BEA
Bureau d'Enquêtes et d'Analyses
pour la sécurité de l'aviation civile

Annual Report 2014

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Sommaire

A Message from the Director

2012 and 2013 were considered as excellent years for civil aviation safety worldwide. Though the number of accidents in 2014 is lower than in previous years, several aviation disasters occurred in 2014. Their characteristics meant they had a particular effect on people's minds: the most significant ones occurred during the cruise phase, and several of them happened in hostile environments, at sea, in the desert or in areas of armed conflict. In addition, the mystery of the disappearance of flight MH 370 on 8 March 2014, whose wreckage has still not been recovered after a year of searches, put the aeronautical community in an entirely new situation.

The BEA sent an Accredited Representative to participate in most of these investigations. Either, as specified in ICAO Annex 13, as the investigation authority of the State of Design (this was the case for the accidents to the Transasia Airways ATR 72 in Taiwan on 23 July 2014 and the Air Asia A320 in the Java Sea on 28 December 2014). Or, at the request of the State of Occurrence (this was the case for the accident to the Swiftair MD 83 in Mali on 24 July 2014). The BEA was also asked to assist in the investigation into the accident to MH370, as a result of the experience that it had gained in sea searches.

The disappearance of flight MH370 put the spotlight on several recommendations that had been issued by the BEA in the Final Report on the Safety Investigation into the accident to Rio-Paris flight AF 447, in particular relating to the regular transmission of parameters, the in-flight activation of emergency locator transmitters in case of an emergency, or the installation of ejectable recorders. After the publication of the report, the BEA had worked actively in various working groups in organisations including the International Civil Aviation Organisation (ICAO) and the European Organisation for Civil Aviation Equipment (EUROCAE), to accelerate the implementation of these recommendations. The measures that were announced following the disappearance of MH370 were made possible by this work.

Regarding general aviation safety, the initial2014 statistics show a decrease in fatal accidents and in the numbers of fatalities in comparison to 2013. Even if we have not returned to the level of 2012, it should be noted nevertheless that 2014 is the second best year of the decade. It is still too early to say if this is a sign of a durable improvement in the level of safety.

For several years, the BEA has invested a great deal to modernise its procedures and its status, and to reinforce its relations with the other services of the State as well as with its partners abroad. This approach is intended not only to conform to European and national regulations, but also to optimise its work. In 2014, it should be noted that advance agreements were signed or amended with the Ministries of Justice and of the Interior, in accordance with the requirements of the European Regulation, in order to ensure coordination between the judicial and Safety Investigations, which must have unrestricted access to the same data and the same evidence, while remaining independent of each other.

Rémi Jouty

1. OVERVIEW OF ACCIDENTS INVOLVING THE BEA THAT OCCURRED IN 2014, INVESTIGATIONS INITIATED

1.1 Background

In accordance with EU regulation 996/2010, any civil aviation accident or serious incident is the subject of a safety investigation in the Member State of Occurrence. This requirement applies to all aircraft, except those listed in Annex 2 of Regulation 216/2008 (the aircraft listed in this Annex are mainly non-certificated aircraft: ULMs, aeroplanes of historic interest, etc.). European regulation 996/2010 also provides that States may investigate other events, including incidents that do not fit into the category of serious incidents.

ICAO Annex 13 also specifies that, when a security investigation is conducted by a State (usually the State of Occurrence of the event), the State of the Operator, the State of Registry and the State of Manufacture of the aircraft involved participate in this investigation, by naming an accredited representative (ACCREP).

In France, the BEA is the authority responsible for safety investigations. Its procedures provide that, in addition to the investigations it has an obligation to conduct in accordance with European regulation, it also investigates the following events:

- Reported incidents, which are of particular interest for safety,
- Events involving "*Annex 2*" aircraft, when they occur in the context of instruction, paid flights, air shows or aerial work.

1.2 Data on investigations initiated by the BEA

The data shown in this first chapter relates to aircraft accidents in France, investigations initiated by the BEA in 2014, investigations initiated by foreign bodies in 2014 in which the BEA is participating – or participated - by designating an accredited representative (ACCREP), and BEA teams sent to accident sites (*"go-teams"*).

1.2.1 Aircraft involved in accidents

The data in the table below comes from two sources:

- Investigations led by the BEA on accidents to certified aircraft (the corresponding information has been validated by the BEA) ;
- Information supplied by field investigators on *"Annex 2"* aircraft accidents which were not the subject of a BEA investigation.

Accidents in France in 2014				
	Number of accidents		**Number of injuries**	
	Total	Of which fatal	Fatal	Serious
PUBLIC TRANSPORT (PT)				
Aeroplanes	3	0	0	0
Helicopters	1	0	0	0
Balloons	1	1	1	2
Public Transport total	**5**	**1**	**1**	**2**
AERIAL WORK (AW)				
Aeroplanes	6	1	1	1
Helicopters	1	0	0	0
ULM	1	1	2	0
Aerial Work Total	**8**	**2**	**3**	**1**
GENERAL AVIATION (GA)				
Aeroplanes	101(*)	14	22	19
Helicopters	7	1	5	2
Glider (of which motorised)	18(*)	4	5	3
Balloons	6	0	0	7
ULM (of which autogyros)	99	13	21	23
General Aviation Total	**231**	**32**	**53**	**54**
Total	**244**	**35**	**57**	**57**

(*)Note that the number of accidents reported may differ from the number of aircraft involved in accidents because the same accident may involve several aircraft. The numbers of aeroplanes and gliders in general aviation involved in accidents in 2014 were 102 and 20 respectively.

