



Mid-Air Collisions

1989-1999

SAFETY STUDY

FOREWORD

This study has been published and translated by the Bureau d'Enquêtes et d'Analyses pour la Sécurité de l'Aviation Civile (BEA) to make its reading easier for English-speaking people. As accurate as the translation may be, the original text in French is the work of reference.

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OVERVIEW

This study covers mid-air collisions that occurred over French territory between 1989 and 1999, and which involved at least one civil aircraft.

Mid-air collisions involving patrol flights and flying demonstrations are excluded from this study because, in these cases, the pilots knew the position of other aircraft in the air. Collisions between gliders or which involved a parachutist are also excluded from the following study.

From 1st January 1989 to 30 June 1999, seventeen mid-air collisions were reported.

These collisions caused a total of forty-two deaths and nine injuries. Twenty-seven aircraft were destroyed of the thirty-seven involved.

In three cases, both aircraft involved were able to be flown back to base by their pilots and, in two other cases, one of the aircraft remained flyable through the landing.

Of the seventeen cases studied:

- Three involved mid-air collisions between a transport plane and light aircraft (two cases) or a glider (one case),
- Three involved a collision between a light aircraft and a glider,
- Eleven collisions occurred between light aircraft,
- Nine flights were instruction flights with the instructor on board,
- Two mid-air collisions occurred while one of the two planes was flying IFR.

1 - STATISTICS

1.1 Distribution by Year

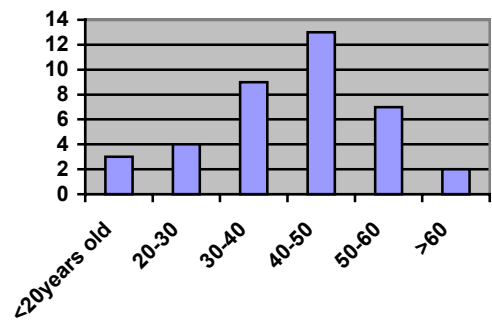
On average, there were 1.5 mid-air collisions per year.

year	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
nb. of mid-air collisions	3	2	1	2	4	0	2	0	1	1	1

1.2 Pilot Information

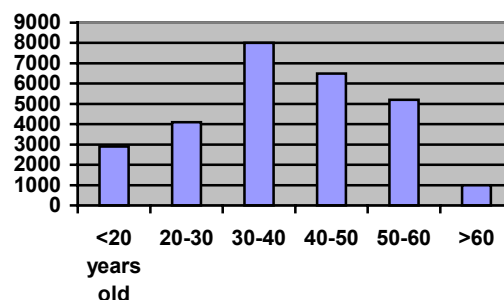
1.2.1 Age

The accompanying bar graph shows the various age ranges of the pilots. All those in the cockpit were taken into account.



Note that all the age ranges are affected by mid-air collisions, with an increase up to the 40-50-age range.

As a rough guide, the second graph shows the age distribution of the private pilot population in 1997. The two graphs show almost the same trend, with the 40-50 age group - where there are a smaller number of licensed pilots - having a higher number of mid-air collisions.

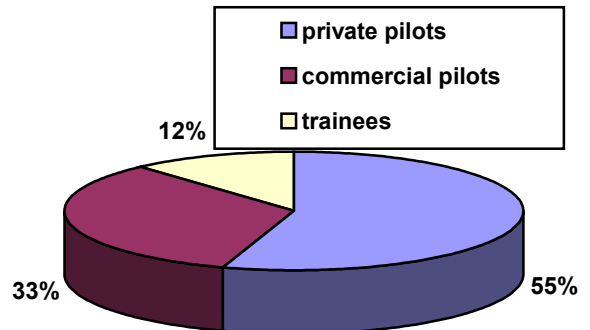


Notice: the above analysis is based on a small group sample and, in the absence of information regarding the exact activity of the pilots in each age group, it seems difficult - not to say impossible - to try to interpret the above findings.

1.2.2 Flying Licenses Held

The accompanying pie chart represents the different flying licenses held by the pilots who were in the cockpit during the mid-air collisions studied.

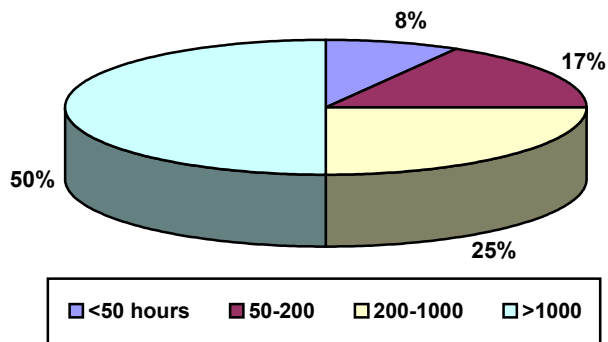
The collisions involved all pilots, regardless of the license they held. The great majority were private pilots. Of the pilots holding a commercial pilot's license, three involved transport aircraft and the others were instructors.



