority since this function is normally the prerogative of the judicial authorities of the State concerned."

3. The principle of independence in the conduct of the investigation

Article 5.4 institutes another fundamental principle applicable to aircraft accident investigations: "[t]he accident investigation authority shall have independence in the conduct of the investigation and have unrestricted authority over its conduct."

The principle of independence in the conduct of the investigation constitutes the backdrop of this presentation.

4. Responsibility of the State of Occurrence to institute and to conduct the investigation[10]

The key elements pertaining to Annex 13 concentrate on five separate notions:

- the State of Occurrence defined as "[t]he State in the territory of which an accident or incident occurs"[11],
- the State of the Operator defined as "[t]he State in which the operator's principal place of business is located, or if there is no such place of business, the operator's permanent residence"[12],
- the State of Registry defined as "[t]he State on whose register the aircraft is entered"[13],
- the State of Manufacture defined as "[t]he State having jurisdiction over the organization responsible for the final assembly of the aircraft"[14] or "the State responsible for the certification as to the airworthiness of the prototype"[15], and
- the State of Design defined as "[t]he State having jurisdiction over the organization responsible for the type design."[16]

The State of Occurrence is entrusted with the responsibility both to institute and to conduct "[a]n investigation into the circumstances of the accident". Still, the conduct of the investigation may be delegated wholly or partly either to the State of Registry or to the State of the Operator.

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[10] Annex 13, chapter 5.
[11] Annex 13, chapter 1.
[12] Annex 13, chapter 1.
[13] Annex 13, chapter 1.
[14] Annex 13, chapter 1.
[15] Annex 13, 7th edition, May 1988, ICAO.

Annex 13 also specifies that "[i]n any event the State of Occurrence shall use every means to facilitate the investigation."[17] For that purpose, it may request the State of Registry and the State of the Operator "[t]o furnish the flight recorder records and if necessary the associated flight recorders"[18], and "[t]o provide pertinent information on any organization whose activities may have directly or indirectly influenced the operation of the aircraft."[19]

However, it belongs to the State of Registry to institute and to conduct the investigation "[w]hen the location of the accident or the serious incident cannot definitely be established as being in the territory of any State" either because such accident/incident occurred over the High Sea or because it occurred on a territory of undetermined sovereignty.[20] In such situation, the State of Registry may also delegate in whole or in part the conduct of the investigation.

Both State of the Operator and State of Registry[21], as well as any other State which, on request, provides information, facilities or experts to the State conducting the investigation, are "[e]ntitled to appoint an accredited representative to participate in the investigation."

The State of Manufacture is also authorized to appoint an accredited representative to take part in the investigation of an accident.[22]

5. Limited Disclosure of Records

In order to encourage the communication of information concerning aircraft accidents/incidents, Article 5.12 institutes a system of confidentiality of certain records collected in the course of the investigation.

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[16] Annex 13, chapter 1.
[17] Annex 13, Article 5.1.
[18] Annex 13, Article 5.16.
[19] Annex 13, Article 5.17.
[20] Annex 13, Article 5.3.
[21] Annex 13, Article 5.18.

CHAPTER 2. THE INSTITUTION OF AIRCRAFT ACCIDENT INVESTIGATION BOARDS IN THE U.S.A. & FRANCE

It is on the basis of the above provisions that the United States and France, both Parties to the Chicago Convention, worked out their respective aircraft accident investigation systems and founded two Air Safety Boards that are now considered as references world-wide: the National Transportation Safety Board (NTSB) and the Bureau Enquêtes-Accident (BEA).

SECTION 1. ORIGIN OF THE U.S. AND FRENCH BOARDS

The appearance of the first aircraft accident investigation authority in the United States dates back to the late "twenties", however, the present-day form of the American Safety Board was adopted in 1974.

A. ORIGIN OF THE N.T.S.B.

After the end of WWI, the conversion of surplus military aircraft into civilian aircraft combined with the opening of air-mail routes by the Department of the Post Office sparked off the emergence of the US civil aviation.

Anticipating the future developments of aviation and the great risks inherent to the extension of such a means of transportation, the US authorities realised the need to address through federal laws the promotion of safety in civil aviation. As a result, Congress passed in 1926 The Air Commerce Act which provided the Secretary of Commerce with the authority to adopt air regulations and to "investigate, record and make public the causes of accidents in civil air navigation". In practice, these functions

[22] Annex 13, Article 5.23.

were carried out by a small unit within the Department of Commerce (DOC) known as the Aeronautics Branch, which later became the Bureau of Air Commerce.[23]

In the time of the "Glorious 1930's", the US civil aviation experienced a considerable growth resulting from the generalisation of transcontinental travel and the replacement of the old military aircraft by newly manufactured twin-engine/long-wing aircraft with longer range capacities. The air safety needed to be reinforced.

Henceforth, the 1926 Act was amended in 1934 to entrust the Secretary of Commerce with additional prerogatives related to the investigation of aircraft accidents such as the right to hold public hearings. For that specific purpose, the Secretary of Commerce was granted the power to administer oaths, to subpoena and examine witnesses and documents, or to require the production of evidence and make public statements concerning the cause(s) of aircraft accidents. However, none of these elements could be admissible as pieces of evidence in lawsuits.[24]

In 1937, the Secretary of Commerce attributed the mission of investigating aircraft accidents to a board of five members among which three were officers of the DOC and two were external advisors.

Yet, such entity was replaced the following year by another air safety board set up to investigate aircraft accidents, to determine the causes of these accidents, to make recommendations in view of preventing their recurrence, and to release information to the public. The distinction between the new Air Safety Board and the old one was essentially based on the former 's alleged independence from political influence (appointment of its members by the President himself).[25]

This independent Air Safety Board was established under the 1938 Civil Aeronautics Act as part of a tripartite entity named the Civil Aeronautics Authority

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[23] See G. Ellis with contributions by C.O. Miller & J.M. Ramsden, *Air Crash Investigation of General Aviation Accidents with emphasis on the crash scene aspects of the investigation* (a Glenndale Book, Capstan Publications Inc. Greybull, Wyoming, USA, 1984). See also *supra* note 3 at 3.
[24] *Ibid.*
[25] *Ibid.*

which also comprised a five-member body appointed by the President, and an independent executive playing the role of an Administrator.[26]

Unfortunately, practice revealed that the Air Safety Board would not function well, especially because of the overlap between the responsibilities of its three units, which originated conflicts among certain of its members.[27]

The Air Safety Board was eventually dismantled in 1940. Its investigative functions were transferred to the Bureau of Safety, within the Civil Aeronautics Board (CAB) which was created along with the Civil Aeronautics Administration (CAA). Both CAB and CAA came under the control of the DOC. The CAB was granted the rule-making function governing the operation of the civil aviation system together with the economic regulatory function.[28]

The participation of the USA in WWII and its engagement in the Korean conflict boosted the technical development of the American aeronautical industry in the 1950's, which seriously affected air navigation safety. As could be expected, more accidents occurred with more devastating consequences than ever before which drew Congress's attention to the need for a reorganization of the air accident investigation system.

In the Federal Aviation Act of 1958, Congress repealed all previous aviation statutes and set up a new legislative framework for civil aviation. From then on, the rule-making and enforcement functions of the CAB were to be assumed by a new body: the Federal Aviation Agency (FAA) which, since 1966, is known as the Federal Aviation Administration. However, the CAB retained the responsibility for aircraft accident investigations.

Later, the 1966 Department of Transportation Act brought all the major Federal transportation programs together within the Department of Transportation and created a new agency: the National Transportation Safety Board (NTSB), which would henceforth investigate all transportation accidents, including aircraft accidents.

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[26] *Ibid.*
[27] *Ibid.*
[28] *Ibid.*

Although the NTSB relied on the US Department of Transportation for funding and administrative support, it was deemed to be independent from any other governmental body in terms of functions, powers and duties.[29]

Yet, the difficulties met by the NTSB, not only in the exercise of its functions but also in the cohesion of its members, brought forth serious concern about the genuine independence and efficiency of the NTSB within the DOT.

With the adoption of the Independent Safety Board Act in 1974[30] US Congress put an end to this debate by severing all organizational ties between the NTSB and the Department of Transportation.

Since then, the U.S. independent Board has investigated over 100,000 aviation accidents, thousands of surface transportation accidents, and has become one of the best accident investigation agencies throughout the world.

Very early, France realized the importance of regulating air navigation to improve air safety. The necessity to investigate aircraft accidents became a concern in the mid-thirties.

B. ORIGIN OF THE B.E.A

What can be considered as the first air regulation of all times was adopted in France, year 1784: the French Police authorities issued a directive which aimed at protecting people from the risks of accident involved by the flying of Montgolfier brothers' hot-air balloon. In 1900, or nine years before Louis Blériot performed the first "heavier-than-air" flight over the Channel, jurist Fauchille proposed the creation of a code of international navigation. From then on, France played a major role in the development of the international aviation legislation either as initiator of or as Party to the main conventions on air navigation.

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[29] *Ibid.*

The need to promote air safety through the conduct of technical aircraft accident investigations was recognized in 1934. However, France waited until 1946 to set up its aircraft accident investigation Board: the Bureau Enquêtes-Accident (B.E.A.). This entity was first placed within the authority in charge of the regulation of air navigation, the "Direction Générale de l'Aviation Civile (D.G.A.C.)", which is dependent upon the French Ministry of Transportation.[31]

In 1951, the BEA was spun off from the DGAC and placed under the administrative supervision of the "Inspection Générale de l'Aviation Civile et de la Météorologie (IGACEM)."[32] Since IGACEM has no organizational ties with the DGAC and is therefore directly answerable to the Minister of Transports, BEA's independence from the civil aviation regulatory authority was guaranteed, in conformity with Article 5.4 of Annex 13.

Thereafter, the evolution of the French Air Accident Board was punctuated by the adoption of a series of measures meant to define the legal framework of the technical investigation:

- *Instruction du 03 janvier 1953 relative à la coordination de l'information judiciaire et de l'enquête judiciaire et de l'enquête technique en cas d'accident survenu à un aéronef français ou étranger sur le territoire de la métropole et les territoires d'outre mer.*

In compliance with Article 5.10 of Annex 13 which states that "the State conducting the investigation shall recognize the need for co-ordination between the investigator-in-charge and the judicial authorities", this text organizes the co-ordination between the technical investigation and the judicial investigation. It should be noted that in France, the latter has primacy over the former.

- *Instruction du 03 juin 1957, n° 300 IGAC/SA concernant les dispositions à prendre en cas d'irrégularité, d'incident ou d'accident d'aviation.*

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[30] Formally implemented on April 1, 1975.
[31] BEA, "Qui sommes-nous ?", online: <http://www.bea-fr.org/francais/bea/bea.htm> (date accessed : 27 June 2000).
[32] *Ibid.*

This text describes the procedures which shall be followed in case of aviation accident, incident, or irregularity (Notification, preservation of the pieces of evidence and wreckage, co-ordination of the investigations, identification of witnesses, conduct of the investigators, communication of information prior to the inquiry).

- *Arrêté du 20 juin 1962 relatif à l'organisation et aux attributions du BEA à l'Inspection Générale de l'Aviation Civile*, which gives details on the organization and prerogatives of the BEA within IGACEM.

- *Arrêté du 03 Novembre 1972 relatif aux commissions d'enquêtes sur les accidents et incidents d'aéronefs civils*, which describes the organization and role of the "*commissions d'enquêtes*" in the investigation.

- *Instruction du 15 juin 1979 relative à la transmission des comptes-rendus d'incidents d'aviation intéressant la navigabilité des aéronefs*, which concerns the incident reporting system.[33]

- *Arrêté du 05 novembre 1987 relatif aux conditions d'utilisation des avions exploités par une entreprise de transport aérien (systèmes d'enregistreurs de vol et incidents aéronautiques).*

Being a Member of the European Community, France is subject to EC law and in particular, to EC Directives.[34]

EC Council issued on November 21st, 1994 a directive[35] which establishes the fundamental principles governing the investigation of civil aviation accident/incident in the Community. In its first article, the directive indicates that its purpose is to improve

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[33] Further discussion on this topic will be found at Chapter 5, Section 2.

[34] See especially C.E. (Conseil d'Etat), Cohn-Bendit, 22 Décembre 1978; C.E., Confédération Nationale des Sociétés de protection des animaux de France, 28 Septembre 1984; C.E., Fédération Française des sociétés de protection de la nature, 7 Décembre 1985; C.E., SA Rothmans & Arizona Tobacco, 28 Février 1992; C.E., Palazzi, 8 Juillet 1991.

[35] *Directive N° 94/56 du Conseil du 21 Novembre 1994 établissant les principes fondamentaux régissant les enquêtes sur les accidents et les incidents dans l'aviation civile*, Doc. 394L0056, J.O. N° L 319 du 12 Decembre 1994 p. 0014-0019 [hereinafter E.C. Directive 94/56].

air safety by facilitating the diligent conduct of technical investigations of which the exclusive objective is the prevention of future accidents or incidents.

The major principles mentioned in the 13 articles of the directive are in substance:

(a) The obligation on the Member States to investigate all aircraft accidents or serious aircraft incidents occurring on their territory.[36]

(b) The extent and the procedures to be followed in these investigations are determined by the investigation body.[37]

(c) A clear separation between technical investigation and judicial investigation.[38]

(d) Immediate access of the investigators to: the site of the accident/incident; the aircraft, its content or its wreckage; the content of the recorders; the tests results or samples performed on the body of the victims or the people involved in the operation of the aircraft; the relevant information retained by the owner, the operator, the manufacturer of the aircraft, and by the civil aviation or airport authorities.[39]

(e) A permanent and functionally independent technical investigation body (with sufficient means and resources to achieve its mission in total independence).[40]

(f) The release of the final report of the investigation within 12 months from the date of the accident.[41]

(g) All incident must be reported and give rise to relevant safety recommendations.[42]

(h) Obligation to make sure that safety recommendations be duly taken into consideration.[43]

(i) A safety recommendation does not constitute a presumption of fault or of responsibility in an accident or an incident.[44]

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[36] Article 4.1 of E.C. Directive 94/56.
[37] Article 4.2 of E.C.Directive 94/56.
[38] Article 4.3 of E.C.Directive 94/56.
[39] Article 5 of E.C.Directive 94/56.
[40] Article 6 of E.C.Directive 94/56.
[41] Article 7.2 of E.C.Directive 94/56.
[42] Article 8.1 of E.C.Directive 94/56.
[43] Article 9.2 of E.C.Directive 94/56.

As can be noticed, E.C. Directive N° 94/56 essentially repeats the principles set forth in Annex 13. Since France complied to a large extent with such principles before the adoption of the directive, only a few modifications were necessary to be on the European Community's "wavelength".

Still, in order to fully integrate in its domestic law the new EC legislation on air accident investigations, France adopted *Loi 99-243 relative aux enquêtes techniques sur les accidents et les incidents dans l'aviation civile*, J.O. N° 75 du 30 Mars 1999[45] which redefines the mission and prerogatives of the BEA with respect to aircraft accident/incident investigations. In particular, law 99-243 provides that the French Board is both permanent and functionally independent.

Although both NTSB and BEA evolved according to the same line of principles, their respective organizations are very different.

SECTION 2. ORGANIZATION OF THE U.S. AND FRENCH BOARDS

Article 5.4. of Annex 13 provides that "the accident investigation authority shall have independence in the conduct of the investigation and have unrestricted authority over its conduct." Both NTSB and BEA fulfil this condition in two distinct manners.

A. ORGANIZATION OF THE NTSB

1. General Organization : Functional and Organic Independence

49 U.S.C. §1111(a) describes the NTSB as "an independent establishment of the United States Government." The US Board is actually independent from two standpoints.

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[44] Article 10 of E.C.Directive 94/56.
[45] Hereinafter loi 99-243.

First of all, the NTSB is independent and has unrestricted authority over its conduct while it is in the course of the investigation, which is a direct consequence of Article 5.4 of Annex 13 and shall be referred to as "functional independence."

Secondly, the NTSB is hierarchically independent from any other governmental body or agency, which shall be referred to as "organic independence." This particularity of the US Board was introduced by the1974 Independent Safety Board Act in order to guarantee the impartiality of the members of the NTSB.

2. Appointment of NTSB members and term of office

49 U.S.C. §1111(b): "The NTSB is composed of 5 members appointed by the President, by and with the advice and consent of the Senate. Not more than 3 members may be appointed from the same political party. At least 3 members shall be appointed on the basis of technical qualification, professional standing, and demonstrated knowledge in accident reconstruction, safety engineering, human factors, transportation safety, or transportation regulation."

The term of office of each member is 5 years[46], except for the Chairman and Vice-Chairman who are appointed by the President, with the advice and consent of the Senate, for a period of 2 years.[47]

3. Location of NTSB offices

NTSB Headquarters are located in Washington D.C. (490 L'Enfant Plaza, SW - Washington D.C., 20594 – U.S.A.), with 6 regional offices in Chicago, Dallas-Fort Worth, Los Angeles, Miami, Seattle, and Parsippany, NJ.

Field offices are situated in Anchorage, Atlanta, and Denver.[48]

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[46] 49 U.S.C. §1111(c).
[47] 49 U.S.C. §1111(d).
[48] NTSB, "About the NTSB", on line: <http://www.ntsb.gov/info/sources.htm> (date accessed: 28 June 2000).

B. ORGANIZATION OF THE BEA

1. General Organization : Functional Independence

When he speaks about the French Board, Paul-Louis Arslanian, Director of the BEA, prefers to use the word objectivity rather than the word independence.[49] He describes the BEA as a compromise between several types of air safety agencies including the American permanent and multimodal Board, the Italian ad hoc committee of inquiry, and the British Aviation Accidents Investigation Branch.[50]

As mentioned in Article L 711-2 of the law of 1999, the BEA is a permanent Board which has independence in the conduct of the investigation (previously defined as functional independence), accordingly with Annex 13. Since the BEA is a constituent part of IGACEM which directly depends on the Ministry of Transports, it has no organic independence unlike its American counterpart.

Moreover, the French Board is at the disposal of the Directors of the DGAC which is the body responsible for the regulation of air navigation and air safety in France. While the Americans see the existence of relations between the air regulation authority and the air investigation Board as contradicting the impartiality of the members of that Board, the French consider such links as an advantage. For Mr François Perthuis[51], this special "positioning" of the BEA (50% within DGAC, 50% outside DGAC) creates a "perfect balance" to avoid two "pitfalls": "isolation and confrontation."[52] The Director of the BEA[53] himself reckons that a total "divorce" between the BEA and the DGAC would be prejudicial to air safety although he considers it important to distinguish these two agencies.

Still, the possibility for the French Board to have its organizational status changed was never excluded. Mr Benesse[54], Secretary General of the BEA, believes that his

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[49] See P.L. Arslanian, "L'enquête-accident un outil de sécurité pour l'aviation" (mars-avril-mai 1995) BEA, IGACEM, IFSA-12, Pilote de Ligne 5.

[50] *Ibid.*

[51] F. Perthuis, "Poids et priorités du BEA" (Avril 1996) Aviation Civile n°279.

[52] *Ibid.*

[53] *Ibid.*

[54] Interview with Jean-Luc Benesse, Secrétaire Général du BEA, 20 Septembre 2000 [hereinafter Interview with J.L. Benesse].

agency is heading for a greater independence. In his opinion, the fact that the world of aircraft accident investigations be predominantly Anglo-Saxon[55] makes it necessary for the BEA to adopt certain fundamental principles which are already shared by its main counterparts: the combination of organic and functional independence could be one of these principles.

According to Mr Benesse, several motives would justify the granting of organic independence to the BEA:

- A need for more "legibility"[56] and clarity especially *vis-à-vis* the press specialized in aviation which, by its professionalism and reliability, has become an intermediary as well as a very important support for aircraft accident boards regarding the release of information to the public. Organic Independence would permit a better understanding and a better representation of the BEA as an autonomous and distinct entity.

- Financial independence : every year, air safety boards need more and more funding to face the safety problems which appear as a corollary to the astounding growth of the international air traffic. Unfortunately, budget allocations do not grow as fast as civil aviation. It hence becomes increasingly difficult for the States to put up sufficient money and finance the improvement of air safety. In France, the situation seems even more critical since aircraft accident investigations involve the participation of civil servants who often come from different Ministries (arms engineers, meteorologists, etc...) with different budget constraints. Increasing the French Board's budget comes down to increasing the funding of each one of these Ministries. If the BEA were organically or organizationally independent, its budget would be specific and therefore easily identifiable which would simplify its management.

However, the French Parliament does not seem disposed to provide the BEA with organic independence yet. Mr Benesse sees such reluctance as the result of two factors:

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[55] Jean-Luc Benesse observes that, other than the BEA, the top Aircraft Accident Boards are anglo-saxon (the US NTSB, the British CAA) or use some anglo-saxon procedures (Canadian CTSB).
[56] Jean-Luc Bénesse used the word *lisibilité*.