In Public Transport, there were no fatal accidents to aeroplanes or helicopters. However, one fatal accident to a balloon caused one fatality and two serious injuries.

In relation to general aviation: see comments in Chapter 3.

1.2.2 Investigations initiated by the BEA

Investigations initiated by BEA in 2014				
Type of event	Public transport	General aviation	Aerial work	**Total**
Accidents	5	110	7	**122**
Serious incidents	5	4	2	**11**
Incidents	3	3	0	**6**
Total	**13**	**117**	**9**	**139**

The number of investigations initiated by the BEA in 2014 fell slightly in comparison to the previous year (139 versus 151), this fall being particularly noticeable in general aviation (117 versus 129).

The number of investigations initiated by the BEA shown below is notably lower than that of the number of accidents, due to the fact that accidents to Annex 2 aircraft were only the subject of an investigation in 2014 in certain specific cases, in accordance with BEA regulations and procedures.

1.2.3 Investigations initiated by foreign investigation bodies for which the BEA nominated an accredited representative (ACCREP)

Foreign investigations initiated in 2014 for which the BEA nominated an ACCREP						
Type of event	Public transport	General aviation	Aerial work	State aircraft	Unknown	**Total**
Accidents	36	57	14	6	6	**119**
Serious incidents	58	6	5	2	0	**71**
Incidents	22	1	1	0	2	**26**
Total	**116**	**64**	**20**	**8**	**8**	**216**

The number of investigations led by foreign investigation bodies in which the BEA participated by nominating an accredited representative (ACCREP) remained at a similar level to that of previous years (216 versus 205 in 2013 and 222 in 2012).The number of foreign investigations in which the BEA was the accredited representative has for several years greatly exceeded that of investigations initiated in France. This is a result of the success of the national aviation industry.

1.2.4 Go-teams

In the case of a particularly serious accident (in France or abroad), the BEA sends a team of investigators to the site without delay. The size and composition of this team (commonly referred to as the *"go-team"*) are defined on a case-by-case basis.

In 2014, 38 *"go-teams"* were sent out, including seven abroad: Indonesia, Sweden, Mali, Taiwan, Ghana, Russia and Malaysia.

Note: the go-team to Malaysia was sent in the context of the investigation into the accident to flight MH370, for which the Malaysian authorities asked the BEA to nominate an accredited representative, as a result of its experience acquired in the area of sea searches.

2. INVESTIGATIONS CLOSED, REPORTS PUBLISHED IN 2014

2.1 Investigations Closed and Safety Investigation Reports Published

Over and above the number of accidents and investigations initiated, the number of investigations closed and reports published are the most relevant indicators of the BEA's activity.

European Regulation 996/2010 specifies that each Safety Investigation must be concluded with a report in a format that is adapted to the type of event. The closing of an investigation is thus marked by BEA with a report that can take two forms:

- ICAO reports: these reports follow a systematic format, defined by ICAO Annex 13. They are generally reserved for the most important events. In 2014, the BEA published 5 reports of this type (see box);
- Simplified reports: these reports contain only the relevant elements from the plan in Annex 13.They are, specifically, for events such as incidents in public transport or general aviation accidents. In 2014, the BEA published 10 simplified reports relating to public transport, and 89 simplified reports relating to general aviation or aerial work.

Note: in 2014, the BEA also closed three general aviation investigations with a simple database entry.

Events that Led to the Publication of an ICAO report in 2014				
Registration	**Type of aircraft**	**Place**	**Date of event**	**Type of Event**
VP-CAZ	Raytheon (Premier I)	Cranves-Sales (74)	04 March 2013	Stall after takeoff in icing conditions, collision with the ground, fire
XT-ABF	McDonnell Douglas MD83	Towards Paris Orly airport (94)	12 January 2011	Lack of fuel during a ferry flight, turn-back, descent below decision altitude in instrument flight conditions
F-OIAN	Beech 200	Nadi aerodrome (Fiji)	26 April 2010	Electrical failure during approach, landing with gear retracted, lateral runway excursion
TC-ACB	Airbus A300	Bagram Airport (Afghanistan)	1st March 2010	Failure of left main landing gear, lateral runway excursion
F-GIRU	Cap 10	Morangles (60)	16 June 2004	Loss of control in flight, collision with terrain

Note: all BEA reports are published in French, but some of them are also published in English. In 2014, the BEA thus translated 4 public transport ICAO reports, 13 simplified public transport reports,2 simplified reports on general aviation or aerial work and 2 safety studies.

European regulation 996/2010 specifies that an investigation report should be published rapidly and if possible within the twelve months following the date of the event. For the BEA, a maximum length of twelve months for each investigation is thus a general objective and a monitoring indicator. This is defined as the ratio between the number of investigations closed within one year that dated from less than a year at the time of closing, and the total number of investigations closed within a year. As of 31 December 2014, this ratio was 0.47.