1.2.3 Flying Experience

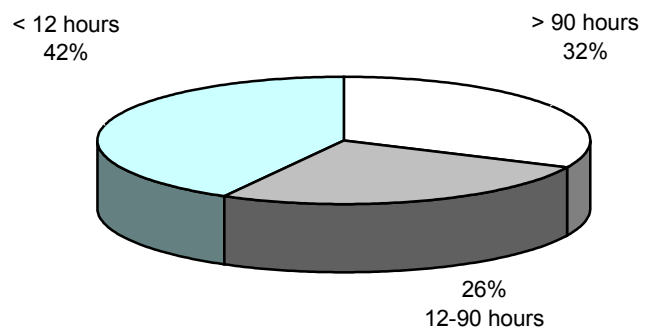
The accompanying pie chart shows the overall flying experience of the pilots involved in the collisions, the number of hours logged for each aircraft corresponding to the number of hours flown by the most experienced pilot in the cockpit.

Note that all types of pilots, experience notwithstanding, are involved in mid-air collisions, with a large number having more than 1,000 flying hours (50%)



1.2.4 Recent Flying Experience

Recent flying experience, covering the last three months of the pilot at the controls, was studied. The 90-hour sector corresponds to professional pilots or instructors. The 12-hour sector corresponds roughly to private pilots flying about one hour per week. In seven cases, the recent experience of the pilot at the controls was very low (about one hour per month).



The lack of recent experience, which lowers the outside monitoring of the pilot in the aircraft, is certainly a serious factor. Nevertheless, it is important to note that pilots who fly regularly are not immune to mid-air collisions.

1.2.5 Flight Duration

At the time of the collision, 56% of the planes had been flying for less than 30 minutes, 35% had been flying for between half an hour and two hours and 9% had been flying for more than two hours.

1.2.6 Vigilance

Most events contain factors that can cause a decrease in vigilance:

- In seventeen planes involved there were two pilots on board. Excluding the three public transport planes where onboard tasks are evenly distributed between the crew members, it is possible to conclude that for other flights the vigilance of each pilot may have relaxed due to the presence of a second pilot, each pilot counting on the other's hypothetical outside monitoring.
- An accident report shows that pilots have significant confidence in the traffic information supplied by air traffic control. It is important to remember that this information on traffic is, as its name indicates, only traffic information known to the controller and on no account a clearance with respect to other aircraft.
- In several cases the aircraft arrived at the aerodrome or in a zone of heavy traffic and the attention of the pilots seemed focused on the search of the runway or of a radio frequency.

At this stage of the study, some conclusions can be drawn:

- **All pilots can be confronted with the risk of collision, whatever their age, their qualifications or their experience.**
- **Although recent flying experience is not a protection against collisions, the lack of training is certainly an aggravating factor.**
- **Flights with several pilots or instruction flights can cause a transfer of attentiveness towards the other pilot.**
- **Increase in the cockpit workload can lead to a decrease in outside monitoring.**

1.3 Information on the Environment

1.3.1 Weather Conditions

All the collisions studied occurred in daytime, while the meteorological conditions were appropriate for VFR flying. It is however necessary to note two cases where the pilots reported poor visibility conditions (end of the day and floating particles in the atmosphere). In six collisions at least one of the pilots had the sun in his face. In three cases the visibility conditions in the air could not be determined.

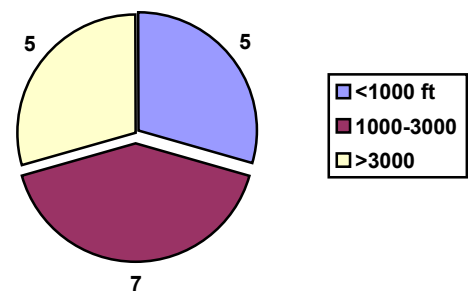
1.3.2 Aircraft Types

Six of the seventeen accidents took place between a high wing and a low wing airplane. In three of these cases the relative position of the wings (high / low wings) constituted a hindrance for the pilots. It is difficult to draw a general conclusion, but it is certain that dead angles caused by the wing, whatever its position, constitute an important hindrance.