- Historical factor : since its inception, the French aircraft accident investigation system has always been fully in line with the provisions of Annex 13 to the Chicago Convention. This traditional conformity with the Recommended Standards and Practices on air safety allowed France to "kill two birds with one stone" when the European Community adopted in 1994 the first EC directive on air accident investigations. Since this directive was essentially taking up the fundamental principles of Annex 13, the French aircraft accident investigation system already met the community requirements, hence, the French Parliament did not see any reason to modify it. In the eyes of Annex 13 and EC law, the "organic-independence-of-the-Board" issue did not appear to be very topical.

- "Appropriateness" Factor : considering that the relations of the BEA and the DGAC are based on mutual confidence and understanding rather than on competition, taking the risk of separating them apart could have a detrimental impact on the management of air safety in France and could therefore not be appropriate.

2. Appointment of members and sharing of functions within the BEA

BEA investigators are traditionally recruited among the engineers of l'E.N.A.C.[57] and appointed by a joint committee composed of representatives of the State Aviation Administration (D.G.A.C.) and representatives of the personnel. However, the Director and first investigator of the French Safety Board is appointed by the Prime Minister on the recommendation of the Chief of IGACEM.[58]

This Director controls every aspect of the French Board's activities, takes all decisions concerning the investigation, gives its approval for the recruitment and salaries of new members, and is the only person entitled to express the opinion of the BEA on the progress of the investigation.[59] To a certain extent, the Director is the "picture" of the BEA.

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[57] Ecole Nationale de l'Aviation Civile.
[58] Interview with J.L. Benesse, *supra* note 54 at 20.
[59] *Ibid.*

Of course, the manner in which this function is exercised depends a lot upon the personality of the person chosen. In other words it is the man who makes the function rather than the function which makes the man.

The BEA itself is composed of civil servants/"fonctionnaires" which can be separated in three main groups:

- the experts in charge of the investigation of materials/ "groupe d'experts pour les enquêtes de materiel" who essentially investigate the deficiencies of the aircraft including the thrust system, or deal with the non-observance or insufficiency of the regulations establishing the principles and specifications of manufacture and maintenance.[60]

- the experts in charge of the investigation of operations/ "groupe d'experts pour les enquêtes d'operations" who mainly deal with those elements of the investigation which are related to the procedure used or the possible failures of the crew or the ATC.[61]

- the administrative section which takes care of all the administrative questions pertaining to the investigation.[62]

The BEA also includes a section which works in the laboratories.

During the investigation, the BEA relies on the support of personnel from the Civil Aviation Branch, the "enquêteurs de première information", and if needs be, from the OCV[63], the Ministry of Defence, the aeronautical industry, airlines, or pilots as it is the case since 1994.

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[60] *Arrêté du 11 Juillet 1962 relatif à l'organisation et aux attributions du Bureau Enquêtes-Accidents à l'Inspection Générale de l'Aviation Civile*, J.O., 11 July 1962, article 4.
[61] *Ibid.* Article 5.
[62] *Ibid.* Article 6.
[63] O.C.V. (Organisme de Contrôle en vol): body which exercises a function of control of airlines aircraft and their crew, and advises the DCAC on that issue.

3. Location of BEA headquarters

Since September 30th, 1994, BEA headquarters and laboratories are located at Le Bourget Airport, opposite the Air Museum, near Paris. The 3,000 square metres BEA complex is currently being refurbished and redeveloped to be more adapted to the expansion of the Board.[64]

In 2002, the surface area available at the BEA headquarters will reach 5,000 square meters.[65]

The French Safety Board also has at its disposal 6,000 square meters of hangars and protected spaces at Melun aerodrome.[66]

The organizations of the NTSB and the BEA are different but their missions are similar, except for the fact the U.S. Board is multimodal.

SECTION 3. MISSION OF THE U.S. AND FRENCH BOARDS

The mission of technical Boards of air accident investigation is to prevent the occurrence of future aircraft accidents, and thereby, to improve air safety. As stated in Annex 13, this mission does not include the apportioning of blame or liability. Both NTSB and BEA satisfy this general definition.

A. MISSION OF THE NTSB

1. The promotion of safety in all transportation modes

Pursuant to 49 C.F.R. Ch.VIII §800.3(a), the primary function of the Board is to promote safety in transportation. For that purpose, the NTSB was charged by Congress with investigating and determining the facts, conditions, circumstances, and cause/probable cause/causes of all civil aviation accidents and significant accidents in other modes of transportation[67], in the United States.

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[64] *Supra* note 31 at 15.
[65] *Ibid.*
[66] *Ibid.*
[67] Railroad, highway, marine, pipeline.

Given the very important number of aircraft built by American manufacturers, the NTSB is often called upon to take part in investigations overseas when U.S. aircraft, or major components of U.S. manufacture were involved. In such case, the Board provides the State of Occurrence with US investigators to serve as accredited representatives accordingly with chapter 5 of Annex 13. Doing this, the United States are in a better position to satisfy Annex 8 to the Chicago Convention which recommends that the State of manufacture keep the aircraft operators informed about any airworthiness, design or building problems it may be aware of.

NTSB' s mission also involves the setting of safety recommendations[68]. As Board Member John Goglia declared that "[i]t is not enough to find the cause of the accidents. The Safety Board's most important products are recommendations that actually result in correcting the problem that led to the accident in the first place. Innumerable lives have been saved because of accidents that were prevented by Safety Boards recommendations."[69]

As indicated previously, the mission of the NTSB supposes the determination of the "probable cause" of the accident which is peculiar to the US Board since other Boards like the BEA generally seek the "causes" of accidents.

2. The determination of the "probable cause" of the accident

The fundamental statute governing aircraft accident investigations in the U.S., namely the Independent Safety Board Act, requires the NTSB to determine the probable cause[70] of transportation accidents.

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[68] See Chapter 3, Section 1, Part G, below.

[69] NTSB, *We are all Safer, NTSB-Inspired Improvements in Transportation Safety* (Washington D.C., 2nd edition, July 1998).

[70] C.O. Miller, Director of the NTSB Bureau of Aviation Safety from 1968 to 1974, "Trapped by Probable Cause" (January 1998) Air Line Pilot:

> [T]he modifier "probable" was found in front of cause as early as the 1934 amendment to the Air Commerce Act of 1926. The element of probability can be explained by two reasons: (1) because of the mysterious nature of aviation in those days, those forming the Board felt they had to hedge the investigation bet. They had little confidence that accidents could be reasonably understood, hence, they introduced the probability factor. (2) in

For certain commentators, this terminology tends to be confusing since it leads to think that there is one single or principal cause for every accident, which is generally not accurate. On the contrary, "[e]xperience has shown that rarely, if ever, does the total anatomy of an accident contain only one cause/effect relationship that can potentially lead to preventing a later like occurrence." [71]

In fact, transportation accidents are usually provoked by a sequence of events made up of a multiplicity of "[a]ccident-producing cause-effect relationships"[72] as illustrated by the example of the crash on the island of Guam of Korcan Air Lines Flight 801 (B-747). This accident, as many others, resulted from a combination of factors including the unavailability of the instrument landing system, the precluding of many if not all meaningful outside visual cues to the pilots because of the dark night and heavy rain, the limited aid provided by the Ground Proximity Warning System (GPWS) to the crew once the landing gear had been extended, and the failure of the Guam approach control radar.

Unfortunately, the "probable cause" terminology is not only a matter of semantics; it may also have unwanted legal consequences if it is wrongly interpreted, as it is often the case in the media or among the public opinion. "Cause" (in its singular form) easily becomes "fault" or "blame" notwithstanding the protestations from the aviation accident investigation community, all the more since that particular "cause" is "probable". Such erroneous interpretation is in total contradiction with the objective of the NTSB not "to apportion blame or liability."

Hence, there is a danger that lawyers and attorneys be tempted to build their claim by reference to the probable cause determined by the NTSB, at the risk of neglecting "[t]he possibility that more correctable causes or factors exist upstream in the accident

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1938, they wanted to separate safety investigations from legal proceedings especially civil cases, as much as practicable. The main confusion appeared to be with "proximate cause", then endemic in tort litigation. Thus, the preference for "probable cause" was born.

[71] *Ibid.*
[72] *Ibid.*

sequence of events than the Board chose to go."[73] Still, it is established that Safety Boards statements of causes are generally inadmissible as evidence in litigation since they equate to Boards reports which are prohibited as a matter of law under 49 U.S.C.§1154(b).

To counter the pernicious effect of the terminology "probable cause", C.O. Miller advocates that the NTSB "[i]mplement policy and related procedures to delete probable cause from its report formats" and "relate its recommendations more directly to its findings."[74]

If by now, the "probable cause" is not deleted, it is either replaced by "probable cause(s)" or used in conjunction with the word "causes" as shown by 49 C.F.R. §831.4[75] and 49 C.F.R. §800.3. To a certain extent, the plural form mitigates the confusion ensuing from the singular form.

B. MISSION OF THE BEA : THE PREVENTION OF AIRCRAFT ACCIDENTS/INCIDENTS

The mission of the BEA is defined in article L 711-1 of law 99-243, March 29th, 1999:

A technical investigation is conducted after the occurrence of a civil aviation accident or incident with sole objective to prevent future accidents or incidents and, without being prejudicial to the judicial investigation, to collect and analyse the useful information, to determine the circumstances and the certain or possible causes of such accident or incident and, if needs be, to establish safety recommendations.

Two important distinctions can be made between the respective missions of the NTSB and the BEA.

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[73] *Ibid.*
[74] *Ibid.*
[75] 49 C.F.R. §831.4: "Accident or incident investigations are conducted by the Board to determine the facts, conditions, and circumstances relating to each accident or incident and the probable cause(s) thereof."

First of all, the scope of BEA 's mission is restricted to the investigation of civil aviation accidents/incidents whereas the NTSB is "intermodal" since it deals both with civil aviation and surface transportation accidents/incidents.

Second of all, the BEA seeks to determine the "certain or possible causes" of the accident/incident while the NTSB tries to find its "probable cause." In other words, the BEA does not necessarily favor one cause rather than the other, which brushes aside any suspicion of apportionment of blame.

As the NTSB, the BEA participates in investigations outside the French territory[76] when the aircraft involved in the accident/incident is either registered or manufactured in France, operated by an entity which is incorporated or has it main place of business in France[77], or when victims involved in the accident were French citizens as it was the case in the crash of TWA Flight 800.

The French Board also issues safety recommendations.[78]

[76] See BEA, "Notre Mission", online: <http://www.bea-fr.org/francais/bea/bea.htm> (date accessed: 25 Juin 2000).
[77] Article L. 711-1, IV, 2 of loi 99-243.
[78] See Chapter 3, Section 2, Part F, below, for more on this topic.

CHAPTER 3. THE CONDUCT BY AIR SAFETY BOARDS OF AIRCRAFT ACCIDENT INVESTIGATIONS

In order to fulfil their mission, the NTSB and BEA perfected their own methods and procedures to conduct aircraft accident investigations.

SECTION 1. THE CONDUCT OF NTSB INVESTIGATIONS

NTSB investigations are characterized by the leading role of the notorious NTSB Go-team.

A. THE NTSB GO-TEAM

The "NTSB Go-team" could be described as the "crack unit" which is sent from the Safety Board's Headquarters in Washington, D.C. to investigate major commercial accidents (crashes of wide-body aircraft involving the death or serious injury of passengers) or accidents which arouse the interest of the public.

All other accidents are investigated either by a "partial" Go-team[79] or by a single field investigator from one of the NTSB field offices[80].[81]

The NTSB Go-team is made up of personnel which possess a wide range of accident investigation skills. In aviation, a Go-team roster includes an Investigator-In-Charge (IIC) along with a panel of 6 or more experts and specialists trained in different aeronautical techniques such as aircraft systems & structures, maintenance, operations, air traffic control, weather/meteorology, survival factors and human factors but also witness interviews.[82] The technical panel also includes two groups which are

[79] For example, where air safety rules are at stake.
[80] For example, for air carriers and commuter accidents with relatively minor injuries.
[81] See Philip J. Kolcynski, "NTSB Investigation Guide" (1997), on line: <http://www.aviationlawcorp.com> (date accessed: 28 June 2000).
[82] *Ibid.* See also "About the NTSB, the investigative process", online: <http://www.ntsb.gov/Abt_NTSB/invest.htm> (date accessed: 28 June 2000).

responsible for the collection and examination of the flight recorders and an expert with particular knowledge with respect to the type of aircraft involved in the accident. One of the 5 NTSB members often joins the team to represent the American people and to guarantee that the investigation be properly conducted.[83]

Some of the Go-team members are "intermodal" which means that their area of expertise is applicable to every transportation mode. Board's metallurgists, meteorologists, and hazardous materials specialists fall into this category as do human performance and survival experts.[84]

The Go-team generally arrives on the location of the accident within two or three hours from the notification of the accident depending upon the distance which needs to be covered, the accessibility to the crash-site (topography) and the time taken to consult the FAA officials and US or foreign authorities concerned by the accident. The first investigator to be on-site is usually a member of the nearest NTSB regional office. His role is to take all the necessary safety precautions and collaborate with the operator[85] and the local coroner in order to preserve the aircraft wreckage, mail, cargo, and records until the arrival of the Go-team.[86]

B. ORGANIZATION OF THE INVESTIGATION

Shortly after his arrival on the site of the accident, the IIC arranges an organizational meeting in which the parties[87] to the investigation designate representatives or "coordinators" who set up and supervise various specialized groups such as, for instance, the Operations group, the Systems group, or the Aircraft Performance group which develops a "flight profile" on the basis of its analysis of the CVR and DFDR, the information of the ATC, the dynamic data on the crash and the operational data, or the Human Performance group which provides medical and

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[83] J. Cazade, *supra* note 8 at 6.
[84] *Supra* note 81 at 29.
[85] 49 C.F.R. Ch.VIII §830.10.
[86] J. Cazade, *supra* note 8 at 6.

behavioral information concerning the individuals who were involved in the accident (particularly the pilots, crew, ATC).

The coordinators also act as intermediaries between the groups and the IIC and make sure that NTSB rules and procedures are observed.[88]

The breach of such rules and procedures may lead to the dismissal of the undisciplined member. To avoid this, the IIC requires that the co-ordinators sign a form which defines the status of the representative parties to an NTSB investigation and specifies that all the members participating in the inquiry are familiarized with the provisions of both 49 C.F.R. Ch.VIII §831.2. (Accident/Incident Investigation Procedures) and 49 C.F.R. Ch.VIII §831.11 (Parties to the Investigation).

To protect the members of the investigation against the risks of contamination in case of exposure to a disease or a virus which can be transmitted by the blood, the parties to the investigation are also required to follow the procedures established by the NTSB in conformity with the rules of the Occupational Safety and Health Administration (OSHA).[89]

Each specialized group is managed by a chairman who, when necessary, organizes inter-group cooperation (the "Operations" and "Systems" groups often work together cockpit issues). The chairman of the Airworthiness group is generally charged with the organization of the wreckage examination and the chairman of the Structures group is designated as the "on-scene commander".[90]

All group-members are answerable both to their group-chairman and to the IIC who controls the course of the investigation. For that purpose, the IIC works closely with the co-ordinators and is kept informed of all the problems which may arise in each group.[91]

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[87] For example, the parties to the investigation include the FAA, the aircraft manufacturer, the engine manufacturer, the operator, and representatives of pilots union representatives. See Chapter 3, Section 3, below, for more on this topic.
[88] J. Cazade, *supra* note 8 at 6.
[89] *Ibid.*
[90] *Ibid.*

C. THE PROGRESS MEETINGS

Progress meetings are held under the authority of the IIC to assess the progress of the investigation as well as to discuss and take important decisions such as the removal of pieces of the wreckage.

During these meetings, the chairmen of the groups report their findings and test results, set out the plans for the next days, and make suggestions or answer questions concerning the inquiry. The IIC presides over the meeting and makes sure that it does not drift into redundant conversations or pointless questions. Every evening, NTSB members inform their team about the progress of the investigation and the factual discoveries carried out to that point.[92]

A designated spokesperson, who can be the IIC, may be appointed to deal with the media. To avoid any misleading interpretation of the facts of the accident, the other parties to the investigation are not allowed to disclose information. The non-observance of this obligation could lead to the dismissal of the investigator who proved to be too talkative.

D. THE FIELD-PHASE

The NTSB was entrusted with broad powers to carry out aircraft accident investigations.

1. Prerogatives of NTSB investigators

Board officers or employees may enter property where a transportation accident occurred or pieces of wreckage are located and "do anything necessary to conduct an investigation."[93] This right of entry is nevertheless subject to the "display of appropriate credentials and written notice of inspection authority".[94] The members

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[91] *Ibid.*
[92] *Ibid.*
[93] 49 U.S.C. para.1134(a)(1).
[94] 49 U.S.C. para.1134(a)(1).

of the NTSB team may also "inspect any record, process, control, or facility"[95] related to the investigation as long as it is "during reasonable hours."[96]

For the purposes of the investigation, "[a]ny civil aircraft, aircraft engine, propeller, appliance, or property on an aircraft involved in an accident in air commerce"[97] may be tested and inspected by the NTSB which is also responsible for their preservation and removal.[98]

However, the tests performed by the Board must be performed both in a way which "[d]oes not interfere unnecessarily with transportation services provided by the owner or operator" of the aircraft[99] and which, to the maximum extent feasible, preserves evidence related to the accident.[100]

Moreover, the NTSB is authorized to order an autopsy provided that religious beliefs regarding autopsies be observed "[t]o the extent consistent with the needs of the accident investigation."[101] Under certain conditions, the Board may obtain drug test results.[102]

To support investigations in the field, NTSB operates its own technical laboratory in Washington D.C.

2. The Laboratory

NTSB laboratory uses state-of-the-art equipment such as scanning electron microscopes and x-ray analysers to perform unbiased tests and analysis on components, or pieces of the wreckage for instance. Another fundamental part of the lab's work is to read out the aircraft cockpit voice recorder (CVR) and decipher the flight data recorder (FDR).

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[95] 49 U.S.C. para.1134(a)(2).
[96] 49 U.S.C. para.1134(1)(2).
[97] 49 U.S.C. para.1134(b)(1).
[98] 49 U.S.C. para.1134(b)(2).
[99] 49 U.S.C. para.1134(c)(1).
[100] 49 U.S.C. para.1134(c)(2).
[101] 49 U.S.C. para.1134(f)(1).
[102] 49 U.S.C. para.1114(d)(1).

3. Ending of the field phase

The field-phase generally ends after 7 to 21 days of investigation.[103]

At this stage, each chairman is asked to report on a "field note" the information and evidence collected by his/her group. Such operation must be performed in the presence of the group-members. The notes are then transmitted to the co-ordinators who hand them over to the IIC.

Each group member receives a copy of the field note written by his/her group chairman. For their part, the co-ordinators and accredited representatives are given a copy the field notes of all groups.

Once the IIC has viewed the notes, he may decide to take the decision to release each chairman and each group from the field-phase.

E. THE POST-FIELD PHASE

Within 3 to 4 months after the accident, each chairman fills out a "factual report" in which he states the findings of his/her group. A copy of the report is then delivered to each of the group members who are requested to inform their chairman of any factual error which they may pick out.

The cases of disagreement between a group chairman and a group member concerning the exactness of the information in the factual report must be referred to the IIC through the intermediary of the group co-ordinator.

All co-ordinators and accredited representatives are given a copy of all the factual reports.

Thereafter, a "pre-hearing conference" takes place to settle the program of the "Public Hearing" [104] which will be held to hear witnesses and provide information

[103] *Supra*, note 8 at 6.

concerning the results of the investigation to the victims' families, the media, and more generally to the public.

At the end of the Hearing, the team in charge of the investigation prepares a written factual report which is submitted to the parties at a "technical review meeting". If the Factual Report is approved, the information which it contains is published in the NTSB public dockets section. Representative items that can be found in a public docket from a major accident investigation include weather data, witness statements, cockpit voice recorder transcripts (only after a period of 60 days from the accident) [105], air traffic control tape transcripts, ground track plots created from FAA radar raw data, engine tear down reports, diagrams, specification, photographs, computer recreations, transcripts of public hearings, etc.[106] However, the trade secrets for which it was requested that they be kept confidential are not placed into the public docket. Neither are the analytical notes and report drafts emanating from NTSB investigators, NTSB technical experts, and NTSB party consultants.[107] If additional relevant factual information is developed later, it is also placed in the public docket of the accident.

After completion of the fact-finding phase, the investigation process reaches its final stage.

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[104] For more details about Public Hearings, see Chapter 5, Section 1, part B1a, below.

[105] Phillipp J. Kolczynski, *supra*, note 81 at 29:

> [F]or many years, the NTSB policy consisted in making the CVR transcripts available almost immediately after the finding of the black boxes. This policy changed after the investigation of the Delta Flight 1141 flaps up accident in Dallas, Texas: the crew allegedly mispositioned the flaps, while they were recorded (on the CVR) discussing the physical attributes of a particular female flight attendant, before take off. A State Court Judge in Texas ordered Delta to produce the CVR recording which was subsequently broadcast by the media. ALPA (Air Line Pilot Association) was outraged and threatened a walkout. The NTSB responded to this lobbying pressure by persuading Congress to amend the Independent Safety Board Act in 1990 to protect the cockpit privacy of airlines crews [...] the CVR tapes are no longer discoverable. We get only those of the portions of the CVR which the Board elects to transcribe and reveal to the public, and only when the Board has completed most of its investigation.