The tables below give the number of investigations closed in 2014, by type of event and operation. They also indicate the date of the events, and the investigations more than one year old not closed as of 31 December 2014

Investigations Closed by the BEA in 2014 (by year of occurence)													
Year of event	**Before 2012**			**2012**			**2013**			**2014**			**Total**
	PT	GA	AW	PT	GA	AW	PT	GA	AW	PT	GA	AW	
Accidents	2	4	0	2	5	0	2	44	2	0	28	1	**90**
Serious incidents	1	0	0	2	2	0	0	0	0	0	0	0	**5**
Incidents	3	0	0	1	1	1	1	3	0	0	2	0	**12**
Total	**6**	**4**	**0**	**5**	**8**	**1**	**3**	**47**	**2**	**0**	**30**	**1**	**107**

Investigations undertaken by the BEA that had been open for more than one year, as of 31 December 2014				
	Public transport	General aviation	Aerial work	**Total**
Accidents	10	64	4	**78**
Serious incidents	13	5	0	**18**
Incidents	13	4	0	**17**
Total	**36**	**73**	**4**	**113**

These results show a decline, in quantitative terms, in the production of reports: the number of investigations closed in 2014 (107) dropped in comparison to 2013 (172). This result can be partially explained by the fact that in 2014, 45 events, mostly older ones, were simply registered in the BEA database, with no publication of a report. In addition to this, there was also a slight increase in the number of investigations initiated more than one year previously, which at the end of 2014 passed from 113, versus 98 at the end of 2013. This drop can also be explained by the implementation of a new method of investigation that aims to improve the quality of analysis and reports. This method required significant additional training in 2014, which corresponded to a year of learning and adoption of methods. To help to reach a production rate compatible with the number of investigations initiated, a modification of the investigation policy was introduced in 2015, to simplify investigations into material leisure aviation accidents corresponding to categories of events that only rarely had any consequences involving injuries, mainly focused on pilot's reports in these cases. This typically includes runway excursions, hard landings, loss of control during roll, events whose causes are most often linked to the technical competence of the pilot and the ability to perform manoeuvres. Conversely, fatal accidents or those with injuries often show causes linked to the behaviour of the pilot and his/her decision-making abilities.

3. GENERAL CONSIDERATIONS ON SAFETY IN FRANCE IN 2014

3.1 Public Transport

With regard to public transport, the general appraisal of safety France in 2014 was quite good, since there were no fatal aeroplane or helicopter accidents. There was however, a public transport accident in a balloon, which caused one fatality and two serious injuries.

3.2 General Aviation

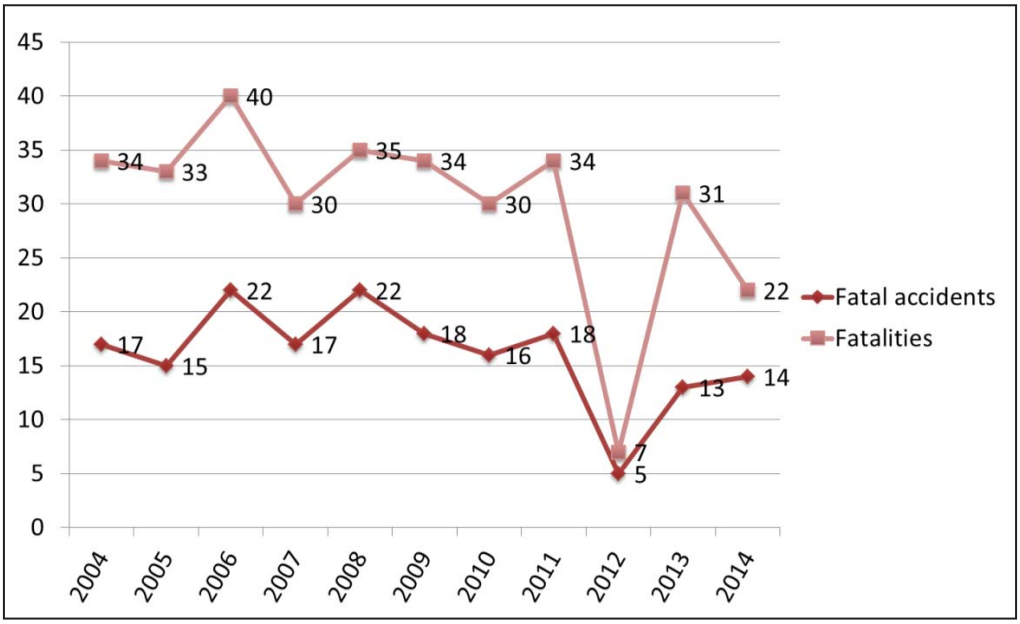
Regarding general aviation (all activities included), 2014 was notable for a quite significant drop in the number of fatal accidents and in the number of fatal injuries in comparison to previous years. We did not return to the excellent figures from 2012, but it should be noted that 2014 was the second best year of the decade after 2012.