1.3.3 Altitude of Mid-air Collisions

The listed collisions occurred at altitudes ranging from 150 to 8,000 feet.

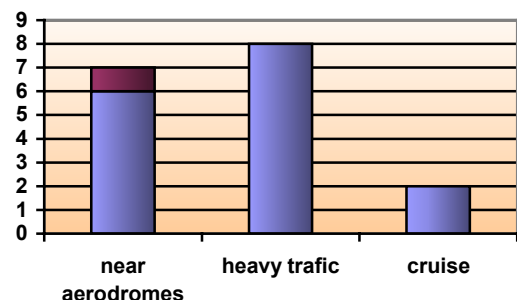
The accompanying graph shows that these accidents occurred mainly below 3,000 feet. It is in this altitude range that most VFR flights are found. In fact, this corresponds to departures, arrivals and aerodrome circuits, as well as a large number of flights in VFR cruise.



1.3.4 Location of Collisions and Phases of Flight

Seven collisions occurred around an aerodrome. In six cases, one of the two planes was in the integration phase. The seventh accident occurred on the extended centerline. One collision occurred at a controlled aerodrome. Air-to air communication was in force at the other aerodromes.

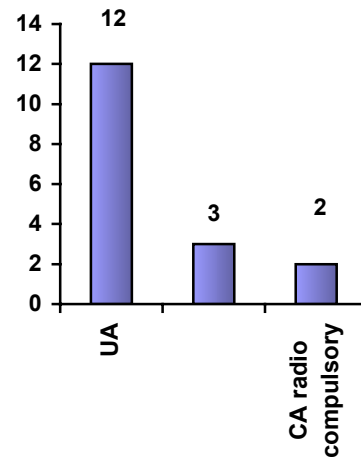
Eight collisions took place in zones where the concentration of traffic is high (vicinity of aerodrome, overhead a radio navigation device, large number of gliders). Only two mid-air collisions took place during cruise.



1.3.5 Airspace

Twelve collisions occurred in uncontrolled airspace (UA). Three took place in controlled airspace (CA) in which radio contact was not compulsory. Finally, there were two accidents in controlled airspace where radio contact was compulsory.

In three cases, one of the two aircraft was passing from controlled airspace to uncontrolled airspace.



1.3.6 Radio

Of the thirty-four aircraft involved in the mid-air collisions, only one had no radio communication equipment.

We have seen that three collisions took place in controlled airspace in which radio contact was compulsory (two in controlled airspace, the third at controlled aerodrome with uncontrolled airspace). Two others took place at uncontrolled aerodromes reserved for aircraft equipped with radio. Problems were caused by:

- radio jamming, frequency congestion or misunderstood radio procedures,
- the absence of radio contact with an air traffic organization or an air-to-air communication frequency,
- miscommunication between the pilot and the controller or between pilots.

Four other accidents took place at aerodromes where radio use was not compulsory. Three occurred during the integration phase. In two of these cases, one of the pilots did not use the radio. In the third accident one of the aircraft had no radio on board.

All these collisions occurred in daytime, in good weather conditions, most often at low altitudes and in zones with heavy traffic. Most took place in uncontrolled airspace or at uncontrolled aerodromes. And finally, radio use was not optimal.

2 - ANALYSIS OF ACCIDENTS

2.1 The See-and-Avoid Rule

The standards and the recommended practices established in Annex 2 of the Chicago Convention, adopted as a national regulation, are applied in French airspace. One of these rules states that:

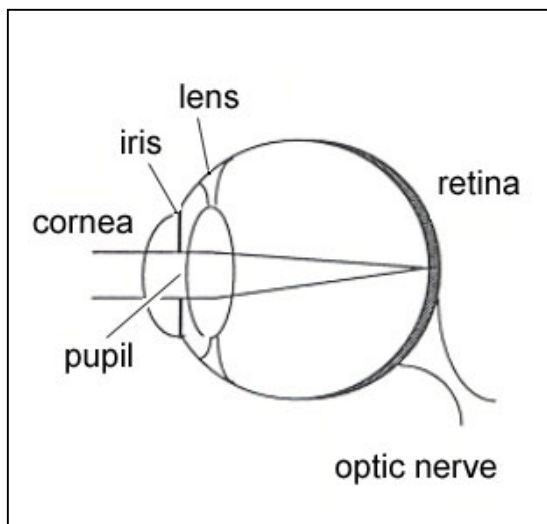
" Regardless of whether an operation is conducted under instrument flight rules or visual flight rules, vigilance shall be maintained by each person operating an aircraft so as to see and avoid other aircraft. "

In certain classes of airspace, air traffic control can give information on traffic and clearance in order to prevent collisions, however see-and-avoid remains the basic rule, in VFR as in IFR flights. This rule was obviously not applied correctly in the seventeen cases studied. Several factors hindered its proper functioning.