[106] *Ibid.*

F. THE FINAL REPORT

Eventually, the IIC prepares a draft accident report which includes NTSB conclusions on the probable cause of the accident as well as safety recommendations to avoid the recurrence of a similar accident. The accident report is then submitted to the full five member Board for review and approval at a public meeting in Washington D.C., after which it is made available to the public.

It should be noted that NTSB probable cause determinations are not admissible in evidence.[108] In the US, "no part of a report of the Board, related accident or an investigation of an accident, may be admitted in evidence or used in a civil action for damages resulting from a matter mentioned in the report."[109] This provision was interpreted by the courts as only prohibiting the introduction into evidence of the opinions or conclusions expressed by the NTSB or its employees with regards to the probable cause of the accident or the relative fault of the parties involved. However, all NTSB factual recitations, evaluations, analyses, or opinions which are not decisive as to the issue of the causation of the accident are generally considered admissible in civil actions.[110]

The entire process of the investigation from the accident to the final report generally takes 9 to 12 months.

G. THE SAFETY RECOMMENDATION

For the members of the US Safety Board, "[t]he recommendation is vital to the Board's basic role of accident prevention since it is the lever used to bring changes and improvements in safety to the nation's transportation system."[111] Congress emphasized

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[107] *Ibid.*
[108] 49 U.S.C. §1441(e).
[109] 49 U.S.C. §1154(b).
[110] E. Tazewell Ellet, "Aircraft Accident Investigation in the United States and the role of the NTSB and FAA" (September 20th, 1995) at Hogan & Hartson, Washington D.C. [unpublished].
[111] NTSB green booklet, 2000, Washington D.C. 20954, U.S.A.

the previous statement encouraging the Board to "advocate meaningful responses to reduce the likelihood of recurrence of transportation accidents."[112]

To comply with this objective, the NTSB issues safety recommendations as soon as a problem is identified without necessarily waiting for the completion of the investigation or the determination of the probable cause of the accident.[113]

Each recommendation both mentions the party or person whom it applies to and points out the action which should be taken to improve air safety. NTSB recommendations are theoretically not mandatory but it is strongly advised to follow them. Moreover, Congress made it an obligation for the Department of Transportation to respond to the Board's recommendations within 90 days.

On certain occasions (e.g. crash of TWA Flight 800), the FAA may conclude - after consultation with aircraft manufacturers and operators - that safety recommendations are impossible to implement because of their high-cost, the operational constraints which they involve, and the low-level of risk incurred. Aware of this problem, the US Board has set down a list of the "Most Wanted safety recommendations" to indicate which recommendations "would have the greatest impact on transportation safety at the national level."[114]

The conduct of BEA investigations follows a similar scheme, although there is a major distinction: the concomitance of the technical and judicial investigations. This aspect will be discussed in the chapter concerning the co-operation or co-existence of Air Safety Boards with other agencies.

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[112] *Ibid.*

[113] For example, in the course of its investigation of the crash landing of a DC-10 in Sioux City, Iowa in 1989, the Board issued recommendations on four separate occasions before issuance of its final report.

[114] *Supra* note 111 at 36.

SECTION 2. THE CONDUCT OF BEA INVESTIGATIONS

In France, the first persons to be notified the accident, other than the witnesses who were there fortuitously, are the emergency assistance services, the fire brigade, the police and the "gendarmerie"[115] which has a special competence[116] in aviation matters and is normally responsible, with the police, for the delimitation of a safety zone around the crash-scene.

Not long afterwards, both technical investigators and judicial experts arrive to start their respective investigations.

A. PARTIES TO THE TECHNICAL INVESTIGATION

There are essentially three categories of technical investigators in France:

- the BEA investigators
- the "enquêteurs de première information (EPI)" which normally belong to the DGAC; they are placed under the control and the authority of the BEA during the investigation[117].
- the members of the "Commission d'Enquête Technique"[118] which are appointed by the Minister of the Department of Equipment, Transport and Housing on the proposal of the BEA[119] either when the accident is so serious that it caused a great stir in the public opinion, when the accident has an international significance, when the type of accident is recent or concerns several Ministerial Departments, or when it appears that the accident is likely to be particularly instructive for the improvement of air safety.[120]

Before law 99-243, the BEA was placed under the control and at the disposal[121] of this Commission of Inquiry which therefore played the leading role in the investigation

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[115] Branch of the French army entrusted with a mission of maintenance of law and public order.
[116] Gendarmerie du Transport Aérien (G.T.A.)
[117] Article L 711-3, loi 99-243.
[118] Technical Commission of Inquiry.
[119] Article L 711-3, loi 99-243.
[120] Article 26, Chapter V, Instruction IGAC/SA N°300.
[121] *Supra* note 117 at 38.

and controlled the setting-up by the Safety Board of the different working groups of aeronautical experts (representatives of the Administration, airlines, aircraft manufacturer, component manufacturer).

The composition of the Commission of Inquiry was provided for in article 3 of "arrêté"[122] of October 14th, 1994 (modifying IGAC/SA Instruction):

- A Chairman : the Chairman of IGACEM, or, the chairman of a section of IGACEM, or, a member of the "Safety and Air Navigation" section of IGACEM.
- A vice-chairman : the Director of the BEA or his representative (this will no longer be the case with the application of loi 99-243 which gives the leading role to the BEA) .
- A member of the Safety and Air Navigation section of IGACEM.
- A pilot-member of the OCV.
- 3 persons designated by the Minister in charge of Civil Aviation for their particular skills in aircraft manufacturing, aircraft operations.
- two other experts with certain aeronautical skills, depending upon the particular circumstances of the accident.

Today, the situation is reversed since law 99-243 entrusted the BEA with the primary role in the investigation which means that the *ad hoc* Commission of inquiry is now under the control and at the disposal of the French Safety Board. The conditions of appointment of this Commission and of the EPF are fixed by a décret en Conseil d'Etat.[123]

B. IDENTIFICATION PHASE

After notification of the accident/incident the Minister of Transports appoints the Commission of Inquiry which will assist the BEA in its work.

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[122] Enforceable decision issued by administrative authorities such as Ministers, "Préfets", or Mayors and either applicable to one particular individual (décision individuelle) or to all French citizens (décision générale et impersonnelle).

[123] *Ibid.*

For its part, the French Safety Board initiates the investigation by immediately sending on-scene an "enquêteur de premiere information" to carry out preliminary observations, take photographs of the wreckage, collect urgent elements, etc. An Investigator in charge is also designated.[124]

Depending upon the circumstances of the accident, the Investigator-in-charge may decide whether he needs the co-operation of investigators, assistant investigators or external experts. In major aircraft accident investigations, he sets up working groups which are responsible for the collection of information. These groups include BEA investigators as well as experts from the aeronautical industry or pilots, and are specialized in one area such as: site and wreckage, aircraft systems and engines, flight preparation and personnel information, flight recorders, aircraft performance, witness testimony, etc.

C. THE FIELD-PHASE

During the field-phase, the main concern is to collect pieces of evidence, and to gather factual information related to the crash through the consultation of the files concerning the crew, the maintenance books of the aircraft, the meteorological data at the time of the accident, the flight preparation, the ATC data (communications transcriptions, radar images). The technical investigators must take the necessary measures for the preservation of these pieces of evidence.[125]

Since law 99-243, BEA investigators have larger prerogatives with respect to the collection of evidence :

At their arrival on the site of the accident, the technical investigators have immediate access to the site of the accident/incident, to the aircraft or the wreckage and what it contains to make all the necessary findings.[126] They also have access, without delay, to the content of the aircraft recorders, to any other recording

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[124] See BEA, "Déroulement d'une Enquête", online: <http://www.bea-fr.org/francais/bea/bea.htm> (date accessed: 30 June 2000).
[125] Article L 721-2, loi 99-243.
[126] L 721, loi 99-243..

considered relevant[127] and are authorized to make use of these recorders.[128] Incidentally, the only persons allowed to listen to the recordings apart from the BEA experts are the crew, the operator of the aircraft, and the judicial experts.

Still, the whole accident site and all parts of the aircraft must absolutely remain under the control of the judiciary.[129]

During the field-phase, the working groups gather in plenary sessions to discuss and assess the progress of the investigation. Moreover, the IIC may decide to issue "Communiqués de Presse" or "rapports intérimaires" to inform the authorities concerned by the accident about the progress of the investigation (DGAC, manufacturers, operator, etc). Generally, these "communiqués" and "rapports" are not made public.[130]

D. ANALYSIS OF THE PIECES OF EVIDENCE

In collaboration with the Judiciary, BEA investigators may perform tests on certain material elements collected on-scene and carry out the transcription of the CVR and flight data recorder. They may also analyse autopsy reports or set up simulations.[131]

The analysis of the pieces of the wreckage, engines, and flight instruments is conducted in the BEA laboratories by the technical section of the Board (Division Technique). When such analysis becomes very complex, the technical section may request the assistance of specialized branches of the Ministry of Defence such as le Centre d' Essais en vol de Brétigny (CEV), le Centre d' Essais des Propulseurs de Saclay (CEPr), or le Centre d'Essais Aéronautique de Toulouse (CEAT).[132]

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[127] Article L 721-1, loi 99-243.
[128] *Ibid.*
[129] See Chapter 4, Section 2, below, for more on this topic.
[130] Favé Vincent, "Les Enquêtes sur les incidents et accidents" (1985) La vie de l'avion commercial, Académie de l'Air et de l'Espace.
[131] *Supra* note 124 at 40.

E. Final Report

The last stage of the investigation is the public release of the final report after submission to and approval by the Commission of Inquiry. Such report contains a description of the facts and circumstances of the accident and the conclusions of the BEA on the "certain or possible causes" of the accident.

In the case of a major accident, a preliminary factual report is published 4 to 6 weeks after the occurrence of the crash.

F. Safety Recommendations

When necessary, the BEA establishes safety recommendations[133] (either before the end of the investigation as precautionary measures or after the investigation) which may concern any branch of the aeronautical industry.

These recommendations are directly addressed to the authorities concerned, including the Ministry of Home Affairs (changes which should be done with respect to emergency aid after aircraft accidents/incidents), the SFACT[134] which supervises the operation, maintenance and certification of aircraft, the DNA[135], which is the control authority of air navigation, or the DGAC.[136] The safety recommendations are also included in the final report.

EC Directive N 94/56 asks the European Community States to make sure that safety recommendations be duly taken into consideration, and if necessary, followed. Since in certain situations a strict implementation of the recommendations would have disastrous consequences (e.g. grounding of a type of aircraft) for the stability of the aeronautical industry, airlines or flying schools, the EC Directive requires that, at least, the concerned parties answer to the recommendations and indicate the measures which they have decided to take, or, the reasons why it is impossible for them to take such

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[132] *Ibid.*
[133] Article L. 711-1, loi 99-243.
[134] Service de Formation Technique et du Contrôle Aéronautique.
[135] Direction de la navigation aérienne.
[136] J. Cazade, *supra* note 8 at 6.

measures. In conformity with Annex 13, EC Directive N° 94/56 makes clear that safety recommendations do not constitute a presumption of fault or liability.

CHAPTER 4. HUMAN, FINANCIAL & TECHNICAL RESOURCES OF THE BOARDS

Today, the personnel, funds, equipment and facilities which are required to conduct one major aircraft accident investigation are often much greater than many States can provide which forces the Safety Boards to operate with relatively thin resources.

SECTION 1. FINANCING OF THE U.S. & FRENCH BOARDS

In order to perform, 24 hours a day, its mission of investigation anywhere in the United States and world-wide, as well as to equal its reputation of professionalism and efficiency in all circumstances, the NTSB needs a considerable amount of money.

A. THE FINANCING OF THE NTSB

> [T]ransportation accidents are expensive. According to the Federal Aviation Administration (FAA), the direct cost of just one fatal commercial aviation accident -the 1989 DC-10 crash in Sioux City, Iowa-totalled more than $300 million. The Exxon Valdez accident, with no fatalities, cost $2-3 billion just in clean-up operations alone. Perhaps the even bigger tragedy is the fact that the equivalent of a planeload of citizens dies each day on our nation's highways. Each year, highway traffic crashes cost the nation about 40,000 lives, more than five million injuries, and $150 billion in medical costs, lost productivity, and property damage--that's $410 million per day. Clearly we must do better to reduce casualties and the cost of accidents. Successful companies know the economic benefits derived from a small investment in safety prevention, and the public derives a significant safety benefit from a small investment in the Safety Board.[137]

[137] See NTSB Strategic Plan, online: <http://www.ntsb.gov/Abt_NTSB/strategic/plan.htm> (date accessed: 25 November 2000).

To fulfil its duty nation-wide, NTSB costs each US citizen only about 23 cents a year. Not surprisingly, the US Safety Board is proud to consider itself as "one of the best buys in the government."[138]

1. Source of Financing

The funding of NTSB activities results from appropriation legislation passed by Congress, signed by the President and generally contained in the Transportation and Related Agencies Appropriation Act for a given fiscal year.[139] The direct financing of NTSB by Congress confers a large autonomy to the US safety board and therefore constitutes a capital element of its independent status.

2. Statistics

Meanwhile NTSB' s funding has risen modestly from a 1980 figure of about US$ 36 million to a fiscal year 1999 budget of US$ 55.688M (reflects US$2.3M supplemental appropriation and US$ 85K rescission[140]) which approximately corresponds to the list price of one single-aisle-jetliner[141], the worldwide commercial air transport fleet has more than doubled within the same period.[142]

In year 2000, this budget has been quite significantly enhanced reaching US$ 81.870M (reflects US$19.739M supplemental appropriation and US$217K rescission). Congressional action is not yet complete concerning NTSB funding in year 2001, although US$ 62.942 have been requested.[143]

In 1999, NTSB Chairman James Hall commissioned a report on the "[i]nner workings of the NTSB" which has been qualified as "[t]he most comprehensive examination of NTSB operations that has ever been undertaken in the 30-year history

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[138] See NTSB History and Mission, online: <http://www.ntsb.gov/Abt_NTSB/history.htm> (date accessed: 25 November 2000).

[139] E-mail from Barbara Bush, (ntsb.gov, Thursday 7 September 2000) Chief of the Facilities Division of NTSB Office of the Managing Director.

[140] Reduction in funding.

[141] Chuck Taylor, "Study finds NTSB teetering near the breaking point" *Seattle Times aerospace reporter* (Thursday, December 9, 1999, 11:23 a.m. Pacific, December 1999), online: <http://seattletimes.nwsource.com/news/business/html98/rand_19991209.html>.

[142] Aviation International News/Online, "Rand urges overstressed NTSB to quit GA probes", online: <http//ainonline.com/jan_rand_1.html>.

of the agency".[144] The fact that the research has been carried out as an outside study of the NTSB by the RAND Institute for Civil Justice[145] adds credibility to this report made public in December 1999.

Among other things, the RAND report states that "[t]he Safety Board is already stretched to the limit" in terms of money, equipment and personnel." [146] Chairman James Hall asked the administration for additional funding but repeatedly has been turned down: "the OMB (the Office of Management and Budget) is zeroing out the welfare of the American People"[147] Mr Hall said.

If it is clear that NTSB must "play tight" with its budget, no change is expected at this time regarding its financing.

Just as its North-American counterpart, the French BEA must face the exponential growth of air navigation and the increasing complexity of aeronautical techniques. Of course, its financial means are not comparable to those of the NTSB since each budget necessarily reflects the economic power of the State of origin and the importance of domestic air traffic. The BEA nevertheless stands as one of the best references known world–wide in terms of air accident investigation, along with the NTSB.

B. THE FINANCING OF THE BEA

With a yearly average of 700 investigations on the French Territory and 50 investigations abroad, the BEA is the most active Air Safety Board in Europe. It is

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[143] *Supra* note 139 at 45.

[144] Institute for Civil Justice, RAND report, *Safety in the Skies: Personnel and Parties in NTSB Aviation Accident Investigations* (by Cynthia C. Lebow, Liam P. Sarsfield, William L. Stanley, Emile Ettedgui, Garth Henning, MR-1122-ICJ, 1999).

[145] Research Institute based in Santa Monica, California. According to the RAND report, its mission is "[t]o improve private and public decision making on civil legal issues by supplying policymakers and the public with the results of objective, empirically based, analytic research."

[146] Further discussion on this report will be found at 61-62, below.

[147] See Geraldine Sealey, "At risk: Safety in the Skies" *ABC news.com* (9 December 1999), online: <http://abcnews.go.com/sections/us/DailyNews/ntsbreport991209.html>.

expected to develop its means of intervention within the next years to face the expansion of international air traffic. Such activity requires appropriate financing.

1. Sources of Financing

By now, the BEA functions as a subsection or "département" of the "Inspection Générale de l'Aviation Civile." Accordingly, its budget is deducted from the "Budget Annexe de l'Aviation Civile (BAAC)."

However, the BEA showed the French national authorities its wish to move towards an organic independence after having been granted its functional independence by loi 99-243.

A transition to organic independence would necessarily involve the awarding to the BEA either of an independent funding (as in the United States) or of an autonomous funding /"budget autonome", depending on its new legal status :

If the BEA were to be categorized by the French Parliament as an "Autorité Administrative Indépendante (AAI)"[148], its funding would automatically become independent and deductible from the budget of the French Ministry of Transports/ "Budget Général du Ministère des Transports."

If however, the French legislator decided to categorize the BEA as an "Etablissement Public (EP)"[149], the latter would then have to leverage its own autonomous budget/"budget autonome."

In each of these alternatives, the BEA would authorize its own expenditures.

In addition to its public financing, the BEA is authorized to leverage funds through "fonds de concours" by which the aeronautical industry contributes in part to the

[148] French administrative authorities specifically endowed with a legal status which, by isolating them from any influence on the part of the State, seeks to give them independence in the exercise of their function as protectors of certain human rights and freedoms. The AAIs usually take the form of collegial bodies (e.g. the French national data protection agency "CNIL, Commission nationale de l'informatique et des libertés"), except for le Médiateur de la République.

[149] Traditionally, describes the French administrative bodies in charge of an activity of public utility. Today, EPs do not necessarily have an administrative activity, some have an industrial or commercial

considerable costs of aircraft accident investigations. Since it is their interest to improve as much as possible the safety of the aircraft which they either built or operate, the main actors of the aviation business see such contribution as beneficial.

2. Statistics

BEA's yearly budget reaches 6.5 million French Francs (FF) or approximately U.S. $ 1,000,000 which does not include the FF 1.8 million spent for the training of its members and the FF 5 million allocated to the laboratories, notably for the analysis of the flight recorders. However, all travelling expenses are debited from the budget and account for FF 3 million.[150]

In order to overcome the insufficiency of the resources available for the investigation of aircraft accidents around the world, measures promoting technical assistance and financing between States have been adopted under the auspices of international authorities.

SECTION 2. INTERNATIONAL MEASURES AGAINST THE INSUFFICIENCY OF RESOURCES

ICAO proposed several measures to compensate the possible insufficiency of resources of Safety Boards.

A. ICAO' S PROPOSALS FOR TECHNICAL ASSISTANCE AND FINANCING

The issue of financial and technical assistance to States in the field of investigation of major aircraft accident investigations was first addressed in 1974 at the 21st Session of the ICAO Assembly. That issue was again discussed at the 1977 and 1992 AIG Divisional Meetings, and more recently at the AIG Divisional Meeting of ICAO held in Montreal from September 14th to Sept. 24th, 1999.

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activity (see distinction "Etablissement public administratif (EPA)" / "Etablissement public industriel et commercial (EPIC)").

In 1974, ICAO Assembly adopted Resolution A 21-20 which *inter alia* recommended that "[S]tates should provide expert assistance and facilities upon request. For that purpose, the Council was directed to study (a) means by which Contracting States could be made aware of expertise and facilities which, on request, might be made available by other Contracting States and (b) types of cost and financial implications of investigations of major aircraft accidents including salvage, and of investigations requiring special expertise, with a view to establishing possible means for apportioning these costs.

To facilitate the Council's study, the Member States were requested to communicate to ICAO all relevant information concerning the expertise, equipment and facilities that they were disposed to offer with regards to the objective of technical assistance provided for in Resolution A 21-20. The Member States were also asked to indicate whether they considered the costs incurred by major accident investigations as "insignificant", "medium", or "considerable."[151] Among the 48 States which replied, only 27 announced that they were ready to provide technical assistance when needed although 15% of them reckoned that the financial incidence of major aircraft accident investigations was "considerable."

As a result of this survey, a list was set of the States which accepted to make their expertise, equipment and facilities available to other States for the purpose of Resolution A 21-20. This list was subsequently included in the Manual of Aircraft Accident Investigation.

ICAO's initiative of 1974[152] to develop technical assistance was taken further at the 22nd Assembly Session of 1977 where the Council:

- advocated the signing of bilateral agreements under which the Member States would share the costs of aircraft accident investigations

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[150] Interview with J.L. Benesse, *supra* note 54 at 20.
[151] C. J. Durand, Aircraft Accident Investigation, The need for a stronger international regime (IASL, McGill University, Canada, August 1993), *supra* note 8 at 6.
[152] 21st Assembly Session, 1974, ICAO.