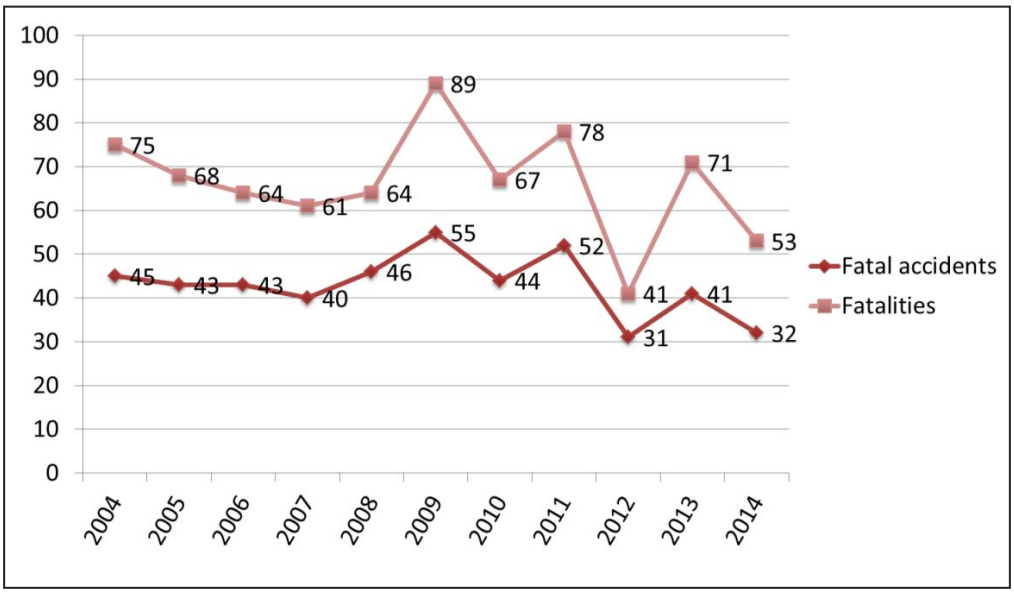
There were:

- 32 fatal accidents (versus 42 the previous year and 42 a year on average over the previous three years),
- 53 fatal injuries (versus 71 the previous year and 64 a year on average over the previous three years).

Focusing only on aeroplanes, it is noticeable however that the number of fatal accidents remained relatively stable compared to 2013 and the average of the three previous years (14 accidents in 2014 versus 13 in 2013 and 12 on average for the period 2011 - 2013). The number of fatalities dropped a lot compared to 2013 (22 fatalities in 2014 versus 31 in 2013), but remained similar to that observed as the average of the three previous years (24 fatalities a year on average for the period 2011 - 2013).

The graphs below illustrate this data: they show the evolution in the numbers of fatal accidents and of fatalities for the period 2004-2014, on the one hand relating to activity in aeroplanes, and on the other hand for all activities together.





In 2014, the statistics for general aviation show that the figures relating to aeroplanes and those relating to ULMs are very similar. Thus there were 13 fatal accidents that caused 21 fatalities for ULMs and 14 fatal accidents that caused 22 fatalities for aeroplanes.

This finding, in addition to the trend towards an increase in the volume of ULM activity, led the BEA to modify its procedures. Even though the European Regulation in force does not oblige the BEA to investigate accidents to *"Annex 2"* aircraft, and thus ULMs, the BEA decided to modify its policy and to initiate investigations into fatal accidents to *"Annex 2"* aircraft. This provision has been in place since 1st January 2015.

3.3 Accidents Abroad where the BEA Participated in the Investigation

Regarding events that occurred abroad that involved the BEA as representative of the country where the aircraft was designed, manufactured or registered, the trend observed in previous years was confirmed: foreign investigations for which the BEA is accredited representative greatly exceed that of investigations initiated in France. This trend remains linked to the success of the national aviation industry, and to the high level of its exports.

4. SAFETY RECOMMENDATIONS

4.1 Background

For the International Civil Aviation Organisation (ICAO), a safety recommendation is a proposal made by an investigation authority on the basis of information gathered from an investigation or a study, in order to prevent accidents or incidents. Thus, the Safety Recommendation is the BEA's main means of improving safety.

The BEA addresses most of its recommendations either to the civil aviation authority of a State or to the European Aviation Safety Agency (EASA). They must relate to the measures to be taken to prevent occurrences with similar causes.

4.1.1 Follow-up on Safety Recommendations

The provisions of European regulation (EU) 996/2010 of the European Parliament and Council of 20 October 2010 on investigations and the prevention of civil aviation accidents and incidents makes mandatory, for Member States, that recipients of safety recommendations acknowledge receipt and inform the issuing authority, responsible for investigations, of the measures taken, or under consideration.