2.1.1 Review of Sight and its Limitations

Man's visual perception possesses unique characteristics. It is interesting to study the eye's structure and function as well as its interaction with the brain in order to analyze possibilities and limitations of sight.

2.1.1.1 Description of the Eye

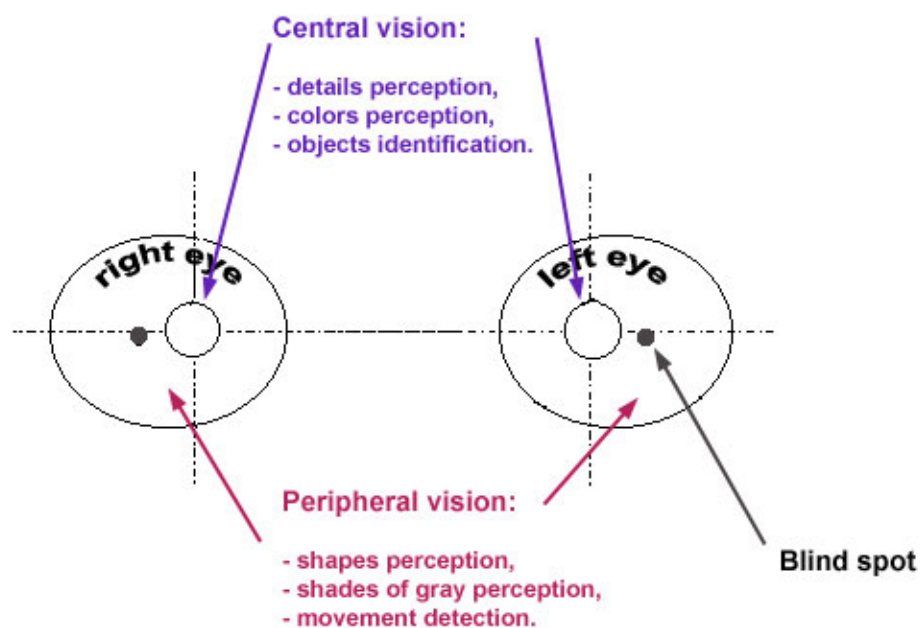


The front part of the eye is called the cornea, a transparent tissue protecting the eyeball. The iris is the colored part of the eye. In the center of the iris is the pupil that allows light to enter the eye. Behind the iris and the pupil is the lens that changes shape through muscle action. This action enables the lens to focus objects at varying distances on the retina.

The retina contains several million light-sensitive cells of two types:

- cones, essentially found in the central part of the retina (the fovea), which are stimulated by bright light and are sensitive to colors. The fovea is the site of greatest visual acuity providing the ability to distinguish fine details.
- rods, much more numerous and essentially found in the outlying area, which are sensitive to faint light, shapes and movement.

While peripheral vision allows only the detection of objects that are strongly contrasted and in movement, central vision ensures identification.



The eye contains about 125 million light-sensitive cells (120 million rods, 5 million cones). The information from these cells is sent to the brain via the optic nerve. This optic nerve consists of around one million nerve fibers. Its function is the coding of the information before sending it to the brain. The optic nerve is connected to the retina at a point where there are no light-sensitive cells. This area is called the blind spot. It is centered, according to certain individuals, between 10 and 16° to the left of the optical axis for the left eye and 10 and 16° to the right of the optical axis for the right eye with each covering a square section of about 3°. No detection is possible in these monocular visual areas. To compensate for the lack of detection in the blind spot of one eye, the brain uses information collected from the other eye.

To demonstrate the eye's blind spot the reader should refer to the following illustration. Cover the left eye and focus on the cross with the right eye. Holding the diagram at arm's length, move it forwards until the plane disappears.



2.1.1.2 Eye Movements

The eye moves in two different ways:

- **tracking:** the eye follows a target and moves with it in a continuous manner.
- **jumping:** the eye makes jerky movements or “jumps” of about $200^\circ/s$ and the brain inhibits any visual analysis during this time. When the eye looks for a distant target, it uses central vision. At great distances areas left undetected, situated between two jumps, are very significant. When the target is closer it can be detected through peripheral vision.

2.1.1.3 Empty-field Myopia

In the absence of a visual stimulus for the eye, as in the case of empty airspace for example, it focuses on its rest position which is located at between 1 and 2 meters, thus hindering the detection of potential distant targets. This phenomenon is called empty-field myopia.