- advised the operators providing international transport services to make sure that they are covered for such costs; and
- suggested the creation and administration by ICAO of a fund intended to grant financial aid to the Member States and to ensure that they have sufficient means to carry out a thorough inquiry.

However, ICAO's 1992 Divisional Meeting showed that the needs of the Member States as to financial aid in aircraft accident investigations had not decreased.

New proposals were hence made to include in Annex 13 a clause encouraging the Member States to negotiate between themselves the sharing of the costs of major accident investigations. ICAO was also urged to set an insurance system which would cover the expenses incurred by major ocean salvage.

Still, as there was no consensus on how the subject of the funding of aircraft accident investigations might be progressed, ICAO took no further action after the 1992 AIG.

Unfortunately, the 1999 AIG[153] did not bring new solutions to that problem. If the Secretariat recognized the financial burden that air accident investigations may impose on the States involved, it however raised the question whether the issue really needs further study considering that in its opinion, "[n]o simple course of action would gain universal acceptance" by the Member States.[154]

However, the Secretariat stressed the need for more technical cooperation between the States.

The European Union[155] went one step further than ICAO when it proposed the institution of a European Aircraft Accident Investigation Board.

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[153] 1999 Accident Investigation and Prevention (AIG/99) divisional meeting of ICAO on modernizing Annex 13 to the Convention.
[154] *Ibid.*
[155] Today, European Community.

B. PROPOSAL FOR A EUROPEAN AIR SAFETY BOARD

Two major proposals were successively made by the European Parliament and by Claude Abraham, former "Directeur Général de l'Aviation Civile" in France.[156]

1. Proposal of the European Parliament

The European Parliament adopted on October 19th, 1987 a Resolution proposing the setting up of a European Accident Investigation Board in "[w]hich the best qualified experts from all European countries would co-operate to investigate accidents involving all public transport aircraft and helicopters occurring in European Airspace in order to reach undisputed conclusions about the causes of these accidents and to learn from their findings."[157]

The purpose of such system is to create a pool of experience and resources thereby optimizing the possibilities of each European Member State with respect to complex accident investigations.

The Resolution also suggested "[t]o set up an air safety task force within the Directorate General for Transport and to instruct it to monitor accidents and safety trends [...]." Such task force would be on alert 24 hours a day and its mission would consist in the providing of technical assistance[158] to back-up, on request, the European States on the territory of which air accidents occurred.[159]

The personnel of the task force would be specially trained for this type of mission and could be selected among the Boards of the European States. Operational costs would be born by the Member States.[160]

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[156] See C. Abraham, "Entretien avec Claude Abraham" (1995) Pilote de Ligne N° 5.
[157] European Parliament Resolution on Community Measures in the Field of Air Transport Safety, (OJ N° C 51, 19.10.87).
[158] From one expert to a full-team of experts would be provided.
[159] For further information on that isssue, see Commission des Communautés Européennes, Direction Générale des Transports, Division B 3, Rapport sur *la coopération et mise en commun des ressources disponibles dans le domaine des enquêtes sur les accidents d'aéronefs* (by C. G. Wilkinson, Former Chief Inspector of Accidents, AAIB, U.K, October 1999).
[160] J. Cazade, *supra* note 8 at 6.

In the absolute, it seems that only France, the U.K., Germany, and perhaps, the Netherlands would be in position to provide the personnel which is needed to form the task force, but these States will still need to have the willingness to do so.

2. Proposal of Claude Abraham[161]

Claude Abraham proposes the creation of a High Authority named "Haut Conseil pour la Sécurité dans les Transports" which would function as the U.S. NTSB (five independent members). All European Safety Boards including the BEA would be dependent on that authority.[162]

3. Opinions about the creation of a European Safety Board

In Franck Taylor[163]'s opinion, the creation of a European Safety Board would not find much support among the member States which generally consider their national aircraft accident system as sufficient and competitive.

Obviously, the institution and operation of a European Board would be impossible without the participation of the three key Safety Boards existing in Europe: the BEA, the AAIB (U.K), and the FUS (Germany). Yet, it seems unlikely that these agencies would accept to lose their independence and prestige to "blend in" an entity which, for the moment, has no experience and no history. As the saying goes "why change a winning team?."

Perhaps, an alternative to the creation of a European Safety Board would be, as Professor Rapp advocated, the mere appointment of accredited representatives in each Member State to participate, wholly or partly, in every major public transportation accident in Europe.[164]

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[161] *Supra* note 156 at 51.
[162] *Ibid.*
[163] Cranfield Aviation Safety Centre, *A joint European approach*, (by Franck Taylor, Cranfield Institute Annals, 1994).
[164] J. Cazade, *supra* note 8 at 6.

Along with the necessity to have sufficient financial means in order to keep maximum material autonomy in the investigation, the Boards must make sure that their personnel have all the skills and integrity not to be mislead or wrongly influenced.

SECTION 3. HUMAN RESOURCES OF THE U.S. AND FRENCH BOARDS

While the NTSB employs almost 500 people[165], the BEA works with approximately 70 people including 30 technical investigators and 12 assistant investigators. The BEA should increase the number of its employees up to 120 within the next few years.[166]

A. BACKGROUND OF THE BOARDS INVESTIGATORS

1. Background of NTSB employees (technical panel)[167]

Most NTSB employees are specialized in Aeronautical/Aerospace engineering and obtained several degrees (B.S. required) in that field from the best universities in the United States or from military schools as renowned as the US Air Force Academy, the USAF institute of Technology or the USAF Aircraft Accident Investigation School. These employees often have supplementary expertise in one particular technique used in the aeronautical field such as compressible fluid flow and boundary layer stability, crashworthiness, metallurgical engineering or computer science and programming.

In many cases, NTSB engineers have a private pilot license or worked as commercial and/or military pilots which necessarily gives them a better understanding of the different constraints to which an aircraft and a pilot can be exposed.

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[165] *Supra* note 48 at 19.
[166] *Ibid.*
[167] See NTSB, *About the NTSB: Members of the Technical Panel*, online: <http://www.ntsb.gov/abt%5Fntsb/bios/tech%5Fpanel.htm> (Date accessed: 13 November 2000).

In order to examine the human (mental, medical, physical) factors which may have concurred to the occurrence of an aircraft accident, the NTSB includes psychologists and experts in Medicine and/or Bioengineering. The NTSB also includes meteorologists and lawyers.

2. Background of BEA employees (engineers/investigators)

Like in any other branch of the French Civil Aviation (including the DGAC), the BEA recruits most of its employees at *l' E.N.A.C.*[168], *SUPAERO*[169] or *l'ENSICA*[170], after a competitive examination. These state-owned engineering schools based in Toulouse provide their students with a high-quality training in a very large spectrum of activities both in the field of aviation and in the field of space technology (for SUPAERO).[171]

Some BEA engineers are nevertheless selected among experienced engineers who worked either in aviation or arms-related State agencies such as the "Direction Générale de l'Armement"[172], or in the field of meteorology.[173]

Since many of their employees come from the same schools, a certain "esprit de corps" is noticeable between the BEA, which sets safety recommendations, and the DGAC, which is responsible for their application. Yet, this is not perceived negatively or considered suspicious in France as it would be in Anglo-Saxon countries. On the contrary, BEA and DGAC see such relations as a beneficial factor for their collaboration and mutual understanding.

As J.L. Benesse explains, BEA engineers are often selected directly after they finished their studies.[174] The reason for this is the necessity of having young investigators with maximum availability and resistance. During an aircraft accident

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[168] Ecole Nationale de l'Aviation Civile.
[169] Ecole Nationale Supérieure de l'Aéronautique et de l'Espace.
[170] Ecole Nationale Supérieure d'Ingénieurs de Constructions Aéronautiques.
[171] Interview with J.L. Benesse, *supra* note 54 at 20.
[172] *Ibid.*
[173] Not surprisingly, BEA meteorologists work on accidents caused by weather phenomenon such as icing or striking by lightning.
[174] Interview with J.L. Benesse, *supra* note 54 at 20.

investigation, the investigators are considerably in demand as much physically, because of the long hardworking hours and the necessity to be operational at any given time, than psychologically, because of the stress involved by the technical difficulty of their task, the accumulation of sleepless nights, and most of all, by the horrible sight of a human disaster. Understandably, employees with important familial constraints would not be in position to offer the same availability and resistance as young recruits newly graduated from university.

All engineers have at least a private pilot licence which shows that the BEA privileges practice over mere theory and reminds us of the fact that the field of aviation is a world of enthusiasts (the BEA could just as well include highly skilled aerobatics-flying pilots as aircraft model collectors).[175]

The BEA is also composed of professional pilots to operate its fleet of 400 aircraft and work on the human factor of accidents. These pilots either work as part-time employees (mostly airlines pilots) or as full-time employees (former air force squadron leaders). The BEA intends to hire full-time air captains within the next few years.[176]

Although the strong majority of BEA employees are civil servants, those who have an expertise in a field as specific as metallurgy or acoustics are contract staff.

Not only must Air Safety Boards employees be very skilled but they are also expected to be above suspicion. By the nature of their activity, these employees are led to be the guardians of highly-coveted information which shall not be released until the final report is made public. Integrity is therefore considered as a major quality in the field of aircraft accident investigation and constitutes an important element of the credibility of Air Safety Boards. The U.S. Code of Federal Regulations gives an illustration of this concern.

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[175] *Ibid.*

B. RESPONSIBILITIES AND CONDUCT OF NTSB EMPLOYEES

The responsibilities and conduct of NTSB employees[177] are enumerated in Part 805 of the Code of Federal regulations of which the purpose is to "[s]et forth the standards of ethical and other conduct required of all Board Members and employees."[178]

The Policy put in force by NTSB concerning this particular matter is laid down in 49 C.F.R. §805.735-3. In particular, 49 C.F.R. §805.735-3(a) promotes "[t]he maintenance of unusually high standards of honesty, integrity, impartiality, and conduct by its members and employees and special Government employees" because it is "[e]ssential to assure the proper performance of the Board's business and the maintenance of confidence by citizens in their Government." It also requires Board's members, its employees and its special government employees "[t]o adhere strictly to the highest standard of ethical conduct in all of their social, business, political and off-the-job activities, relationships, and interests, as well as in their official actions."

NTSB employees must generally avoid any situation which might create the appearance of "[m]isconduct or conflicts of interest" or result in "(1) [U]sing public office for private gain; (2) Giving preferential treatment to any person; (3) Impeding Government efficiency or economy; (4) Losing complete independence or impartiality; (5) Making a government decision outside official channels; (6) Affecting adversely the confidence of the public in the integrity of the Government."[179]

In other words, NTSB employees must be morally blameless whatever the cost be, and that, as much while in the course of their duty as off-duty. It is a matter of credibility.

For instance, they shall not have direct or indirect financial interest conflicting with duties and responsibilities within the Board or resulting from information obtained

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[176] *Ibid.*

[177] According to 49 C.F.R. §805.735-2: "[M]embers and employees means the Board Members and employees of the National Transportation Safety Board and active duty officers or enlisted members of the Armed Forces detailed to the Board, but does not include special Government employees."

[178] 49 C.F.R. §805.735.

[179] 49 C.F.R. §805.735-3(c).

through their employment by the board.[180] Neither could they receive gifts, entertainment, and favors by members or employees of the NTSB or have family members employed in transportation and related enterprises.[181]

As a matter of fact, NTSB employees are considered as the guarantors of the Government's integrity and are thereby morally responsible *vis-a-vis* the US citizens.

During aircraft accidents investigations, Air Safety Boards increase their workforce with investigators from the aeronautical industry.

SECTION 4. TECHNICAL INVESTIGATORS FROM THE AVIATION INDUSTRY

Considering the ever-growing complexity of aviation technology and the rise of aircraft accidents each year, it would be an illusion to think that Air Safety Boards could hold a thorough investigation without the participation of the aeronautical industry. As pointed out by Edward Stimpson[182], "[m]anufacturers are the ones that know the best about their products. NTSB, while an outstanding investigatory body, cannot possibly be kept up to speed on the operations of all the complex systems in an aircraft."[183] This statement is true for any air accident board including the BEA.

A. TYPE OF ASSISTANCE PROVIDED BY THE AERONAUTICAL INDUSTRY

Assistance may be provided during the investigation.

1. Assistance during the investigation

Aircraft manufacturers, airlines, or pilots groups often have their own professional investigators whom they place at the disposal of Air Safety Boards to participate in aircraft accident investigations. Since they are the ones who have knowledge of the

[180] 49 C.F.R. §805.735-4.
[181] 49 C.F.R. §805.735-5 & §805.735-8. .
[182] U.S. Ambassador to the Council of ICAO.
[183] E-mail from Edward Stimpson, U.S. Ambassador to ICAO (faa.gov, 13 June 2000).

products, these professional investigators provide the Boards with technical aid and help them familiarizing with the particularities of the aircraft involved in the accident.

They are normally authorized to identify the elements of the wreckage, to carry out various tests and measurements and have access to every factual information concerning the accident including the data collected on the CVR. The may also take part in the analysis of the material pieces of evidence and in the exploitation of the information either in their own laboratories or in those of their components manufacturers.[184]

Of course, all of these operations are performed on demand and under the control of Air Safety Boards.

Assistance may also be provided "upstream" of accidents.

2. Preventive Assistance

The role played by the aeronautical industry in the improvement of air safety starts at the aircraft design phase since it is their interest to prevent aircraft accidents rather than to investigate them.

For the sake of air safety, aircraft manufacturers and engine manufacturers have joined forces in such associations as the AIA (Aerospace Industry Association) or the SAE (Society of Automotive Engineer) which set up experts committees to work on the cause(s) of accidents. Some representatives of airlines, pilots unions or certification authorities are occasionally invited to attend these committees as observers.[185]

Each meeting begins with the drawing up of a list of incidents and accidents with a similar cause, continues with the analysis of every stage of the chain of events which led to the accidents or incidents reported on the list (whether they have a human, environmental or mechanical origin), and ends up with the establishing of a

[184] See J.M. Rame, "Rôle des Industriels dans la prévention des accidents" (1995) Pilote de Ligne N°5.
[185] *Ibid.*

programme of common research and development between its members to improve air safety.[186]

On several occasions the contribution of these committees proved to be essential in the improvement of air safety. One example is the successful contribution of an AIA committee after the explosion of Lauda Air B767-300 on May, 26th 1991, 11.15 p.m., at 15,000 feet above a mountainous region near Bangkok. The direct cause of the accident was held to be the release of one thrust reverser during take-off which rendered the aircraft uncontrollable. An AIA committee was set up with aircraft manufacturers including Boeing and members of the FAA. This committee held an inquiry which led to the establishing of new certification standards for thrust reversers (triple controls activation).

Both NTSB and BEA have recourse to the participation of the aeronautical industry in the investigation. In the United States, this mechanism is referred to as "the party system"[187] and is provided for in federal texts.

B. THE U.S. "PARTY SYSTEM" : NEED FOR A TECHNICAL CONTRIBUTION TO THE INQUIRY

Congress established that the Party System only concerns the people who, by their technical skills and experience, can contribute to the investigation. As expressed by Edward Stimpson[188], "manufacturers, pilots groups or others have to be invited into the investigation by the Board on the basis that they have something to contribute." Since the lawyers, insurers, and victims families have no investigating skills, they may not participate in the inquiry.

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[186] *Ibid.*

[187] Defined in the RAND report, *supra* note 144 at 46, as a system which "[a]llows the NTSB to leverage its limited resources and personnel by bringing into an investigation the technical expertise of the companies, entities (such as the pilot's unions), and individuals that were involved in the accident or that might be able to assist in determining probable cause."

[188] *Supra* note 183 at 57.

1. Exclusion from the Party System of all persons with legal interests related to the accident

Pursuant to the Code of Federal Regulations:

> "[T]he investigator-in-charge designates parties to participate in the investigation" [189] and "[P]arties shall be limited to those persons, government agencies, companies, and associations whose employees, functions, activities, or products were involved in the accident or incident and who can provide suitable qualified technical personnel to assist actively in the investigation."[190] Furthermore, "[n]o party to the field investigation [...] shall be represented by any person who also represents claimants or insurers."[191]

In other words, these provisions keep away from being assigned to the investigation all persons in legal or litigation positions such as lawyers, or insurance groups, and makes clear that party status may only be granted to those corporations or organizations that may contribute to the investigation because of their technical or specialized expertise.

Mr B. Ziegler and Mr Y. Benoist, from Airbus Industry Engineering Directorate, expressed this idea in a few words saying that "lawyers are just outlaw"[192] during NTSB activities.

Since they have litigation interests related to the accident, the victims families and the associations promoting their rights are also excluded from the party system.

2. Exclusion from the Party System of the victims' families

The C.F.R. provides that:

> [e]ven though persons or entities suffering loss in an accident might be argued to have a significant interest in the outcome of the investigation as likely future claimants in litigation, they are not permitted to be parties to the field investigation unless their employees, functions, activities, or products were involved in the

[189] 49 C.F.R. para. 831.11(a).
[190] *Ibid.*
[191] 49 C.F.R. §831.11(c).
[192] Ziegler B. & Benoist Y, "Aircraft Accident Investigation in the USA - Speech" (1995) Airbus Industry Engineering Directorate [unpublished].

> accident and they provide suitable qualified technical personnel to actively assist in the field investigation.[193]

Although such restriction could appear morally questionable, it is justified by the fact that the mission of the NTSB consists in the prevention of future accidents rather than in the assessment of liability.

It is sometimes argued that the corporations and organizations acting through the party system also have liability litigation interests in the investigation and could therefore be tempted to exercise an undue influence on Safety Boards aircraft accident investigations. If practice proves that the actors of the party system only aim at improving air safety, commentators nevertheless recommend that their participation in the investigation be reasonably limited in order to preserve, as much as possible, the Board' s independence.

C. RESERVES EXPRESSED CONCERNING THE PARTY SYSTEM

Since a few years, NTSB was increasingly driven back to rely on the party system. To offer a better appreciation of that situation as well as to catch Congress's attention on that question, James Hall commissioned the RAND report.[194]

One of RAND's major findings is that "[t]he reliability of the party process has always had the potential to be compromised by the fat that the parties most likely to assist in the investigation are also likely to be named defendants in related civil litigation. The inherent conflict of interest may jeopardize, or be perceived to jeopardize, the integrity of the NTSB investigation."[195]

However, the report asserts that "[d]espite its limitations, the party system is a key component of the NTSB investigative process."[196]

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[193] *Supra* note 110 at 36.
[194] *Supra* note 144 at 46.
[195] *Ibid.*
[196] *Ibid.*

In fact, this report brings to light the weight of the constraints exercised over most aircraft accident investigation boards in terms of budget, personnel, and technical resources.

For its part, the aeronautical community has always clearly demonstrated how the possibility to use the party system was important from their point of view:

Jean-Marie Rame, Professional Accident Investigator at the SNECMA Flight Safety Department declares that "beyond the suffering and human distress that it provokes, the accident is also an acknowledgement of failure"[197] for the aeronautical community which therefore intends to take all necessary steps to improve air safety.

As expressed by Ron Hinderberger, Boeing Director of Airplane Safety, aircraft company's participation in crash investigations is not motivated by anything other than a desire "to find out what happened and why."[198]

Understandably, the party system puts aircraft manufacturers and operators in a better position to improve their aeronautical techniques and procedures. Moreover, they are the ones that know the best about their products which renders their participation in the investigation crucial, all the more since aeronautical technology becomes increasingly complex.

[197] *Supra* note 184 at 58.
[198] *Supra* note 141 at 45.

CHAPTER 5. COOPERATION OF THE BOARDS WITH OTHER AGENCIES DURING THE INVESTIGATION

No less important than the finding of the cause(s) of accidents and the setting of air safety recommendations by aircraft accident investigation boards are:

- the establishing by judicial authorities of the liabilities which will allow the victims or their families to gain pecuniary compensation, and
- the determination by certification authorities of the measures improving air safety.

In order to fulfil their mission, such authorities may be allowed to conduct their own aircraft accident investigations, possibly in concomitance with the technical investigation. Both the American and the French systems provide examples of the eventual "co-existence" or cooperation of two investigations.

While in the United States, the aviation certification authority[199] may participate in NTSB investigations, in France, the Judiciary may carry out its own investigation at the in parallel to the technical investigation.[200]

SECTION 1. COOPERATION WITH CERTIFICATION AUTHORITIES : NTSB COOPERATION WITH THE FAA

In the United States, aircraft accidents are investigated by the National Transportation Safety Board and, depending on their nature, some can be delegated to the Federal Aviation Administration (FAA).