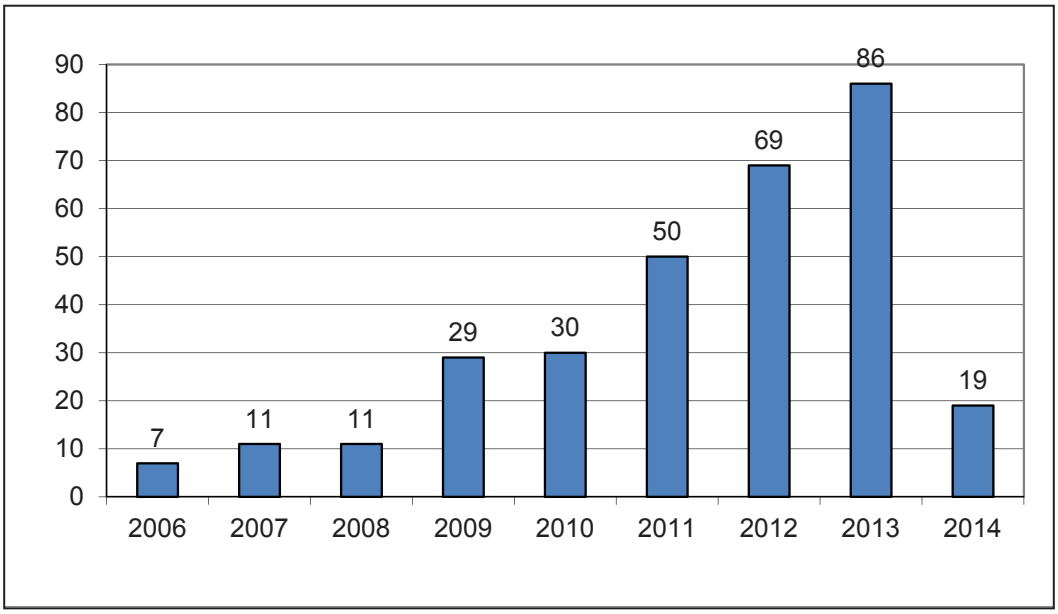
This must be done within 90 days of receipt of the Safety Recommendation letter.

Within 60 days of the date of receipt of the answer, the investigation authority must make known to the recipient if it considers its response as adequate or, if it disagrees with the answer, to communicate the reasons for this.

4.2 Safety Recommendations Issued

In 2014, the BEA issued 19 recommendations, of which 5 at the beginning of investigations:

- 4 recommendations addressed to the primary certification authority (EASA),
- 1 recommendation jointly to DGAC and the French Parachuting Federation (FFP).



Recommendations Issued

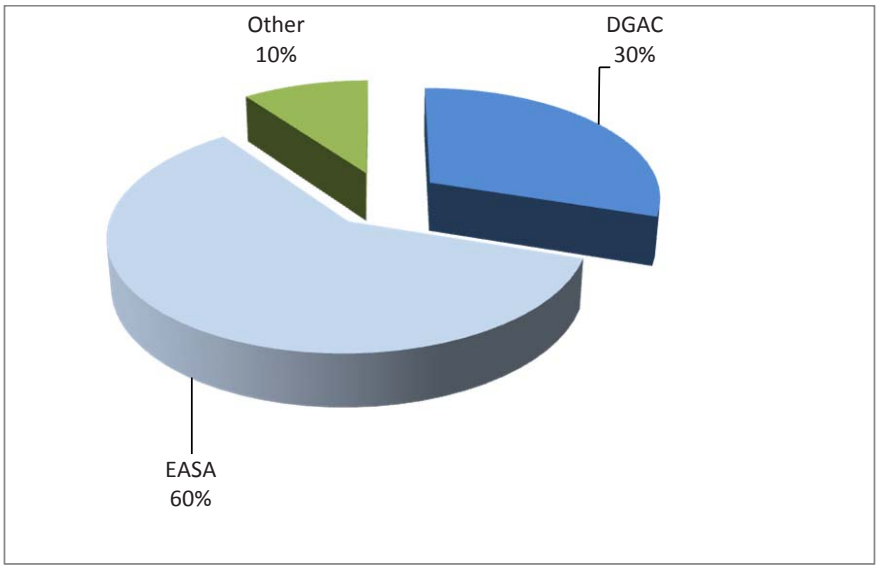
The considerable drop compared to the 3 previous years can be explained by the fact that in 2014 there was no publication of a public transport investigation report into a major event or of a major study. This type of report made a considerable contribution to the number of recommendations issued in the previous years. The drop also shows the desire on the part of the BEA to avoid making several recommendations simultaneously aimed at the same safety issue and an identical field of action, and on the contrary to formulate recommendations that leave more scope for the addressee to define the actions to be taken in more detail.

4.2.1 Distribution by addressee

In 2014, EASA and DGAC were the main addressees of recommendations (18 of the 19 recommendations issued).

A recommendation was addressed during an investigation to DGAC and the FFP. This recommendation, relating to parachute jumps with floater position, was quickly implemented by the addressees.

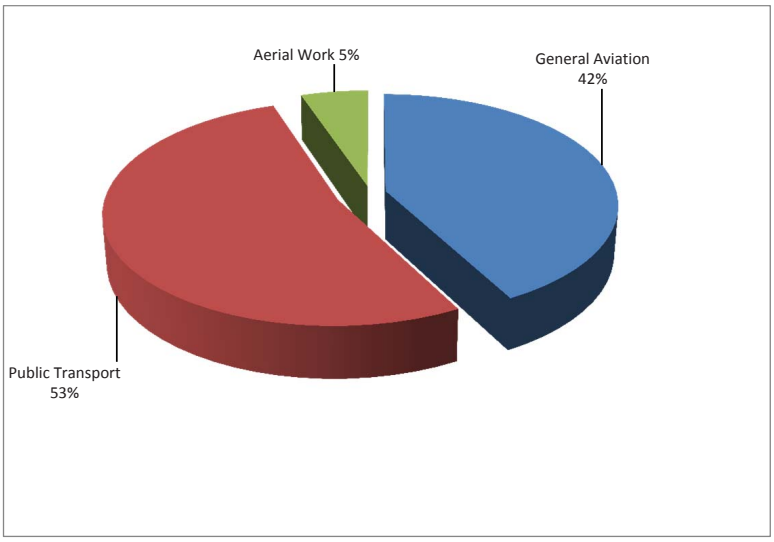
It should be noted that that in 2014, no recommendations were addressed to aeronautical manufacturers.