A. BRIEF OVERVIEW OF THE FAA

Concerned by the sparking of an important growth in the aviation industry after WWII, Congress decided to reorganize the federal civil aviation apparatus through the

[199] See Chapter 4, Section 1, below.
[200] See Chapter 4, Section 2, below.

enactment the Federal Aviation Act of 1958. The main purpose of this Act consisted in the creation of an independent body named the Federal Aviation Agency (FAA) which took over the safety rulemaking function of the Administrator of Civil Aeronautics Board. The two major areas of responsibility which the FAA was assigned were the promotion of air commerce and the enforcement of Federal Aviation Regulations (FAR).[201]

By virtue of the Department of Transportation Act of 1966, the Federal Aviation Agency became the Federal Aviation Administration and was placed, along with all other federal agencies and activities involved in the promotion of transportation safety, within the new executive Department of Transportation.[202]

Today, the U.S. aircraft certification authority is one of the most important governmental agencies with about 50,000 employees.[203]

The FAA is statutorily empowered to take part in NTSB aircraft accident investigations

B. RIGHT OF THE FAA TO PARTICIPATE IN NTSB INVESTIGATIONS

According to 49 U.S.C. §1132(c) "the Board (NTSB) shall provide for the participation of the [Administrator] in the investigation of an aircraft accident under this chapter when participation is necessary to carry out the duties and powers of the [Administrator]." However, it should be born in mind that the FAA "may not participate in establishing probable cause."[204]

By its participation in the investigation, the FAA is in position to learn any information[205] which could be used as a basis for the adoption of new certifications, operations rules or operating practices. In this regard, E. Tazewell Ellet judiciously

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[201] H. W. Donner, "The legal relationship between the regulator and the independent investigator", (June 27-29, 1995) Washington D.C. [unpublished].
[202] *Ibid.*
[203] See FAA, on line: http://www.faa.gov/ (date accessed: 17 June 2000).
[204] 49 U.S.C. §1132(c) *in fine*, C.F.R. Ch. VIII para.831.5.

comments that "[t]he FAA sometimes finds itself in the ironical position of imposing restrictions on aircraft manufacturers or operators because they previously followed FAA mandates which the accident investigation discloses was erroneous or incomplete."[206]

The participation of the FAA in the investigation is subject to the primacy of the NTSB.

C. PRIORITY OF THE NTSB OVER THE FAA DURING THE INVESTIGATION

In case of air accident/incident, the NTSB has priority "[o]ver any investigation by another department, agency, or instrumentality of the United States government"[207], including that of the FAA.

A major consequence of such priority is that the NTSB may request the FAA to investigate certain aircraft accidents[208] and to report to the Board on their facts and circumstances.[209] When such request is made, the NTSB has the obligation to use the report of the FAA in the determination of the probable cause.[210]

Furthermore, the NTSB may address safety recommendations to the FAA which has 90 days to respond and indicate its intention either to:

- Adopt the recommendation in full, pursuant to a proposed timetable,
- Adopt the recommendation in part, pursuant to a proposed timetable, with the reasons for not adopting the remainder, or
- Refuse to adopt the recommendations and give reasons for such refusal.[211]

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[205] The FAA generally waits the release of NTSB recommendations.
[206] Extract from E. Tazewell Ellet's speech *Current Trends in Aircraft Accident Investigations* delivered on September 20th, 1995 at the Palais des Congrès in Paris on the occasion of the 12th Biennial Conference of the International Bar Association.
[207] 49 U.S.C. § 1131(a)(2), C.F.R. Ch. VIII § 831.5.
[208] For example, where misfeasance or nonfeasance by the Government has not been alleged.
[209] 49 U.S.C. §1131(c).
[210] 49 U.S.C. §1131(c)(2).
[211] 49 C.F.R. §1135(a)(b).

D. POWERS OF THE FAA IN AIRCRAFT ACCIDENT INVESTIGATIONS

The FAA may have two different kinds of powers regarding air accident investigations depending whether the NTSB chose to delegate[212] the responsibility of the investigation in order to concentrate on the accidents which need to be investigated in priority.

The scope of such delegation encompasses certain general aviation accidents, non-fatal accidents, and accidents involving aerial applications, amateur-built or restricted category aircraft.

When a delegation of investigation is made, the FAA enjoys the same types of powers as the NTSB except that it is not authorized to determine the probable cause of the accident or to hold public hearings.[213]

When, the NTSB decides to conduct the investigation, the role of the FAA is circumscribed to the provision of equipment, facilities and expert personnel in such areas as flight standards, aircraft certification, air traffic control, aviation medicine, and airport standards. However, the FAA may always interview and subpoena witnesses, inspect equipment, components and facilities, or request the production of records and use it as evidence to require changes in procedures or manual, place limitations on operations, change rules or take any other action which it believes is required in the interest of safety.[214]

In this regard, E. Tazewell Ellet points out that "[g]iven the political ramifications of the FAA's receiving NTSB safety recommendations identifying FAA safety regulatory deficiencies, the FAA quite often takes remedial action while an NTSB investigation is still underway in order to forestall or blunt the impact of such recommendations."[215]

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[212] 14 C.F.R. §800.
[213] 49 U.S.C. §1131(c) or 49 C.F.R. §800.
[214] See Tazewell Ellet, *supra* note 110 at 36.
[215] *Ibid.*

During NTSB investigations, the FAA carries out its function of regulation of Air Safety.

E. FAA' S REGULATORY FUNCTION

To perform its regulatory function, the FAA must determine whether and how the nine following areas were involved in the circumstances of the accident:

- Performance of FAA facilities or functions.
- Performance of non-FAA owned and operated air traffic control facilities or navigational aids.
- Airworthiness of FAA-certified aircraft.
- Competency of FAA-certified airmen, air agencies or operators.
- Adequacy of the Federal Aviation Regulations (FAR's).
- Airport certification safety standards.
- Operator and/or airport security standards.
- Airman medical qualifications.
- Violation of the FAR' s.[216]

Since these areas of responsibility virtually cover all of civil aviation activity, one or more of them are invariably involved in every accident.

Most of the time, the FAA obtains sufficient information from its participation in NTSB investigation to determine which area was actually involved in the circumstances of the accident, if otherwise, the FAA holds its own independent investigation to get additional information making sure that it does not interfere with the NTSB investigation.

Once the FAA investigators identified the aforementioned areas of responsibility, a report is sent to FAA offices which require corrective action through the issuance of Airworthiness Directives (AD's), Flight Standards Information Bulletins (FSIB's), and modifications or additions to the Aeronautical Information Manual (AIM).

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[216] See *supra* note 201at 64.

In France, the Air Safety Board must collaborate with the judicial authorities.

SECTION 2. COOPERATION OF THE BOARDS WITH JUDICIAL AUTHORITIES

In France, aircraft accidents are subject to a dual-investigation[217]:

- on one hand, the technical or administrative investigation[218] is conducted by the BEA to improve air safety, whereas
- on the other hand, the Judiciary[219] investigates to assess the liability of the people whose conduct may have concurred to the accident (aircraft manufacturer, components manufacturers, operator of the aircraft, certification authority).

Since these investigations are held concomitantly but separately, the word "co-operation" may not seem appropriate. For the purposes of this section "co-operation" will be replaced by "coexistence".

A. THE FRENCH DUAL-INVESTIGATION SYSTEM[220]

In contrast to the NTSB, the BEA does not have priority over other investigations.

1. Priority of the Judiciary over the BEA

The French legislation imposes that in case of accident involving death or bodily injury, the investigation be primarily held to establish the truth "pour une bonne administration de la justice" which is emphasized by the fact that the Judiciary is the guarantor of the public interest. As a result, the Judiciary has priority in aircraft accident investigations.

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[217] "Double-enquête."
[218] "L'enquête technique ou administrative."
[219] "L'enquête judiciaire."
[220] For information on this issue, see Commission des Communautés Européennes, Direction Générale des Transports, Division B3, Rapport sur *les problèmes de la double-enquête sur les accidents d'aviation* (by Lucien Rapp, Novembre 1989).

2. Initiation of the Judicial investigation

All judicial investigations in France are initiated by a major public prosecutor named "le Procureur de la République" who generally requires the competent court to appoint a lesser prosecutor "juge d'instruction" in order to entrust him with the conduct of the inquiry.

Since the "juge d'instruction" is no more than a regular prosecutor with no particular expertise as regards aircraft investigations, he is hardly suspected of being influenced by anyone involved in the field of aviation.[221]

However, "every rose has its thorn" and the weak or non-existent aeronautical knowledge of the "juge d'instruction" is often detrimental to his efficiency in the investigation. Due to the suspicion of incompetence which hangs over this prosecutor, the aeronautical community generally gives more credit to the remarks of the technical investigators than to the legal conclusions of the judiciary.[222]

3. Responsibilities of the Judiciary in the investigation

Broadly, the French Judiciary is responsible for the preservation of the material elements of the investigation (pieces of the wreckage or data recorders).

(a) Preservation of the wreckage

When the Judiciary is informed of an aircraft accident, its first concern is to take all necessary steps to keep the wreckage in the exact same state as when it was first found.

At this stage, the Judiciary orders the delimitation either by the Gendarmerie mobile or the C.R.S. of both a global safety zone circumscribing the site of the accident and specific zones marking out the scattered pieces of wreckage. The purpose of these measures is to prevent the material elements of the investigation from being

[221] See Guichard François, Juge d'Instruction au TGI de Colmar, "Le cadre juridique de l'enquête judiciaire" (1995) Pilote de Ligne n° 5. See also Ministère de l'Equipement, des Transports et du Tourisme, IGACEM, Rapport sur *L'enquête technique sur les accidents et les incidents dans l'Aviation Civile* (by C. Gherardi, Inspecteur Général de l'Aviation Civile, Juillet 1994).

damaged or deteriorated as much as to avoid the occurrence of further incidents or accidents and to isolate the investigators from any exterior interference. Every person entitled to enter the safety zone must bear distinguishing features such as a uniform, a badge, a pass, or a business card.

Unless it is motivated by rescue operations and medical assistance, all moving, dismantling and removal of parts and documents necessary to the determination of the technical causes of the accident must be performed with the agreement of the representative of the Judiciary, namely the "juge d'instruction."[223]

(b) Seizure of pieces of evidence

The primary mission of the judicial experts when they arrive on the scene of the accident consists in the seizure and the preservation, under the authority of the Judiciary, of the pieces of evidence which have not already been put under seal by the Police officers.[224]

In particular, the Judiciary is responsible for the seizure of:

- the maintenance book of the aircraft which shows whether or not wrongful maintenance participated in the happening of the accident,
- the air control radar speed trap data which must be read to check out whether the ATC was involved in the cause(s) of the accident,
- a sample of the kerosene used by the aircraft which could have been abnormally inflammable thereby causing an explosion,
- and the professional records of the pilots to identify whether portent signs of serious pilot error could be detected by the operator prior to the accident.
- the flight recorders.[225]

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[222] *Ibid.*

[223] Instruction ministérielle du 3 janvier 1953 relative à la Coordination de l'Information Judiciaire et de l'Enquête Technique et Administrative en cas d'accident survenu à un aéronef français ou étranger sur le territoire de la métropole ou les Territoires d'Outre-mer: "Tout déplacement, démontage et enlèvement des pièces et des documents nécessaires à la détermination des causes techniques de l'accident sont effectuées avec l'accord du représentant de l'autorité judiciaire."

[224] "Officiers de la Police Judiciaire (OPJ)."

[225] See Guichard, *supra* note 221 at 69.

Since the recorders constitute a preponderant element for the understanding of aircraft accidents, they must absolutely be preserved either from being unintentionally deteriorated or lost, or from being intentionally tampered, stolen, or exchanged by malevolent people whom interests could be affected by the determination of the causes of the accident. In France, the avoidance of such risks is the responsibility of the Judiciary.

(c) The Judiciary as guarantor of the authenticity of the recorders

Annex 13 to the Chicago Convention emphasizes the importance of the flight recorders and suggests that their preservation be the responsibility of the Judiciary. The French investigation system makes a rigorous application of this principle.

As soon as the flight recorders are found, the Judiciary must make sure that a statement[226] mentioning the exact time of their localisation is done and that the extraction of these recorders has been photographed and filmed.

Thereafter, the flight recorders are immediately seized, put under seal and carried in person by an Officer of the Judicial Police to the laboratories which have been duly authorized to sift through the data contained in the recorders. This last operation may only be performed in the presence of judicial experts and must be photographed, filmed, and reported in detail.[227]

The listening of the CVR is strictly confidential in order to avoid all risks of distortion or wrong interpretation of the data by uninformed individuals who could then disseminate a truncated version of the circumstances of the accident, which would spoil the course of the investigation. However, if requested, the recorders must be put at the disposal of the technical investigators who will subsequently make a copy of the magnetic tapes under the control of an OPJ.[228]

The application of such preventive measures permits the Judiciary to trace every action performed on the flight recorders back to the moment of their discovery.

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[226] "Procès-verbal."
[227] See F. Guichard, *supra* note 221 at 69.

The authenticity of the data contained in the recorders may therefore be ascertainable at any time of the inquiry.

However, on two occasions, misunderstandings between the technical and the judicial investigations disrupted the efficiency of the precautions taken by the Judiciary. Doubts were subsequently raised as to the authenticity of the data contained in the flight recorders.

The first case happened during the investigation of the crash at Mont Sainte Odile, France, of an Airbus A 320 operated by the French domestic airline Air Inter. The DFDR and CVR were effectively put under seal by a "juge d' instruction" assisted by a judicial expert, but the QAR was retained by a member of the DGAC who only returned it to the "Gendarmerie" after he was threatened of being kept in custody.[229] Quite understandably, the relations between the technical experts and the judicial experts became a bit strained thereafter.

The second case concerns the crash of an Airbus A320 in June 1998 at Habsheim, Alsace, France. In the aftermath of this terrible accident, a local correspondent of the BEA collected the flight recorders (DFDR & CVR) without any control by the Judiciary. Although they had not been put under seal, the recorders were transferred to the Director of the French Civil Aviation Authority and then conveyed by the army to the Flying Tests Center/"Centre d'Essais en Vol" of Brétigny, near Paris. The first tests were also performed without the supervision of the Judiciary.[230]

The lack of judicial precautions which characterized the investigation of Habsheim crash aroused many critics and plunged the whole French aviation

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[228] Article L 721-2 I, loi 99-243.

[229] C. Guibert & M. Venet, "Commentaires sur la loi 99-243 du 29 mars 1999 relative aux enquêtes techniques sur les accidents et les incidents dans l'aviation civile" (1999) Revue Française de Droit Aérien et Spatial (RFDAS), vol. 211- N° 3 Juillet. See Also Jérôme Cazade, Directeur Juridique et Président d'Aéria (Association des anciens étudiants de l'IFURTA), "La loi du 29 mars 1999 : la fin justifie-t-elle les moyens ?" *Lex-aero* (1999), online: <http://www.lex-aero.com/Public/page9.html> (date accessed: 20 June 2000). See also Nicolas Loukakos, "Le pouvoir des fonctionnaires: la loi 99-243 est-elle contraire a la Convention de sauvegarde des droits de l'Homme et des libertés fondamentales ?" *Lex-aero* (1999) <http://www.lex-aero.com/Public/page9.html> (date accessed: 20 June 2000).

community into turmoil especially when rumors evoked a possible falsification of the magnetic tapes.[231] After having been accused in court of forgery and use of forgeries, the judicial experts struck back and authenticated these tapes.

Ever since then, such unfortunate events were never repeated. Still, these affairs remained notorious for the illustration that they give of the difficulty to carry out two separate investigations concomitantly and in an exceptionally competitive environment.

Things should nevertheless be put back in their context when looking at the two cases of Habsheim and Mont Sainte-Odile.

At the time of "Mont Sainte-Odile" and "Habsheim", the technical investigations of aircraft accidents were performed by an *ad hoc* "Commission d'Enquête" appointed by the Minister in charge of Transportation.[232] To a certain extent, these Commissions "short-circuited" the intervention of the BEA which was reduced to a secondary role in major aircraft accident investigations. Hence, the negligence of the technical investigators in "Habsheim" and "Mont Sainte-Odile" cannot be held against the BEA.

Although the Judiciary conserved its primacy over the technical experts in aircraft accidents investigation, Law 99-243 of March 29th, 1999 endowed the BEA with more prerogatives which, to a certain extent, modified the initial balance of powers and conferred the French Safety Board more prerogatives and leeway within the dual investigation system.

4. New sharing of powers between the BEA and the Judiciary

Law 99-243 of March 29th, 1999 grants the BEA more powers with regards to its access to the wreckage and the preservation of the pieces of evidence.

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[230] *Ibid.*

[231] *Ibid.* See also G. Rovetto, "Catastrophes aériennes: la perfectibilité de la méthode Sainte-Odile" (1995) Pilote de Ligne N° 5.

[232] See *supra* Chapter 3, Section 2, Part A.

(a) BEA Facilitated Access to the Crash-site

As seen previously, Article L 721-1 provides that the BEA and the "enquêteurs de première information"[233] have immediate access to the site of the accident/incident, to the aircraft, its wreckage and its content [...]. This provision adds that, in case of accident only, the BEA must preliminarily inform the Judiciary of its intervention, but it is not very explicit as to how this should be done. Apparently, informal notification would suffice.

Nothing is said about the notification of BEA' s intervention in case of incident which is subject to criticism. Judicial experts[234] argue that this provision contradicts Article R 142-4 of the "Code de l'Aviation Civile" according which if the accident or the incident results in damages to the persons or to the goods carried, the Public Prosecutor is kept informed.

However, this remark seems questionable since Article L 721-1 concerns the notification of the intervention on the accident/incident rather that the notification of the accident/incident itself.

Law 99-243 also authorizes, under certain conditions, the preservation of pieces of evidence by the BEA.

(b) Preservation of pieces of evidence by the BEA

Article L 721-1 entitles the BEA or, failing that, the "enquêteurs de première information", to take any measure for the preservation of the pieces of evidence, when this is necessary.

Some judicial experts[235] see this provision as an infringement of their competence since this matter is traditionally considered to be the prerogative of the Judiciary. Moreover, these experts find unacceptable that the preservation of the pieces of evidence may not only be the responsibility of the BEA but also that of the

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[233] Administrative officers chosen in the technical branches of the French Civil Aviation Authority and placed under the control of the BEA during the investigation.
[234] *Supra* note 229 at 72: Max Venet & Çlaude Guibert are aeronautical experts accredited to the "Cour de Cassation", Supreme Civil Court in France.
[235] *Ibid.*

"enquêteurs de première information"[236] which, as they think, could bring confusion in the investigation. To support this opinion it is argued that the "enquêteurs de première information" ignore the legal procedures related to the preservation of the pieces of evidence.[237]

On top of being challenged by the technical investigators as to the preservation of the pieces of evidence, the Judiciary is also forced to depart from certain prerogatives related to the collection of the flight recorders.

(c) BEA Facilitated access to the recorders

Article L 721-2 II states that, in case of accident and in the absence of preliminary judicial investigation, the technical investigators, or the enquêteurs de première formation by order of the BEA, are authorized to collect the flight recorders in the presence of an OPJ designated by the "Procureur de la République."

In other words, each time the Judiciary will be late to start its preliminary investigation, the technical investigators will have free hands to collect the flight recorders and will thereby be in better position to satisfy the imperatives of quickness peculiar to the prevention of aircraft accidents.

By granting more independence to the BEA, the law of March 29th, 1999 strikes a blow at the primacy of the judicial investigation which nevertheless remains the rule.

5. Pros and Cons of the dual-investigation system

During an investigation, the Judiciary[238] on one side, and the technical experts on the other side, strive towards very different objectives: while the former is concerned by the determination of the liabilities and the sanction of faults, the latter is urged to find the causes of the accident in order to avoid its recurrence and improve air safety.

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[236] Emphasized in Article L 711-3, loi 99-243.
[237] See M. Venet & Claude Guibert, *supra* note 229 at 72.

For certain commentators, the dichotomy between these objectives is not as clear as it seems, which is a source of confusion in the investigation. Charles Gherardi, "Inspecteur Général de l'Aviation Civile", admits that the technical investigation has a determining influence on the distribution of liabilities and the attribution of faults which are in many cases the legal charge of a fact, the cause of the accident.[239] For instance, the report made by the technical experts is transmitted to the judge and may be used by the victims or their legal successors when they bring a civil action in court.

Furthermore, François Guichard, "Juge d'instruction au TGI de Colmar", points out that there can always be suspicion as to the ability of the Judiciary to deal with a matter as complex as aeronautics which explains why the conclusions of the technical Board may have serious repercussions on the future stability of the manufacturer and the operator.[240]

For his part, Mr Paul Louis Arslanian, Director of the BEA, admits that the coexistence of contradicting objectives is a major difficulty in air accident investigations. In particular, the Director of the BEA mentions the risks of concealment or controversy which is created by the "coexistence" of two different methods in the context of the accident.[241]

However, Mr Arslanian considers that the dual investigation system in France remains an advantage, one of the main reasons being that the technical investigators do not have to justify the independence of their intervention nor to present a legally admissible report since a magistrate is there to guarantee the preservation of the interests of the parties.[242]

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[238] Magistrates, police, judicial experts.
[239] Ministère de l'Equipement, des Transports et du Tourisme, IGACEM, Rapport sur *L'enquête technique sur les accidents et les incidents dans l'Aviation Civile* (by C. Gherardi, Inspecteur Général de l'Aviation Civile, Juillet 1994).
[240] See F. Guichard, *supra* note 221 at 69.
[241] See P.L. Arslanian, "L'Enquête-accident : un outil de sécurité pour l'aviation" (1995) Ministère de l'Equipement, des Transports et du Tourisme. See also P.L. Arslanian, "La sécurité, l'enquête et les médias" (1999) Pilote de Ligne n° 21.
[242] *Ibid.*

Echoing Mr Arslanian, François Guichard[243], thinks that the dual-investigation is far from being a disadvantage since it permits to improve air safety without eluding the liabilities which may be incurred, thereby avoiding that the rights of the victims be jeopardized.

In fact, the main issue seems not to be the dual-system itself, but rather, the way in which it is implemented; very judiciously, Mr Guichard observes that the "co-existence" of the judicial investigation with the technical investigation can encourage a competitive spirit and create emulation "provided that the methodological and deontological rules of the investigation be scrupulously followed."[244]

If the dual-investigation system does not exist as such in the United States, the NTSB may on certain occasions have to perform its mission simultaneously with federal agencies which depend from the United States Department of Justice, such as the FBI.

B. Cooperation of the N.T.S.B. with the F.B.I.

Since aviation has always been considered as a symbol of national pride, and because air accidents inevitably provoke a great emotional shock in the public opinion, aircraft are seen as an ideal target to deliver a deadly message in the name of ideological or political motives. Criminal activity is therefore a primary concern in the investigation of major air disasters.

1. General mission of the FBI

The Federal Bureau of Investigation seeks:

> [t]o uphold the law through the investigation of violations of federal criminal law, to protect the United States from foreign intelligence and terrorists activities, to provide leadership and law enforcement assistance to federal, state, local, and international agencies, and to

[243] See F. Guichard, *supra* note 221 at 69.
[244] *Ibid.*

> perform these responsibilities in a manner that is responsive to the needs of the public and is faithful to the Constitution of the United States.[245]

2. Role played by the FBI in aircraft accident investigations

Where it is presumed that an air disaster resulted from a criminal act, the FBI institutes its own investigation which it then carries out in parallel to the NTSB inquiry. For the purposes of that investigation, the FBI hears witnesses, and draws conclusions which are subject to the 1966 Freedom of Information Act and the 1974 Privacy Act[246].[247]

The mission of the FBI may encompass many aviation related matters including terrorism, sabotage, skyjacking, suicide and any other crimes committed on board an aircraft.

As an exception to the principle of primacy of the NTSB in aircraft accident investigations[248], the FBI becomes the lead federal investigative body where it is suspected that an aircraft accident was caused by criminal activity, in which case the role of the NTSB is only to provide any requested support.[249]

In recent memory, the only time when the US Board has transferred oversight to the FBI was in 1987, during the investigation of the crash of a Pacific Southwest Airlines flight in San Luis Obispo, California on December 7, 1987. All 43 persons aboard died. After having listened to the information which had been communicated over the radio by the flight crew shortly before the crash, the FBI suspected that a crime had been committed and therefore decided to conduct its own investigation in parallel to that of the NTSB. A few days later, it was found that a former employee had actually boarded the Bae-143 with a gun and, while the plane was in cruise flight,

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[245] See "FBI Mission, History and Organization", online: <http://www.fbi.gov/yourfbi/facts/fbimission.htm#statement> (date accessed: 18 October 2000).
[246] For more details on the 1966 Freedom of Information Act & the 1974 Privacy Act, see Chapter 5, Section 1, Part A.1, below.
[247] *Ibid.*
[248] 49 CFR Ch. VIII para. 831.5.
[249] *Supra* note 48 at 19.

had shot the flight crew, causing the aircraft to crash. From that moment, the FBI took over the lead of the investigation.[250]

The same pattern could have been followed in the still on-going investigation of the crash on October 31st, 1999 of Egyptair 990 in the ocean off Massachussets, less than an hour after taking off from New York for Cairo. The CVR intra-cockpit communication revealed that a voice, which was identified as that of the Egyptian co-pilot, repeatedly uttered in Arabic "[I] rely on God" just before the autopilot was turned off and the plane began its fatal plunge from the altitude of 33,000 feet.[251] Because such words could lead to any hypothesis or speculation[252] as to the circumstances of the crash of Egyptair 990, ranging from a mere accident to an eventual suicidal act of the co-pilot, the FBI joined the NTSB investigation although it did not take it over since criminal activity has not been established.

Rather than participating in NTSB investigations as the FAA, the FBI conducts its own investigation to confirm or deny that the accident was caused by criminal activity. Since NTSB and FBI investigations are separate, the findings of both agencies may lead to different interpretations which may disturb the investigatory process. A recent situation illustrates the risk of misunderstanding between the NTSB and the BEA.

3. Recent Example of NTSB- FBI co-operation : crash of TWA Flight 800

The FBI took part in the investigation of the in-flight break up and subsequent crash in the Atlantic Ocean near East Moriches, New York, of TWA flight 800, a

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[250] *Ibid.*

[251] See especially "Intra-cockpit communication" enclosed in "NTSB Specialists Factual Report of Investigation" on the crash of Egyptair Flight 990, DCA00MA006, Group's Chairman Factual Report Transcript, on line: <http://www.ntsb.gov/events/EA990/docket/Ex_12A.pdf> (date accessed: 28 Novembre 2000).

[252] Special attention should given to the warning stated in "NTSB Specialists Factual Report of Investigation" on the crash of Egyptair 990, *supra* note 223:

> [T]he reader of this report is cautioned that the transcription of a CVR tape is not a precise science but it is the best product possible from an NTSB group investigative effort. The transcripts, or parts thereof, if taken out of context, could be misleading. The attached CVR transcript should be viewed as an accident investigation tool to be used in conjunction,with other evidence gathered during the investigation. Conclusions or interpretations should not be made using the transcript as the sole source of information.

Boeing 747-131, on July 17, 1996, about 8:31 p.m. eastern daylight time. TWA flight 800, which was operating as a scheduled international passenger flight, had departed John F. Kennedy International Airport, New York, NY, about 8:19 p.m. and was bound to Charles De Gaulle International Airport, Paris, France. All 230 people on board (2 pilots, 2 flight engineers, 14 flight attendants, 212 passengers) were killed and the aircraft was totally destroyed.[253]

After 4 years of thorough investigation and impassioned debate in the media as to the cause(s) of the TWA flight 800 disaster, the NTSB released its Final Aviation Accident report.[254]

The NTSB eventually determined that the TWA flight 800 disaster was an accident which had probably been caused by:

> [a]n explosion of the center wing fuel tank (CWT) resulting from ignition of the flammable fuel/air mixture in the tank. The source of ignition energy for the explosion could not be determined with certainty but, of the sources evaluated by the investigation, the most likely was a short circuit outside of the center wing tank which allowed excessive voltage to enter it through electrical wiring associated with the fuel quantity indication system.[255]

Until the NTSB reached the conclusion that the accident had been caused by a mechanical failure, several assumptions were made that the in-flight break up of TWA Flight 800 resulted from an event which was independent from the design or the functioning of the aircraft, such as a bomb which would have been hidden on board the aircraft or a missile which would have been launched at the aircraft.[256] The question of a criminal act committed against TWA flight 800 was hence raised. As long as such hypothesis had not been dismissed, the FBI would hold its own investigation in parallel with that of the NTSB.

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[253] See "Abstract of Final Report Aviation Accident Report In-Flight Breakup Over the Atlantic Ocean Trans World Airlines (TWA) Flight 800 Boeing 747-131, N93119 near East Moriches, New York July 17, 1996" (Public Meeting, August 22-23, 2000) NTSB AAR-00/03.
[254] *Ibid.*
[255] *Ibid.*
[256] See *Report to the Transportation & Infrastructure Subcommittee on Aviation on the TWA Flight 800 Investigation* (by Congressman James A. Traficant, JR., July 15, 1998).

Among the first to arrive near the scene of the disaster in the evening of July 17th 1996 were members of NTSB regional office of Parsipanny, New Jersey, which were rejoined the next morning at 6:10 a.m. by a team of NTSB experts from Washington D.C. The headquarters for the investigation were established at the Air National Guard Facility and at the Coast Guard Center of East Moriches, New York. Quickly, the NTSB set teams of experts to investigate the different technical functions[257] of the aircraft. Among these teams were representatives of the FAA, the US Coast Guard, the US Navy, the Bureau of Alcohol Tobacco and Firearms (ATF), the Suffolk County Police Department, Boeing as main manufacturer, Pratt & Whitney as engine manufacturer, the ALPA, the International Association of Machinists, the National ATC Association, and...the FBI.[258]

While NTSB experts began to investigate in the vicinity of Long Island and to examine information such as the communications of the pilots with the ATC of JFK airport and the maintenance reports of the aircraft, the FBI interviewed witnesses[259] and members of the families of the victims both in the United States and in France.[260]

NTSB preliminary report, released on August 29th, 1996,[261] shows that the FBI and the ATF found residue of explosives on certain pieces of the wreckage. However, NTSB laboratories in Washington DC held that the residue was so microscopic that it could not constitute sufficient evidence to conclude that TWA Flight 800 had been bombed. Yet, the FBI decided to carry on its investigation.

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[257] Systems, structure, ATC, operation, maintenance, engines.
[258] See NTSB Preliminary Report on the In-Flight Break-up Over the Atlantic Ocean Trans World Airlines (TWA) Flight 800 Boeing 747-131 (August 29th, 1996).
[259] See Abstract of Report of Congressman J.A. Traficant, JR. indicated *supra*, note 234: "[T]he FBI interviewed more than 400 individuals who reported seeing something in the sky south of Long Island the night of July 17, 1996. According to the FBI, 115 of these individuals reported seeing something ascend into the sky. Of these, only three reported seeing something ascend toward a second object."
[260] *Supra* note 253 at 80.
[261] NTSB Preliminary Report on the *In-Flight Breakup Over the Atlantic Ocean Trans World Airlines (TWA) Flight 800 Boeing 747-131* (29 August 1996).

Since no evidence of a criminal act was found and the statements of the eyewitnesses lead to think that the crash was accidental, the FBI eventually ended its active investigation in November of 1997.[262]

After divers from the US Navy, the NYC Police Department, and the NY State Police brought the first pieces of the aircraft wreckage up to the surface, the NTSB, the FBI and the ATF transferred their Headquarters to the disused base of Grumman, Calverton, New York, which was large enough to store the remains of the TWA Boeing and put them back together. In Grumman base, an inventory was made of these elements followed by the numerous tests[263] which are normally carried out in the course of aircraft accident investigations.

The upshot of the TWA Flight 800 investigation case aroused suspicions with regard to the NTSB-FBI communication. For instance, Congressman J.A. Traficant JR. reported that tension could be felt between the two agencies at the beginning of the inquiry especially when a piece of the wreckage was taken out of Calverton by the FBI for further analysis without the NTSB being previously informed.[264] Still, he reckoned that "[s]uch tension is to be expected when two major agencies with different missions and operating procedures are forced to work together on such a high profile

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[262] *Supra* note 256 at 80.

[263] *Supra* note 256 at 80:

> [M]ore than 95% of the airplane was recovered. A large portion of the airplane was recovered. Every scrap of wreckage was carefully analysed. Thousands of pieces of wreckage were tested and retested. Experts on ballistic missiles, meteors, bombs and airplane disasters sifted through the wreckage for months on end. CIA experts on surface-to-air missiles closely reviewed eyewitness statements to determine whether any of the eyewitness descriptions matched known missile launch characteristics. Two separate animations of the accident were made, one by the CIA and one by the NTSB. The NTSB and FBI conducted numerous tests involving different types of bombs, missiles warheads and other explosive devices. The FBI worked closely with experts from the US military. Metallurgists were called in to examine thousands of pieces of wreckage. None of these experts found any evidence that a missile or a missile fragment hit Flight 800. In addition, no evidence of bomb explosion was found. The FBI also analysed hundreds of pieces of suspicious material found in the bodies of the victims. All of the material recovered from the victims' bodies came from the aircraft. None of the autopsy evidence indicated that a bomb or a missile was involved in the tragedy.

investigation."[265] "[O]n the whole, the Flight 800 investigation was carried out in a highly professional, careful, and thorough manner" Mr Traficant said.[266]

The NTSB and the BEA are asked to go to every corner of the world to investigate aircraft accidents. When they participate in foreign investigations, Air Safety Boards are brought to co-operate with other Boards.

SECTION 3. COOPERATION OF THE BOARDS WITH FOREIGN INVESTIGATORY ENTITIES

As seen previously, the NTSB puts no geographical limits to its mission. For NTSB Member George Black, "[t]he work of the Board goes far beyond domestic safety. Its products and expertise are instrumental in improving transportation safety around the globe. We will continue to work with our counterparts world-wide to advance safety."[267]

Similarly, the BEA flies to every corner of the world to assist foreign governmental authorities to carry out aircraft accident investigations.

Through their participation in foreign investigations, the Boards are brought to co-operate with the local authorities but also with accredited representatives from other Boards. Such co-operation is provided for in Annex 13.

A. COOPERATION WITH FOREIGN INVESTIGATORY ENTITIES UNDER ANNEX 13

Under the terms of article 5.24 of Annex 13, the NTSB and the BEA may participate in foreign investigations as accredited representatives.

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[264] *Ibid.*
[265] *Ibid.*
[266] *Ibid.*
[267] *Supra* note 69 at 25.

1. Participation as accredited Representative

Paragraph 5.24 indicates that "[a]ny State which on request provides information, facilities or experts to the State conducting the investigating shall be entitled to appoint an accredited representative to participate in the investigation."

NTSB and BEA may also be delegated wholly or partly the responsibility of the investigation.

2. Delegation of the responsibility to conduct the investigation

Following paragrah 5.1, "[t]he State of occurrence may delegate the whole or any part of the conducting of the investigation to the State of Registry, to the State of the Operator, to the State of Design or to the State of Manufacture."

When the location of the accident/serious incident is outside the territory of any State, for example in international waters, paragraph 5.3 provides that "[t]he State of Registry shall institute and conduct any necessary investigation of the accident/serious incident" but may also delegate "[t]he whole or any part of the investigation to another State by mutual arrangement and consent." This is actually what happened in the case of the crash of Egyptair Flight 990. Since the Boeing fell in international waters, the Egyptian Government, as State of registry, was normally responsible for the investigation. However, Egypt delegated the investigation to the United States, State of Manufacture. As a result, the NTSB assumed control of the investigation.

The BEA and NTSB themselves are brought to co-operate in certain investigations.

B. EXAMPLES OF BEA-NTSB COOPERATION

Very recently, the BEA was brought to consult the NTSB concerning the crash on July 25th, 2000, of a New York bound Concorde (registered F-BTSC), at La Patte d'Oie, Gonesse, France, just after take-off from Paris Charles De Gaulle airport. After the pilot announced that he would try to proceed to an emergency landing at Le

Bourget aerodrome, engine 1 failed. T, Gonesse. All 9 crew members and 100 passengers were killed.[268]

1. Concorde F-BTSC : on-going BEA-NTSB cooperation

Since France is the State of occurrence of the crash, the BEA is responsible for the conduct of the investigation. One British accredited representative, two investigators from the British air safety board (the AAIB), and several experts from BAE SYSTEMS and Rolls Royce joined the investigation as representatives of the State of manufacture. Since German and American passengers died in the crash, the German air safety board (BFU) and the NTSB came as observers.[269]

During the investigation, the BEA specially focused its attention on the piece of metal found after the accident on the runway from which Flight F-BTSC took off (it is very probable that, just when it reached the V1 speed of 150 Knots, the 186.9 tons[270] heavy supersonic airliner run over this piece of metal causing the right front tyre on the left main landing gear to suddenly blow up, which resulted in large pieces of rubber being hurled at the plane, thereby causing an engine failure). In particular, a BEA investigator was sent to Washington and Houston to collaborate with the NTSB and FAA and try to identify the origin of this element.[271]

Along with the NTSB and the FAA, the French investigator noticed that a spare part was missing in the thrust reverser of the Continental Airlines DC-10 which had preceded the Concorde on the runway. The characteristics of that spare part were also found to be identical to those of the piece of metal which probably caused the tyre of F-BTSC to burst. Both BEA and NTSB co-operate to determine whether this piece of metal actually belonged to the aforementioned DC-10.[272]

In a "communiqué" released on Sept 4th, 2000, the BEA underlined the quality of the support of the NTSB and the FAA in the investigation.

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[268] See BEA Preliminary Report f-sc000725p on the crash of Air France Concorde Flight F-BTSC on 25 July 2000, at la Patte d'oie de Gonesse, online:
< http://www.bea-fr.org/francais/actualite/actuConcorde.htm> (last update: 31st August 2000).
[269] *Ibid.*
[270] Weight of the plane before take-off, including 95 tons of fuel.
[271] *Supra* note 268 at 85.

When two Boards as important as the BEA and the NTSB are put in presence, there could be a risk that, given the multiplicity of causes of each accident, they reach different conclusions.

Still, the conclusions of the agency responsible for the conduct of the investigation necessarily prevail.

2. American Eagle ATR-42 : conflicting NTSB-BEA conclusions

In the investigation of the crash of American Eagle ATR-72 on October 31st, 1994 near Roselawn, south of Chicago, Illinois (68 victims) the NTSB and the BEA co-operated but reached different conclusions.

Since the United States were the State of Occurrence of the accident, the NTSB was entrusted with the responsibility to conduct the investigation in which the BEA however participated as a representative of the certification authority of the French-Italian manufactured aircraft (Aerospatiale & Alenia).

In its final report[273] on the crash of ATR-72 near Chicago, NTSB declared that the accident resulted from a number of factors which justified the grounding of the whole ATR fleet in the United States for a short period:

- the flying manual provided by ATR was insufficiently precise
- the aircraft aileron had been abnormally affected by the icing[274].
- [T]he French Directorate General for Civil Aviation (DGAC) and the Federal Aviation Administration (FAA) failed to require the manufacturer to provide documentation of undesirable post-SPS [stall protection system] flight characteristics which contributed to their failure to identify and correct the abnormal aileron behavior early in the history of the ATR icing incidents.[275]

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[272] *Ibid.*

[273] See NTSB Abstract of Final Report of Aviation Accident on the *In-Flight Icing and Loss of Control of Simmons Airlines, Inc., American Eagle Flight 4184, ATR-72 Aircraft*, at Roselawn, Indiana October 31, 1994 (Public Meeting, July 9, 1996).

[274] Icing : When an airplane, while flying at a level where the temperature is at or below freezing, strikes a supercooled water droplet, the droplet will freeze and adhere to the airplane. Ice collects on and seriously hampers the function of not only the wings, control surfaces and propellers (if any), but also windscreens radio antennas, pitot and static pressure sources, carburetors and air intakes. Dangerous icing can occur in cloud, freezing rain, or freezing drizzle. Most modern planes are fitted with systems designed to prevent ice from forming or to remove the ice after it has formed, "From the Ground Up", Aviation Publishers Ltd., 27th revised edition.

The NTSB also mentioned the lack of precisions of the meteorological information communicated by the ATC and the deficiencies of the FAA in terms of certification of aircraft.[276]

Yet, as implicitly referred to by French Minister of Transports J-C Gayssot before the French Senate on 16 February 1999, the BEA came up with different conclusions from those of the NTSB.[277] The French Board actually put forward that the pilots had not obeyed the procedures indicated in the flying manual and that the air captain had spent 18 minutes talking with a stewardess without apparently being worried about the icing conditions.[278] The BEA also stated that the ATC had put the plane on hold at an altitude where there were high icing conditions while the airspace was clear underneath.[279]

Since the NTSB had the responsibility for the conduct of the investigation, the NTSB conclusions prevailed.

[275] See *supra* note 273 at 86.
[276] *Ibid.*
[277] See Sénat, *Comte-rendu de la Séance du 16 Février 1999 sur les enquêtes-accidents dans l'aviation civile* (Discussion du projet de loi n° 516, 1997-1998, 16 February 1999).
2000).
[278] NTSB AAR-96/02 In-Flight icing encounter and loss of control of Simmons Airlines, d.b.a.; American Eagle Flight 4184; Avions de Transport Regional-ATR, Model 72-212; N 401 AM; Roselawn Indiana; October 31st; 1994; Vol II: Response of BEA to Safety Board's Draft Report.

CHAPTER 6. THE MANAGEMENT OF INFORMATION BY THE TECHNICAL BOARDS OF AIRCRAFT ACCIDENT INVESTIGATION: CONFIDENTIALITY & TRANSPARENCY

In our era of intense "communication", the management of information has become a crucial element of the Boards activity for which the main problem is to find the right balance between total transparency (detrimental to the course of the investigation) and extreme confidentiality (prejudicial to the right of the victims families and the public to know the truth about a distressful event in their lives).

Traditionally, the Americans privilege transparency whereas the French privilege confidentiality and professional secrecy. Oddly enough, both tendencies aim at the protection of the rights of the individual: while in the US, transparency is seen as the expression of the primacy of each citizen over the State, confidentiality is seen in France as the means by which the State protects the privacy of its citizens.