Addressees of Recommendations

4.2.2 Distribution by type of operations

The majority (53%) of recommendations issued in 2014 related to events linked to operations in public transport.

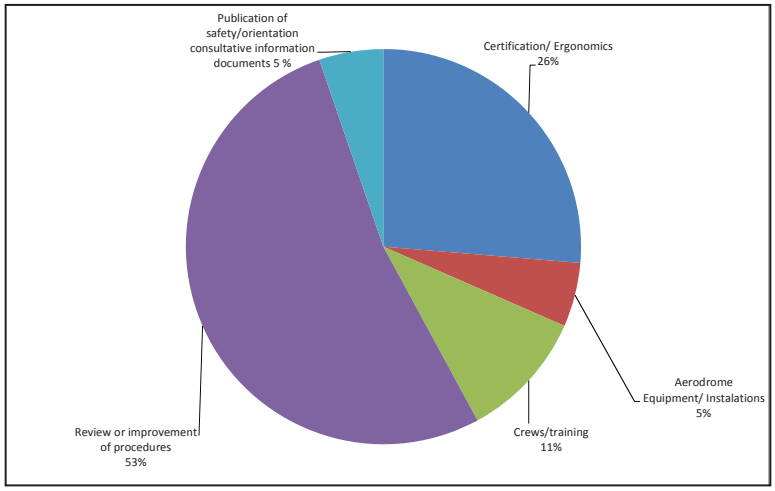


Distribution by Type of Operation

4.2.3 Recommendations by theme

The distribution by theme of recommendations issued in 2014 shows five areas where safety action was recommended. The distribution was as follows:

- Review and improvement of procedures (53%);
- Certification/Ergonomics (26%);
- Aerodrome equipment/installations (5%);
- Crews/training (11%);
- Publication of safety/orientation/consultative information documents (5%).



Distribution by Theme of Recommendations

4.3 Answers to Safety Recommendations

Regarding follow-up to the 19 recommendations issued by the BEA in 2014:

- 14 recommendations received a favourable answer from the authorities addressed,
- 2 recommendations received a partially favourable answer,
- 1 recommendation received an unfavourable answer,
- 2 recommendations are awaiting an answer from the addressee.

Note: for the last category, the recommendations sent to their addressees at the end of 2014 and the latter had 90 days to inform the BEA of any actions planned or undertaken.

5. LABORATORY ACTIVITY (ENGINEERING DEPARTMENT)

5.1 Overview of Engineering Department activity in 2014

The volume of activity of the Engineering Department was at a level close to that of previous years.

The department was again in demand in 2014 in the context of accredited representation, in order to participate in work on site and with the readout of flight recorders for accidents abroad. Note, for example, the case of the accident to an MD-83 in Mali or that of an ATR-72 in Taiwan.

5.2 Flight Recorders and Avionic Systems

In 2014, 29 CVR recordings and 40 flight data recordings were read out and analysed at the BEA. Half of these recordings related to investigations in which the BEA participated as accredited representative, and the other half corresponded almost entirely to investigations led by the BEA. Some work was also performed within the framework of technical assistance. Around twenty CVR readouts were also undertaken to evaluate the quality of recordings in the context of certification.

The number of recordings handled was close to that of previous years.

	BEA investigation	BEA ACCREP	Technical assistance	Total
CVR recordings read out at BEA	15	11	3	**29**
Data recorders read out at BEA (FDR, DAR and QAR)	14	24	2	**40**
Total number of recordings read out at BEA	29	35	5	**69**

DAR: Direct Access Recorder; QAR: Quick Access Recorder

In 2014, the BEA avionics lab read out 45 GNSS computers and 66 onboard computers, to which must be added work on audio/video recordings.

	BEA investigation	BEA ACCREP	Technical assistance	Total
Avionics systems	40	25	1	**66**
GNSS	42	0	3	**45**
Audio/video recordings	6	3	1	**10**

GNSS: Global Navigation Satellite System

In 2014, 58 events required work on the data relating to air traffic management(ATM), based on radar data or Air Traffic Control communications (ATC).This type of work mainly relates to investigations led by the BEA.

The distribution of ATM work by type of investigation was as follows:

	BEA investigation	BEA ACCREP	Technical assistance	Total
Number of events	56	2	0	**58**

In 2014, the Engineering Department greatly developed its ability to handle images and onboard video recordings, in particular in the area of calculations to estimate the position and attitude of an aircraft based only on the analysis of images recorded from the cockpit.

The laboratory continued to develop its abilities, with the acquisition of the latest readout equipment associated with new flight recorders equipping aircraft of French manufacture.

Investigators from the laboratory also participated in European and international activities and in the evolution of regulations (mainly EUROCAE standards and EASA and ICAO regulations)

5.3 Structures, Equipment and Engines

124 examinations were carried out in 2014.

Note that 40 examinations were carried out by the BEA in the context of accredited representation.

Type of operation	Number of occurrences	Number of examinations
Public Transport	17	29
Aerial Work	2	3
General Aviation	50	92
Total	**69**	**124**

The number of examinations by type was as follows:

	BEA investigation	BEA ACCREP	Technical assistance
Wreckage examinations on site	22	9	0
Examinations made at BEA	27	13	0
Examinations in outside centres	35	18	0
Total	**84**	**40**	**0**

In 2014, the Engineering Department continued to develop its ability to perform examinations and store wreckage. A group specialised in the transport of parts to be examined in the context of safety investigations was also set up.

The laboratory was also very involved in the complex investigations into the problems of propeller vibration on ATRs.

6. INTERNATIONAL ACTIVITIES, PUBLIC RELATIONS AND ASSISTANCE TO FAMILIES

The BEA does a lot of work on the European and international scene: public relations by participating in international conferences, setting up cooperation with foreign investigation authorities, organising training seminars abroad and participating in working groups in international organisations (in particular the European Union, ECAC, and ICAO).

6.1 Public Relations

In 2014, the BEA participated in the following international conferences:

- European Society of Air Safety Investigators (ESASI),in Milan (Italy):the BEA presented a study on events relating to Thielert TAE 125engines to its European counterparts.
- International Society of Air Safety Investigators (ISASI), in Adelaide (Australia): during this seminar, which gathers together the international safety investigator community, the BEA presented the report on the investigation into the runway overrun by the CRJ 700 during landing on a runway contaminated by water at Lorient Lann Bihoué aerodrome.
- AIR meeting (Accident Investigators on Recorders), in Singapore.
- AIM meeting (Accident Investigators on Metallurgy), in Washington (USA). This was the second such annual meeting, organised in 2014 by the NTSB (the first had been organised by BEA following its own initiative).
- Flight Safety Foundation Annual Seminar, in Abu Dhabi (UAE):the BEA presented the safety study on loss of control of the trajectory during a go-around (ASAGA).
- Africa Forum Aviation, in Rabat (Morocco): in the context of this forum, which aims to promote development and safety in civil aviation in Africa, the BEA promoted the importance of aviation safety.

Some of these conferences are aimed at promoting knowledge of some BEA reports that are especially interesting for improving safety. These conferences also make it possible to make the BEA's abilities better known abroad. This is an essential element for success in the BEA's participation in foreign investigations.

6.2 Collaboration with Foreign Investigation Bodies

6.2.1 Co-operation agreements

Oversight for ICAO standards and recommended practices lead many States to ask the BEA for advice and assistance. In 2014 the BEA signed co-operation agreements in relation to investigations into civil aviation accidents with Ivory Coast, Gabon, Mali, Namibia, the Republic of Congo, Togo and Ukraine in order to assist them, according to the means available, to deal with a major investigation. This brings to 35 the number of States with which the BEA has signed a co-operation agreement.

These exchanges and the co-operation agreements that they lead to facilitate the conduct of safety investigations.

6.2.2 NTSB Forum on Recovering Flight Data

Following the disappearance of Malaysia Airlines MH370, the National Transportation Safety Board (NTSB) invited the BEA to the forum that it was organising on the recovery of flight data after an accident at sea in October 2014. On this occasion, an investigator from the BEA summarised the work undertaken in the context of the investigation into Rio-Paris flight AF447 and progress in standards and recommended practices requested from ICAO.

6.3 Training Actions Abroad

The BEA organised some training on investigation methods and techniques linked to examinations of Turbomeca engines following an accident. This training, which lasted five days and was held at the Singapore Academy brought together safety investigators from 15 States, mainly from Southeast Asia

6.4 Participation in the work of international organisations

6.4.1 ICAO

The BEA participated actively in the work of the ICAO Flight Recorder Panel (FLIRECP) and is president thereof. New modifications to Annex 6 on follow-up of aircraft above oceanic areas are being studied. All of these modifications are actively proposed and supported by the BEA. They correspond to specific recommendations made in the context of the Safety Investigation into the accident to the Rio-Paris flight.

During the ICAO multidisciplinary conference on tracking aeroplanes, in May 2014, an ICAO Ad-Hoc working group (AH-WG) was set up. The BEA participated actively in this working group on the localisation aircraft in normal flight and during an emergency situation. This work led to the writing of a document defining the general aeronautical distress and safety system(GADSS).

In the context of the preparation of the ICAO high level safety Conference (HLSC) that was held in Montreal in February 2015, the BEA, in 2014, coordinated several working documents in the name of the 44 States of the European Civil Aviation Conference (ECAC), the European Union and Eurocontrol. These documents deal with the localisations of aeroplanes in distress and extreme meteorological conditions. The conclusions of the conference included both these subjects and were strongly oriented around their content.