The functioning of the NTSB and the BEA necessarily reflects these general tendencies.

SECTION 1. COMMUNICATION OF INFORMATION BY THE BOARDS

Both American and French legislation ensure the access of the public to the information held by governmental entities.

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[279] *Ibid.*

A. PUBLIC'S RIGHT OF ACCESS TO THE INFORMATION OF THE BOARDS

1. The American Legislation: "open government acts"

The open government acts make federal agencies including the NTSB accountable for information disclosure policies and practices. If these laws do not create an absolute right to examine government documents, they establish the right to request records and to receive a response to the request.

(a) The Freedom of Information Act (F.O.I.A.)[280]

- Purpose of the FOIA

The FOIA, which was passed in 1966 and amended in 1974 and 1986, establishes a "[p]resumption that records in the possession of agencies and Departments of the Executive Branch of the United States government are accessible to the people."[281]

The scope of the FOIA only encompasses the documents held by agencies in the executive branch of the US Government which includes cabinet departments, military departments, government corporations government controlled corporations, independent regulatory agencies. The FOIA does not concern the documents held by the federal judiciary or by elected officials of the federal government such as the President, Vice-President, Senators, and Congressman.

- Type of information covered

The types of information which the FOIA requires to make available for public inspection are:

- descriptions of agency organization and office addresses
- statements of the general course and method of agency operation
- rules of procedure and descriptions of forms
- substantive rules of general applicability and general policy statements
- final opinions made in the adjudication of cases, and

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[280] 5 U.S.C. §552 as amended by PL 104-23, FOIA update Fall 1996.

[281] Committee on Government Reform and Oversight, *A Citizen's Guide on using the Freedom of information Act and the Privacy Act of 1974 to request Government Records* (105th Congress, 1st Session House Report 105-37), on line: < http://www.epic.org/open_gov/citizens_guide_97.html> (date accessed: 28 November 2000).

- administrative staff manuals that affect the public.

- Denial of access in case of statutory exemption

Access to such information may be denied under the FOIA if the requested document falls under one of the nine statutory exemptions[282] which protect against disclosure all information that would harm national defence or foreign policy, privacy of individuals, proprietary interests of business, functioning of the government and other important interests.

These nine exemptions are:

- Classified documents
- Internal Personnel Rules & Practices (if it is considered as a "trivial administrative matter of no genuine public interest" or, where an internal administrative manual is concerned, if there is a risk of circumvention of law or agency regulations)
- Information exempt under other laws
- Confidential Business information (trade secrets)
- Internal Government Communications
- Personal Privacy (personnel, medical files)
- Law enforcement
- Financial Institutions
- Geological and Geophysical information.

When a request made under the FOIA is wholly or partly denied, the person who was opposed a denial has a right to appeal.

- NTSB policy with regards to the FOIA

The policy of the NTSB with respect to the FOIA reads as follows:

> [I]t is the policy of the Board to make information available to the public to the great extent possible. Accordingly, all records of the Board, except those that the Board specifically determines must not be disclosed in the national interest, or for the protection of private

> rights, or for the efficient conduct of public business to the extent permitted by the FOIA, are declared to be available for public inspection and copying [...].[283]

(b) The Privacy Act[284]

- Overview of the Privacy Act

The Privacy Act[285], which was passed in 1974:

> [p]rovides safeguards against an invasion of privacy through the misuse of records by federal agencies. In general, the Act allows a citizen to learn how records are collected, maintained, used, and disseminated by the federal government. The Act also permits an individual to gain access to most personal information maintained by federal agencies and to seek amendment of any incorrect or incomplete information.[286]

The Privacy Act applies to personal information maintained by agencies in the executive branch of the federal government. The application of the Act is subject to specific exemptions and to two general exemptions which concern the records maintained by CIA, and all selected records maintained by an agency or component whose principal function is any activity pertaining to criminal law enforcement.

- NTSB policy with regards to the Privacy Act

The policy of the NTSB concerning the Privacy Act is expressed as follows: "[N]TSB policy encompasses the safeguarding of individual privacy from any misuse of Federal records and the provision of access to individuals to NTSB records concerning them, except where such access is in conflict with the Freedom of Information Act, or other statute."[287]

The two areas of NTSB accident investigations which would be likely to fall under the Privacy Act are the records and comments included in the NTSB docket and concerning the identities of the parties to the accident, and the NTSB information concerning the transcripts of cockpit voice recordings.[288]

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[283] 49 CFR Ch.VIII §801.2
[284] 5 U.S.C. §552a (PL 93-5795).
[285] Major addition in 1988 and minor amendments in 1989 & 1990.
[286] *Supra* note 23 at 12.
[287] 49 CFR Ch. VIII §802.1.
[288] *Supra* note 23 at 12.

(c) The Government in the Sunshine Act[289]

- Overview of the Sunshine Act

As its colorful name suggests, the Government in the Sunshine Act was enacted in 1976 "[t]o provide public visibility to the proceedings of quasi-judicial bodies such as the NTSB"[290] by allowing the public to attend its meetings.

The application of the Sunshine Act is nevertheless subject to ten exemptions of which the first nine parallel the FOIA exemptions. The tenth exemption provides for closure of the meeting when an agency is involved in arbitration or adjudication of a case.

A court has the right to dissolve an improperly noticed or closed meeting. Where such an injunction is issued, future improper closing or notice could result in a court finding the agency in contempt of court.

- NTSB policy with regards to the Sunshine Act

"[I]t is the policy of the NTSB to provide the public with the fullest practicable information regarding the decision-making processes of the Board, while protecting the rights of individuals and the ability of the Board to discharge its statutory functions and responsibilities. The public is invited to attend but not to participate in open meetings."[291]

The effect of the Sunshine Act on the NTSB is to open to the public (e.g. parties, media) all discussions where aircraft accident investigations are discussed.

Still, the consequences of this Act are restricted by the fact that the public is not entitled to participate in these meetings. Moreover, it would be possible for the Board, under the "practices of an agency" exception of the Act, to preclude or limit discussion of the adequacy of its investigative procedures.[292]

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[289] 5 U.S.C. §552b.
[290] *Supra* note 23 at 12.
[291] 49 CFR Ch. VIII §804.2.
[292] See *Supra* note 23 at 12.

2. The French Legislation : "loi n° 78-753 du 17 juillet 1978"

The purpose of loi du 17 juillet 1978 seems close to that of the 1974 Privacy Ac

(a) Overview of "loi du 17 juillet 1978"

"La loi du 17 juillet 1978"[293] sets out two principles which shall be considered on equal footing:

- principle of justification by the Administration of its own unilateral decisions.
- principle of freedom of access of the public to the administrative documents which are not nominative

In other words, the freedom of access instituted by the law of 1978 only regards the documents which emanate from entities which are subject to Public Law/administrative and which do not contain information concerning one person in particular/non-nominative.

A list of the types of non-nominative documents[294] is laid down in the first article of the law. The documents which are actually nominative may only be communicated to the persons who are directly concerned by these documents.[295]

In order to ensure that the freedom of access to administrative non-nominative documents is respected, law of 1978 also creates[296] an "Autorité Administrative Indépendante (AAI)"[297]: "la Commission d'Accès aux Documents Administratifs (CADA)." This independent body gives opinions in case of disputes as to denials of access to administrative documents. It should be noted that the referral of such dispute

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[293] *Loi N° 78-753 du 17 Juillet 1978 portant diverses mesures d'amélioration des relations entre l'administration et le public et diverses dispositions d'ordre administratif, social et fiscal, modifiée par la loi n° 79-587 du 11 juillet 1979*, J.O. du 18 Juillet 1978 [hereinafter loi 78-753].

[294] "Tous dossiers, rapports, comptes-rendus, procès-verbaux, statistiques, directives, instructions, circulaires, notes, et réponses ministérielles qui comportent une interprétation du droit positif ou une description des procédures administratives, avis, à l'exception des avis du Conseil d'Etat et des tribunaux administratifs, précisions et décisions revêtant la forme d'écrits, d'enregistrements sonores ou visuels, de traitements automatisés d'informations non nominatives."

[295] Conseil d'Etat, 29 juillet 1994 Chambre des notaires du Département du Cher.

[296] Article 5, loi 78-753.

[297] See *supra* note 148 at 47, on definition of an "AAI."

to an administrative magistrate cannot be made without prior consultation of the CADA by the applicant.[298]

The CADA also proposes to the competent authorities all modifications of laws or regulations which it considers useful for the good communication of administrative documents.

(b) Application of the law of 1978 to documents of the BEA

Since the adoption of the 1978 law on the release of information, the accident reports made by the BEA are covered by the freedom of access to the documents of the Administration, which contributes to the transparency of aircraft accident investigations.[299]

B. RELEASE OF INFORMATION TO THE PUBLIC

Initially, the task of Safety Boards was limited to the technical aspect of aircraft accident investigations. Today, such task encompasses not only the technical aspect of the investigation but also the management of the information which involves the providing of assistance and support to the first persons who need to be informed about the progress of the investigation : the victims' families.

1. Release of information to the victims' families

Often, the victims' families of air crashes feel that they are deliberately pushed aside from the investigation, their presence being probably seen as inconvenient and inappropriate in the over-pressurized context of the investigation.

As a result, they are often informed about the results of the investigation through the media which, always being on the lookout for sensational stories, do not hesitate to dwell at length on the most gruesome details of the accident, and if needs be, to distort reality to make it sound more spicy.

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[298] Conseil d'Etat, 19 février 1982 dame Commaret.
[299] See C. Gherardi, *supra* note 239 at 76.

The lack of discretion of the media with regards to the pain of the victims' families, who are frequently put under coverage without even being able to control it, often maintains or emphasizes the emotional shock provoked by the brutal loss of a loved one in particularly tragic circumstances.

In the period following the accident, the victims' families feel disoriented, abandoned and vulnerable. They desperately need to know and understand what caused the accident both because doubt would be unbearable psychologically and because they must be in position to defend their case and get a very symbolic pecuniary compensation for the loss of a relative and the suffering ensuing from it.

Since a few years, efforts have been made in the aviation community both to recognize that the victims' families are victims themselves and to give them all the support and attention that they deserve.

Accordingly, many international airports, airlines, associations, and unions keep specifically trained teams of experts and/or volunteers ready to manage the context of crisis surrounding aircraft accidents, which includes the follow up medical treatment and continuous psychological support which the victims families need.

Although it is not their primary mission, the Boards of Air Accident Investigation also have a role to play with regards to the support of these families, such support includes the communication of the information concerning the investigation. Two strategies can be observed:

(a) Transparency in the United States

In the United States, several means are used by the NTSB to keep the families of the victims (and the public) informed about the progress of the inquiry:

- in case of major airline disaster or other accident of great public interest, the holding of a public hearing (lasting 3 to 4 days, one week during the investigation of TWA, 800 in Baltimore) may be decided by the Board following the accident "[t]o clarify accident information and to air in a

public forum significant new issues."[300] At public hearings, the families can hear the testimony of witnesses speaking under oath and answering the questions of the NTSB technical jury (composed of the IIC and the group presidents) as well as the opinions of the NTSB on the probable cause of the accident.

The parties to a public hearing generally include representatives of the aircraft/engine manufacturers, members of the FAA, representatives of the pilots unions, and in certain cases, accredited representatives. These parties designate the President of the Hearing.

- the NTSB public docket
- the release of NTSB's final report on the accident.
- the release on NTSB's website of both the results of its work and the correspondence which it keeps up with the FAA concerning the recommendations on air safety.

Furthermore, the NTSB has recently been entrusted with the additional responsibility of aiding the victims' families of aircraft accidents occurring in U.S. territory in response to "[i]nadequacies in the treatment accorded to these families in the wake of a number of major air crashes."[301]

This new aspect of NTSB's mission is provided for in the Aviation Disaster Family Assistance Act[302] which was passed by Congress and signed by President Clinton on October 9, 1996 following a Presidential Executive Memorandum, dated September 9, 1996, which designated the NTSB as the co-ordinator of Federal services for families of victims[303] of major transportation disasters.

Under this Act, the NTSB must establish direct contacts with the victims and/or their families, answer their questions and take care of the recovery and identification of

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[300] *Supra* note 111 at 36.
[301] NTSB *1997 Annual Report to Congress* (NTSB Washington D.C., 1997).
[302] *Aviation Disaster Family Assistance Act* (PL 104-264, Title VII, 9 October 1996).
[303] See *Symposium on Family and Victim Assistance for Transportation Disasters* on the role of government and the industry in the care of victims and their families following major transportation

fatally injured airline passengers as well as the disposition of personal effects. Moreover, the Board must make sure that it provide the victims' families with updated information on the investigation before it is communicated to the media. The NTSB also co-ordinates the work of other federal or private organizations in terms of grief counselling, "[f]orensic services, communicating with foreign governments, translation services."[304]

For that purpose, the Board set up a "family affair" team of 7 members which is separate from the investigative staff and is a part of every Go-team.

This NTSB Office of Family Affairs (FA) of the NTSB prepared a Federal Family Assistance Plan for Aviation Disasters made public on April 12, 2000 and according which the NTSB, in a co-operative effort with local, state and airlines authorities, must co-ordinate Federal support to assist the city of occurrence of accidents in meeting the needs of the victims' families. Federal and other agencies that are involved in the family support area are American Red Cross (ARC), Department of State (DOS), Department of Health and Human Services (DHHS), Federal Emergency Management Agency (FEMA), Department of Justice (DOJ) and Department of Defense (DOD).

(b) Confidentiality in France

Assistance to the victims' families after air disasters has clearly become a major stake for the BEA as expressed by Mr Arslanian who declared that in addition to the welcoming of the victims' families, the preservation of personal effects and the quick payment of an indemnity, it is essential to make sure that these families be heard and directly informed, far beyond the first days following the accident.[305]

To be informed, the victims' families have at their disposal:

- the final report of the investigation
- the release on the BEA website of preliminary reports and "communiqués" about the progress of the investigation as well as the transcription of the

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disasters (September 28-29, 1998), online: < http://www.ntsb.gov/Events/symposia.htm#symp_fam > (date accessed: 28 November 2000).

[304] *Supra* note 302 at 96.

[305] Arslanian P.L, "La sécurité, l'enquête et les médias" (1999) Pilote de Ligne n° 21.

"points de presse" where the Director of the BEA answers to all the questions of the press.

The BEA is also contemplating the creation of a special unit which would be exclusively committed to the information and the grief counselling of the victims families.[306]

By now, the access of the families to information about the accident is very limited for two reasons : "Secret de l'instruction" and Professional secrecy.

- "Secret de l'instruction"

According to this typically French legal principle, the judicial investigation of a case must be kept secret at the stage of the proceedings where the parties lay claim and the judge gathers evidence to rule on such claim. The purpose of this principle is essentially to protect the interests of the defence.

The task of the BEA is therefore particularly delicate since on one hand it is supposed to inform the victim's families and the public as much as possible and on the other hand is required not to contravene the "secret de l'instruction".

- Obligation of professional secrecy

In France, all "fonctionnaires" are under an obligation of professional secrecy[307] of which the purpose is to guarantee the impartiality of the Administration and to protect the rights of the defence in a lawsuit.[308]

Being "fonctionnaires", the members of the BEA[309] are required to observe such obligation which clearly jeopardizes the transparency of the investigation. For Senator Philippe Richert, this "[l]aw of silence" is detrimental to the families of the victims who suffer from the discretion in which investigations are conducted."[310]

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[306] Interview with J.L. Benesse, *supra* note 54 at 20.
[307] Article 226-13 du Code Pénal.
[308] Governed by articles 226.13 & 226.22 Code Pénal.
[309] Article L 731-1, loi 99-243.
[310] See Senator of Bas-Rhin Philippe Richert, "Les Enquêtes-Accident en discussion au Sénat", by Thierry Dubois, Air &Cosmos Magazine International N° 1692.

- Exception to "secret de l'instruction" and professional secrecy : the Director of the BEA

Law 99-243 entrusted the Director of the BEA, and him only, with the discretionary power to derogate to both professional secrecy and "secret de l'instruction" if it is justified by the prevention of future accidents and incidents.[311]

The Director of the BEA is also allowed to make public some information concerning the findings of the technical investigators during the inquiry.[312] The repeated appearances of the head of the French Air Safety Board on TV after the crash of Concorde F-BTSC proved that this last provision did not go unheeded.

The victims' families often find unacceptable that the Boards of investigation do not "apportion blame and liability". They generally interpret such neutrality in the analysis of the circumstances of the accident as a lack of compassion with regards to their distress.

(c) Neutrality of reports in the United States and France

As stated in Annex 13, "[t]he sole objective of the investigation of an accident or incident shall be the prevention of accidents and incidents" and "it is not the purpose of this activity to apportion blame or liability."[313]

Still, in their extreme distress, the victims' families are eager to know who was responsible for the accident which took the life of their loved ones, and understandably, expect their best sources of information, the Boards of investigation, to point a finger towards a party. The Boards cannot possibly live up to these expectations.

Apart from the steps taken by the Boards to keep them aware of the progress of the investigation, the victims' families are unavoidably informed by the media.

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[311] Article L 731-1, loi 99-243.
[312] Article L 731-1, loi 99-243.
[313] Article 3.1 of Annex 13.

2. Release of information through the media

Today, the influence of the media on populations is such that what can be seen on TV, read in papers or on the internet is often taken for gospel truth and "absorbed" without prior critical analysis which becomes problematic when the disseminated information is inaccurate. Instead of trying to counter such influence, which often proved to be detrimental to their work, aircraft accident Boards seek to funnel its effect and use it to their own benefit.

(a) Dangers of the media as to aircraft accident investigations

Without making an exhaustive list of all the dangers of the media *vis-à-vis* aircraft accident investigation Boards, certain essential features can be mentioned.

- Lack of proportion between the means of communication of the media and the means of communication of the Boards

- Instantaneous information v. continuity of the investigation.

The media are often characterized by the rapidity with which they pass from one subject to another in response to people's unquenchable thirst for instantaneous information in all its guises.

Since the investigation of aircraft accident is a long process which requires months of meticulous analysis and facts reconstruction, the work of the Boards often appears slow and laborious in the eye of the public who is expecting immediate answers to appease its insatiable curiosity.

- Distortion of information

Because quick answers must be given to the public to keep their interest alive, the media often build up their own theories on the cause(s) of the accident from mere opinions and suggestions expressed by sources which were not necessarily the most reliable ones. This is particularly true when the media are the first to arrive on the site of the accident.

The Boards are obviously put under a lot of pressure by the media and communication has become one of their most important challenge for the future.

(b) Avoidance by the Boards of the dangers of the media

More and more, the boards rely on the professionalism and efficiency of the specialized press which they use as a springboard to disseminate official information about air safety.

For instance, the NTSB and the BEA provide information on the progress of the investigation at press briefings (and public hearings for the NTSB). To avoid speculation by the media/public about the accident, these briefings only convey known facts of the investigation and no comments or analysis on the cause(s) of the accident.

Safety Boards may also set up communication units as the NTSB.

In France, Mr Arslanian nevertheless advocates to take lots of precautions regarding the possible leak of confidential and personal information which could undermine the confidence of the aviation community.[314]

The promotion of air safety does not only require the release of information by the Boards, but also the communication of information to the Boards.

SECTION 2. COMMUNICATION OF INFORMATION TO THE BOARDS

Air safety boards receive information from witnesses in two main circumstances:

- during an investigation in order to determine the cause(s) of the accident and prevent its repetition by recommendations on air safety.
- outside the investigation in order to prevent the recurrence of incidents which could result in an accident; the information concerning air incidents is communicated through the aviation safety reporting system.

[314] P.L. Arslanian, *supra* note 305 at 97.

A. COMMUNICATION OF INFORMATION TO THE BOARDS DURING THE INVESTIGATION

While it is in the course of an aircraft accident investigation, the NTSB has very broad powers to obtain information from the witnesses. These powers are exercised at the occasion of Public Hearings.

1. Communication of information to the NTSB during the investigation

According to 49 USC §1113(a)(1), the NTSB may "[c]onduct hearings to [...] administer oaths, and require, by subpoena or otherwise, necessary witnesses and evidence."

The American Air Safety Board is entitled to bring a civil action[315] in a US federal district court to enforce any subpoena, order, or notice in case of disobedience by a witness.[316] If no sanction is imposed on the failure to obey an NTSB subpoena/order/notice itself, however, the disobedience of a court order to comply with the subpoena/order/notice is punishable as a contempt of court.[317]

In France, law n° 99-243 of March 29, 1999 has quite significantly enhanced the prerogatives of the BEA in terms of access to the information during the investigation.

2. Communication of information to the BEA during the investigation

Pursuant to article L721-5 of law n° 99-243, the technical investigators are authorized, without professional secrecy possibly being opposed to them, to require the communication of all documents pertaining to the persons, companies and equipment which are connected to the accident/incident. In the situation where these documents were put under seal by the Judiciary, a copy is conveyed to the technical investigators.

The same provision allows the physicians who work with the BEA, and them only, to be handed all medical records established for the aptitude tests of the persons in

[315] In court, the NTSB is generally represented the local US Attorney's office.
[316] 49 USC §1113 (a)(4).
[317] 49 USC §1113(a)(4).

charge of the operation, the information, or the control of the aircraft involved in the accident.