6.4.2 European Union

The European Regulation set up a structure called ENCASIA (European Network of Civil Aviation Safety Investigation Authorities) to coordinate the work and the experiences of the various European Union Safety Investigation Authorities. The BEA participates actively in the work of this network. In this context, the BEA was particularly active in 2014 in setting up a system of peer reviews. In addition it worked on the identification, formalisation, and the sharing of best European practices in relation to investigations and report writing.

6.4.3 CEAC/ACC

The investigation group of the Member States of ECAC, called ACC, is a very active feedback forum. During its May 2014 workshop, the BEA presented its experience of working on safety investigations on difficult accident sites. The BEA participated in writing the best practices document edited by ECAC following this meeting.

6.4.4 APAC/AIG

The Accident Investigation Group (AIG) of member States from Asia and the South Pacific (APAC) is a forum for exchanging experiences similar to that of the ACC in Europe. France is a member of this group. During its second meeting in May 2014 in Hong-Kong, the BEA presented its experience on sea searches and managed a forum on the same subject.

6.4.5 EUROCAE (EURopean Organisation for Civil Aviation Equipment)

This European organisation, which groups together members of the aviation community and publishes reference documents on specifications for onboard systems, organised its annual symposium in November 2014. The BEA has participated for several years in the work of a number EUROCAE working groups, in particular those dealing with updating the specifications for flight recorders (such as image recorders or ejectable recorders). WG-98 is currently headed by the BEA representative: this group aims to define the specifications for triggering position transmission when an emergency situation is detected automatically by the onboard aircraft systems. Some of the specifications come from recommendations of the investigation into the accident to the Rio-Paris AF447 flight.

EUROCAE recognised this contribution by paying tribute in 2014 to Philippe Plantin de Hugues, who is the BEA representative in this organisation, for his sixteen-year Presidency of EUROCAE working groups.

6.5 Information to Families

In 2014, twelve meetings for the families of victims were held to present the progress of and the conclusions of the Safety Investigation. Four related to general aviation accidents that occurred in France in 2013, eight to public transport accidents that had occurred abroad (one accident that occurred in 2013 and three in 2014). These presentations intended for French families of victims were organised with the agreement of the authorities in charge of the Safety Investigations.

7. HUMAN RESOURCES, FINANCE

7.1 Personnel (as of 31 December 2014)

BEA staff	Public servants	Contractual employees	Workers	Total
Flight crew	-	1	-	**1**
Engineers	35	13	-	**48**
Senior technicians	12	1	-	**13**
Workers	-	-	13	**13**
Administrative staff	15	5	-	**20**
Total staff	**62**	**20**	**13**	**95**

Note: In addition to the staff listed above, 160 Field Investigators (FI) can be added. These investigators, trained by the BEA, act on its requests and under its control and authority, in general in the context of general aviation investigations. They are usually agents employed by DGAC services, and more precisely the inter-regional DSAC service. They operate within the framework of a service contract between the BEA and the afore-mentioned services.

7.2 Budget

The BEA budget for 2014 was set in the initial finance law at €3.043 million in commitment authorisations (CA) and payment appropriations (PA).

An anticipatory reserve reduced this sum to €2.833 million in CA and PA.

7.2.1 Expenditure during the period

Services	Operation		Investment	
	CA (€)	PA (€)	CA (€)	PA (€)
Communication	94 603	51 182	0	0
Logistics	1 088 594	769 971	104 564	120 916
Engineering	209 124	196 642	0	0
Informatics	212 535	210 156	94 464	22 963
Training	169 444	168 976	0	0
Travel	342 658	695 739	0	0
Total (€)	**2 116 958**	**2 092 666**	**199 028**	**143 879**

8. OTHER TOPICS OF INTEREST

8.1 Advance Arrangements with the Services of Other Ministries

European Regulation 996/2010, which fixes the fundamental rules for the organisation of safety investigations, makes it mandatory for the BEA to sign advance arrangements with other services of the State, in particular the Ministries of Justice and of the Interior. These agreements aim to organise coordination between different investigations, which must be led in an independent manner from each other, but must have access to the same evidence and the same data.

The advance arrangement with the Ministry of Justice (direction of criminal affairs and mercy) was signed on 16 September 2014. This arrangement details:

- The steps to be taken as soon as the judicial and safety investigations are initiated in order to ensure coordination between them;
- The procedures to follow in order, specifically, to ensure access to the necessary parts and data, both at the accident site and during subsequent phases.

In the same context, the advance arrangement that existed between the BEA and the Civil Safety services was revised: a supplementary arrangement was signed on 16 June 2014, in order to ensure coordination between the services at accident sites.

8.2 Peer Reviews by European Counterparts

European Regulation 996/2010 specifies that peer reviews must be organised by ENCASIA (European Network of Civil Aviation Safety Investigation Authorities).In this context, each SIA (Safety Investigation Authority) must be evaluated by a panel composed of members of SIA's from other Member States.

ENCASIA thus set up a programme, which covers evaluations of all of the SIA's in the EU Member States (and Associate States) over several years. The BEA volunteered to be among the first four SIA's to be evaluated: the panel of evaluators included agents from the Icelandic and British investigation authorities. The evaluation took place in October 2014. Preparation of this evaluation presented an opportunity for the BEA to update its internal working procedures. The conclusions of this evaluation recognised the quality of the BEA's work and its ability to undertake all types of investigations.

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