Further, Article 721-6 entitles the technical investigators to be communicated, on request, the results of the tests performed on the persons responsible for the operation, the information, and the control of the aircraft involved in the accident.

The improvement of air safety necessitates a great vigilance, not only to avoid the repetition of an accident which already happened, but also to anticipate and prevent the occurrence of new types of accident.

Such feedback system exists under the form of the incident reporting by which the pilots, the crew members, the mechanics, the air traffic controllers or any person physically involved in the operation of aircraft, communicate to a designated aviation authority all the information they know about the air incidents which they witnessed.

B. COMMUNICATION OF INFORMATION TO THE BOARDS OUTSIDE THE INVESTIGATION: THE INCIDENT REPORTING SYSTEM

Chapter 7 of Annex 13 to the Chicago Convention recommends that "[S]tates should establish formal incidents reporting systems to facilitate collection of information on actual or potential safety deficiencies" and the ICAO Accident Prevention Manual gives guidance with respect to the two types of incident reporting systems which may be used: either mandatory or voluntary.

While France uses a mandatory system of incident reporting system known as the "retour d'expérience" or feed-back system, the United States resort to a voluntary and confidential incident reporting system which is referred to as the Aviation Safety Reporting Program/System.

In order to encourage the development of such notification through aviation safety reports, guarantees of confidentiality may be provided for in the interest of the people who spontaneously make revelations which, if they were to fall in the hands of their employer, could easily be turned against them and give rise to disciplinary measures.

1. The Aviation Safety Reporting Program (ARSP)

The United States were precursors when they created their Aviation Reporting Safety Program (ARSP) which is now considered as one of the most efficient of its kind.

(a) Origin of the ARSP

The ARSP was established on April 30th, 1975 to implement an FAA Advisory Circular (n° 00-46 C) which had been adopted on February 4th, 1975. It was subsequently defined in a Memorandum of Agreement (MOA) signed by the FAA and the National Aeronautics and Space Administration (NASA) on August 15th, 1975. Since 1975, the MOA has been subject to several amendments.[318]

(b) Independence of the body in charge of the ARSP

The ARSP is based on the intervention of a private company based in Moffett, California, subcontractor of the National Aeronautics and Space Administration (NASA), which analyses the information contained in the incident reports and draws conclusions which are used by aviation authorities (the FAA essentially, but also the NTSB) for the purposes of the improvement of air safety.[319]

Since the ARSP must rest on a relation of confidentiality between NASA and the addresser of the incident report pilots, NASA's subcontractor is both institutionally and functionally independent from the FAA or from any other governmental authority or aircraft operator.[320]

(c) Confidentiality of incident reports

Since the objective of the ARSP is to contribute to the improvement of air safety rather than to blame the members of the aviation community who where involved in an incident and, by definition, did not cause the death or injury of another, the confidentiality of the information which is communicated must be guaranteed.

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[318] See Commission des Communautés Européennes, Rapport sur les *Problèmes Juridiques posés par la mise en œuvre d'un Système de Rapports Volontaires d'Incidents dans le domaine de la Sécurité Aérienne* (by L. Rapp, May 1990).
[319] *Ibid.*
[320] *Ibid.*

Incidents are reported by the means of a type-form perfected by NASA (N.A.S.A./ARC Form 277) and marked "official paid". Once filled, it only needs to be folded and addressed without envelope at Aviation Safety Reporting System, P.O. Box 189, Moffett Field CA 94035. The addresser is asked to fill out his/her name, address, and phone number in the detachable upper part of the form. As from the time when the incident report reached its destination, the NASA-ARSP center has 72 hours to tear the detachable part off the form and send it back to the addresser marked with the stamp of NASA which testifies that the report has been completed. The period of 72 hours, which must not be exceeded, normally gives NASA sufficient time (through its subcontractor) to ask more details about the incident when that appears necessary. Over that period, NASA commits to keeping no trace of the addresser's identity: at this stage, the incident report becomes genuinely anonymous.[321]

To secure the confidentiality of incident reports, NASA has a legal obligation not to disclose the information which it collected through the ARSP. For its part, the FAA undertakes that it will not attempt to obtain such information from NASA and use it against the person who spontaneously revealed it. However, that does not prevent the FAA to have recourse to its own means of investigation and take legal action to sanction a wrongful conduct which, in other respects, has been reported through the ARSP.[322]

NASA may be nevertheless be released from its obligation of confidentiality in two situations:

- where NASA is informed through an incident report about a criminal offence (such information must be communicated to the Department of Justice and to the FAA).
- where NASA is informed through an incident report about an accident (such information must be communicated to the NTSB and the FAA).

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[321] *Ibid.*

(d) Immunity of the addresser of the incident report

As an incentive for all the people which may have information about incidents to take part in the ARSP, it has been established that the addresser who informs NASA about an incident may be conferred immunity for the reported wrongful conduct under certain conditions:

- the addresser must prove that the report was sent to NASA within ten days from the occurrence of the incident.
- the immunity only covers administrative and civil sanctions (the addresser's license has been suspended).
- the immunity does not cover criminal offences.
- the immunity may only be used once every 5 years.

On one hand, the success of the US aviation safety reporting program proved that confidentiality and anonymity efficiently contribute to loosen the tongues of those who are in first line in the happening of air incidents. On the other hand, such system could entail a pernicious effect and create an exaggerated "inflow" of incident reports which would only be communicated to confer immunity on the addresser of the report.

For its part, the French old incident reporting system is about to be replaced by a new system in which the BEA will play a central role.

2. The French "Feed Back / Retour d'Expérience" system

In France, the current feed back system, which is only obligatory since 1988, is somewhat hampered by a constraining legislation which prevents the confidentiality of reports.

(a) The current legislation on aviation safety reports

The French incident reporting system is essentially based on provisions of "the Code de l'Aviation Civile": articles R 142-1 to R 142-4, and R 425-1 to R 425-3, and

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[322] *Ibid.*

on *Instruction du 15 juin 1979 relative à la transmission des comptes rendus d'incidents d'aviation intéressant la navigabilité des aéronefs.*[323]

- Provisions of the Code de l'Aviation Civile

Articles R 142-1 to R 142-4 and R 425-1 to R 425-3 define the different obligations of the members of the aviation community[324] in case of aircraft accident or incident.

In particular, article R142-2 provides that all incident:

- which affects or is likely to affect the safety of an aircraft; and
- which occurred on the land or in the airspace over which France has sovereignty

must be reported by the air captain either to the commander of the closest airport or to the center of regional control to which he/she is connected.

In conformity with article R151-4, failure to comply with this obligation is punished by the payment of a fine of 600 FF up to 1000 FF (2000 F in case of second offense). If the air captain is not able to make this report, article R142 indicates that the obligation is transferred to the operator-company directors or to the owner of the aircraft who, however, must address the report to the department in charge of the investigation of aircraft accidents/incidents.

Article R425-1 imposes on the air captain to establish a detailed report within the 48 hours following the occurrence of an incident affecting or likely to affect the safety of an aircraft and which took place either on the ground or in-flight. In the light of this report, the Minister in charge of the Civil Aviation initiates an investigation with a view to seek and make the causes of the incidents.[325] Such investigations may lead to administrative and disciplinary proceedings and subsequently to sanctions.

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[323] *Instruction du 15 juin 1979 relative à la transmission des comptes rendus d'incidents d'aviation intéressant la navigabilité des aéronefs* (J.O. 8 August 1979).

[324] Air captain, directors of operator company of the aircraft, airport authorities, regional center of air control, directors of the manufacturing company of the aircraft, maintenance/service units.

[325] Article R425-5, Code de l'Aviation Civile.

If an incident involves bodily injuries or damage to the goods which are carried, the "Procureur de la République" must be informed.[326]

- Instruction of June 15th, 1979

The objective of Instruction of June 15th 1979 is to allow the competent authorities to obtain sufficient technical information about air navigation incidents in order to apply the necessary measures to maintain and improve the safety level of the fleet of aircraft which are built, owned or used by French nationals.[327] It does not aim at apportioning blame which is supposed to encourage the members of the French aviation community to use the incident reporting system.

- Scope: incidents covered by this text.

The text provides a list of incidents which it covers: engine failure; systems failure; starting fire; leaks of flammable fluids; accumulation of smoke, gas or toxic fumes; unexpected drop in fuel gauge; maneuvering difficulties with landing-gear, rotors; blow-out of a tyre; meteorological factors such as hailstorm, striking by lightning; unexpected vibrations, etc.[328] However, this list is not exhaustive.[329]

The scope of the Instruction does not include the incidents which are related to birds impacts, ATC control, risks of aircraft collision, risks of ground collision, radio or communication deficiencies and off-strip landings without damage.

- Communication of the information.

Air incidents may be reported either on a form specially established by the aircraft manufacturer or operator, on a DGAC form[330] or by internal report.[331]

The aircraft manufacturer[332], operator[333] and maintenance services[334] have one month from the notification of the incident to issue their incident report.

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[326] Article R142-4. Code de l'Aviation Civile.
[327] *Supra* note 299, Article 2.
[328] *Supra* note 299, Article 3.
[329] *Supra* note 299, Article 3.
[330] "Constat d'événement en exploitation '(CEE)" for in-flight incidents or "Constat d'intervention sur le matériel (CIM)" for ground incidents.

The reported information must permit the determination of the circumstances, nature, probable or certain causes, material and operational consequences of the event considered, as well as the identification of the equipment concerned.[335] To fulfil this condition, the text provides a listing of the requested elements of information depending whether the incident occurred in-flight or when the aircraft was on the ground.

- Absence of confidentiality of reports

In France, the primacy of the Judiciary and the importance of the legal proceedings in case of breach of civil aviation regulations render almost impossible the confidentiality or anonymity of aviation safety reports.

First of all, the French Law makes provision for an imposing arsenal of legal actions to sanction the breaches of civil aviation regulations, which has a deterrent effect on the participation in the incident reporting system of those who were directly or indirectly involved in an accident/incident.

Three types of legal actions may be taken:

- judicial/criminal[336] proceedings in case of breach of regulations contained in the French Criminal Code[337] which may lead to the payment of a fine or to an imprisonment sentence.
- administrative action taken by the regulatory authorities of civil aviation which may cause the person at fault to have its professional license either permanently or temporarily suspended, or to be struck off the civil aviation registers. Administrative sanctions are determined by a collegial institution, the "Conseil de Discipline" composed of representatives of the air navigation personnel.
- Disciplinary action incurred by any employee or public officer *vis a vis* his/her employer or principal.

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[331] *Supra* note 299, Article 5.
[332] *Supra* note 299, Article 5.2.1.
[333] *Supra* note 299, Article 5.3.1.
[334] *Supra* note 299, Article 5.5.
[335] *Supra* note 299, Article 4.
[336] Read articles 319, 320, R 40, R 41 of the "Code Pénal."
[337] "Code Pénal."

In accordance with the latin principle "non bis in idem", the breach of a regulation may only give rise to one legal action.

In order to carry these legal actions through, the French administrative, judicial and criminal authorities were granted broad prerogatives and efficient means of investigation. In particular, they may not be opposed professional secrecy which obviously goes against the establishment of a system of aviation safety report based on confidentiality and anonymity.

Two other obstacles to the confidentiality and anonymity of aviation reports result from article 9 of the *Instruction ministérielle* of January 3rd, 1953[338] and article L 150 of the "Code de l'Aviation Civile."

Whilst the former creates an obligation on the technical investigators to communicate to the Judiciary all documents and information pertaining to the determination of the causes and circumstances of aircraft accidents, the latter establishes that all civil servants/fonctionnaires, including BEA members, must inform the criminal authorities about the breaches of air safety regulations which they may be aware of while in the discharge of their duties.

Despite its apparent incompatibility with the French legal system, the confidentiality of aviation safety reports is about to become the rule in France.

(b) Impending establishment of a confidential and anonymous system of aviation safety reporting in France

The development of aviation safety reporting has been significantly promoted within the past ten years.

[338] Instruction Ministérielle du 3 Janvier 1953 relative à la co-ordination de l'information judiciaire et de l'enquête technique administrative en cas d'accident survenu à un aéronef français ou étranger sur le territoire de la métropole ou les territoires d'outre-mer.

As early as in May 1990, a report[339] addressing the legal problems pertaining to the establishment of an aviation safety reporting system in the European Community was presented to the EC Commission. In 1996, the EC Council adopted a directive concerning incident/accident reports. Two years later, in 1998, the Joint Aviation Authorities (JAA) took measures (JAR-Ops) in favor of a feed back system which would include human factors.

Since 1995, ICAO also made recommendations to develop the use of aviation safety reporting. As a result of these recommendations, France has set up a system of "retour d'expérience" based on confidentiality: the Recueil d'Evénements Confidentiels (REC), which will start from December 31st, 2000.[340] According to that system, those who witnessed air incidents while in the exercise of their duties will be able to send anonymous incident reports in exchange of disciplinary immunity.

The REC is created to contribute to the prevention of air accidents and the improvement of air safety. It is based on:

- the collection of confidential reports established by the users of general aviation and describing situations, events or circumstances reckoned as likely to originate risks
- the anonymous use of the information to improve the "retour d'expérience" in air safety.

In order to be preserved from any conflicting interest, the REC was placed within the BEA. However, this REC unit is even more independent than the BEA itself since it has no organizational nor functional ties with the IGACEM. Moreover, the buildings, phone lines and computer systems which it uses are separate from those used by the other units of the BEA.

REC forms are made available to the general aviation users in flying schools, flying-clubs (etc) or can be asked by mail, phone, or e-mail. Once filled out, these

[339] L. Rapp, *supra* note 318 at 105.

[340] BEA, le Recueil d'Evénements Confidentiels (REC), online: <http://www.bea-fr.org/rec/lc_rec.htm> (date accessed: 20 September 2000).

forms must be sent without stamp and in a sealed envelope to the REC. The addressers of the forms are then requested to phone the REC and to give details on the events considered. Only the facts pertaining to these events are integrated in the REC reports which means that all information permitting of the identification of the addressers is systematically erased.

The forms are then returned to sender in REC-sealed envelopes within 2 weeks from their receipt by the REC unit. Meanwhile and afterwards, the reports are analysed and the information is used for the improvement of air safety.

Similarly to the ARSP, the REC is anonymous and confidential in order to encourage its use by the users of aviation. For that purpose, the REC undertakes not to issue any copy, list, or element which would permit the identification of addressers of REC forms. All the information concerning the identity of the users must therefore be erased including the names, registration numbers, precise dates and aerodromes cited in the reports. In addition, the persons working for the REC have an obligation of professional secrecy[341].

Immunity from administrative or disciplinary sanctions is normally granted to all users who spontaneously and without delay indicate that they were involved in an air incident.

In order to avoid the improper use of the REC to obtain systematic protection from sanctions, immunity is not granted where the addresser endangered another, repeated an offence or deliberately committed a breach of safety rules.

In France, the organization of the BEA is characterized by the preponderance of its Director whom is entrusted with very important prerogatives. The involvement of the French Air Safety Board in the feed back system is precisely related to one of these prerogatives.

[341] See articles 226.13 & 226.22 Code Pénal.

(c) Preponderance of the Director of the BEA in the REC

Mr Paul-Louis Arslanian, Director of the BEA, often insists on the importance of the "feed back" system in the improvement of aviation safety.

By virtue of a delegation of powers from the Minister in charge of Air Transportation, the Director of the BEA is authorized to decide which serious incident his agency should investigate.[342] In order to do so, the Director of the BEA has two alternatives:

The first alternative is to consult the list of serious air incidents as established by the EC directive of 1994 for the use of the EC Member States. However, this list is not exhaustive which means that certain incidents among those not included in the Directive could actually be seen as serious.[343]

The second alternative ensues from the first one: the Director of the BEA is entitled to determine which incidents other than those featured in the EC list should be investigated by the French Air Safety Board. In order to do so, the head of the BEA must be communicated as much information as possible on air incidents through the reporting of air incidents.[344]

The impending introduction of confidentiality and anonymity with the REC system is expected to increase significantly the inflow of air incident reports towards the Director of the BEA.

[342] Interview with J.L. Benesse, note 54 at 20.

CONCLUSION

It is clearly established that the steady growth of international air traffic will increase the probability of accidents despite the permanent decrease of the rate of accident by number of passengers. Every year, the NTSB investigates more than 2500 aircraft accidents. This number should increase substantially in the near future due to the steady growth of air traffic which continues to climb with an estimated 75 million takeoffs and landings at the US airports for year 2009.[345] Such previsions impose to the authorities and bodies in charge of air accident investigations to elaborate, in conjunction with the aeronautical community, new preventive measures and new methods of regulation of air safety.

Although the rise of accidents is not likely to be located in the European or the North American airspace[346], major Air Safety Boards as the NTSB or the BEA are destined to play a preponderant role in the setting up of new safety standards.

By its skills, its high degree of independence, and its desire for transparency, the NTSB seems well prepared to face these new challenges and is often presented as an example to be followed.

If it is recognized for its high-quality skills, the BEA must deal with constraints which do not allow as much independence as would be necessary to satisfy all the needs of aircraft accident investigations. In particular, the weight of professional secrecy and "secret de l'instruction" seems to paralyse any significant initiative in favor of the information to the public and the victims families (perhaps, law 99-243 should have gone further).

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[343] *Ibid.*
[344] *Ibid.*
[345] NTSB, *We are all safer : NTSB-inspired Improvements in Transportation Safety* (Washington D.C., 2nd edition, July 1998).
[346] R. T. Francis II, Vice-Président NTSB, Washington D.C. Perspectives concernant l'avenir de l'aviation entre les USA et la CEE, trans. Navigants, Navigants (Nov. 1997).

While it can be held that the NTSB should not go through major structural changes, it is harder to predict in which way the BEA will evolve within the next few years. Will it merge with its European counterparts into a "European NTSB" as advocated by Claude Abraham ? Will it be granted organic independence and its own budget like the NTSB ? Will it remain under the form decided by law 99-243 which already enhanced its prerogatives ? Only the future will tell.

For sure, the NTSB and BEA will need to rely on a greater harmonization with aviation certification authorities and regulatory authorities. They will have to optimize the use of their resources and, in that sense, privilege partnership and technical co-operation with other Boards, as well as maintain their deep commitment for the benefit of all and everyone.

"The preservation of human lives, the sensitivity of the public to air accidents, the amplification by the media of events which are rare but described as catastrophes, the economic consequences, constitute as many determining motives for the aeronautical community to place safety as a categorical imperative and to develop constant efforts for its improvement." [347]

[347] M. Hucher, "Sécurité et traitement numérique des informations", Colloque international sur la sécurité aérienne et spatiale, 20-22 Octobre 1988, Toulouse.

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ANNEX: WHAT IS A FLIGHT RECORDER ?

The use of flight recorders is obligatory for all aircraft exceeding 5.700 kg or carrying 10 or more passengers. They are fixed on the tail and on the right side of the fuselage and look like orange boxes. They are heatproof, waterproof and designed to withstand great speeds and accelerations.[348]

They are of several kinds:

The **Digital Flight Data Recorder (DFDR)** contains a magnetic tape on which elementary data such as the airspeed, the altitude, the accelerations or the functioning of the engines is stocked up in "bits" at the rate of 64 signals per second. This magnetic tape runs on 6 tracks without interruption during the flight, with a switch from one track to the other every 4 hours and 10 minutes which only permits to record the data processed in the 25 hours preceding the accident. The performance of DFDR's can be increased with Safety State Flight Data Recorders (SSFDR).

The **Cockpit Voice Recorder (CVR)** also contains a magnetic tape on which are recorded all the conversations, noises and alarms picked up by 4 microphones in the cockpit . This tape runs permanently during the flight on 4 tracks which only permits the recording of the 30 last minutes.

The fitting of commercial aircraft with a **Cockpit Video View Recorder (CVVR)** which would film the interior of the cockpit during the flight was proposed on several occasions at international symposiums on air safety but this idea generally met the disapproval of the pilots which argued that such device would constitute an invasion of their privacy.

[348] Belotti J, *Les Accidents Aériens : pour mieux comprendre* (Editeur Frédéric Couffy, Librairie de l'Université d'Aix-en-Provence, 1998).

However, at the ICAO 1999 AIG, the world air line pilot community represented by the International Federation of Air Line Pilots' Associations (IFALPA) acknowledged that Cockpit Voice recordings / Cockpit Video View recordings have proven to be "extremely beneficial in determining the causes of accidents and hence preventing their recurrence". The IFALPA agreed to the use of such recordings provided that they would only serve for safety purposes and therefore proposed to insert in Annex 13 that CV recordings and CVV recordings:

- shall only be used for accident and serious incident investigation purposes,
- shall not be made available to any person outside the investigation conducted by the safety Board at any time either during the investigation or after it is completed and that
- the CVVR shall not record the entire cockpit environment nor the anatomy of any flight crew member.

The data given by the **Quick Access Recorder (QAR)** is very similar to that of the DFDR. A floppy disc inside the QAR records up to 50 hours of flight which are systematically examined to improve the maintenance of aircraft.