2.1.1.4 Contrast and Visual Acuity

The **contrast** perceived between an object and the background on which it appears is linked to the difference between the brightness of the object (or the quantity of light emitted by the object's surface) and the brightness of the background.

Visual acuity, which determines the quality of an image passed on to the brain by the eye can be likened to the separating power of an optical system. Visual acuity is 10/10 if the eye can separate two points seen within a one-minute angle arc, and 1/10 if the eye distinguishes this detail within 10 minutes. Visual acuity decreases as one moves away from the central field of vision. It is a function of increasing contrast. For example a white glider in a milky sky will be difficult to distinguish.

The blind spot, jerky eye movement, empty-field myopia and the decrease in peripheral vision performance constitute obstacles to the detection of targets or potential conflicts. Furthermore, although the visual acuity of pilots is regularly checked, the eye's capacities diminish with age, environment and fatigue.

2.1.1.5 Psycho-visual Stages

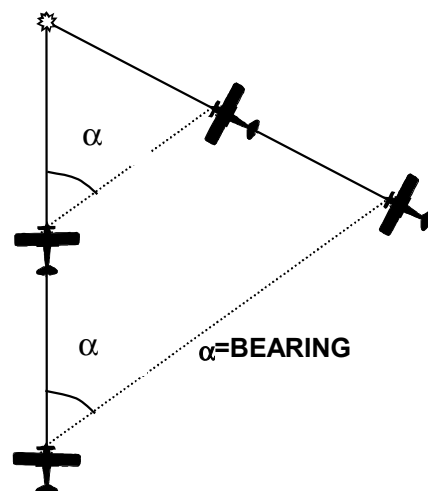
Central mechanisms of perception and memorization are used in the recognition of the shape and the trajectory of an aircraft.

Processing time for visual information is half-a-second for the transmission of the visual message to the central structures and two and a half seconds for brain recognition. The result is a three-second delay between the moment that an aircraft becomes perceptible and the moment that a pilot can identify it as such.

2.1.2 Characteristics of Mid-air Collisions

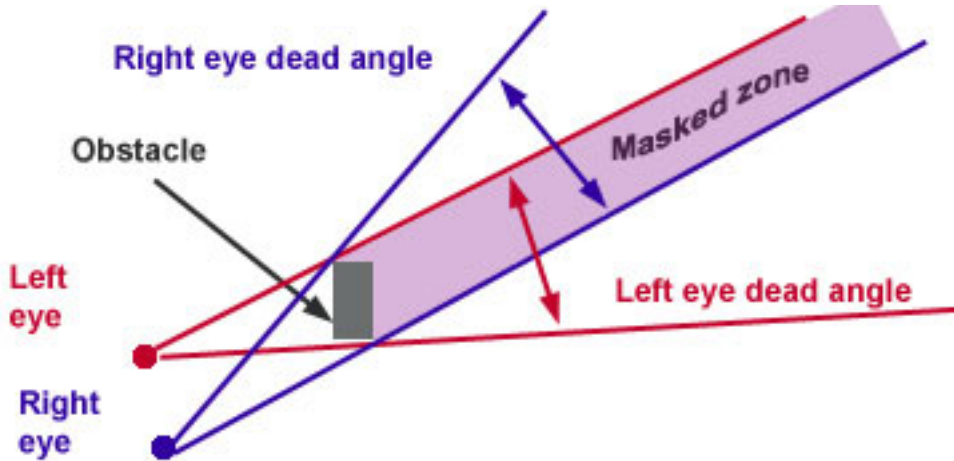
2.1.2.1 Convergence at a Constant Bearing

The pilots of two aircraft flying at a constant speed and altitude and having convergent trajectories will each see the other aircraft at a constant bearing. In other words, the converging traffic will be motionless for the pilot. This visual immobility is dangerous because detection is very often made through peripheral vision and, as seen previously, peripheral vision is mainly stimulated by movement.



2.1.2.2 Dead Angles

Binocular vision passes on two images from the eyes to the brain. For an object placed at infinity both images are similar. For an object moved closer (around one meter) it is observed by both eyes at different angles. This phenomenon allows terrain to be differentiated.



A dead angle corresponds to an area of the environment masked by an object and therefore not seen. So for each eye, which adjusts to infinity, an object placed nearby can constitute a different dead angle. The overlapping of these two areas creates a masked zone that can, according to the situation, stretch to infinity. In a plane a windshield post can create a particularly troublesome dead angle.

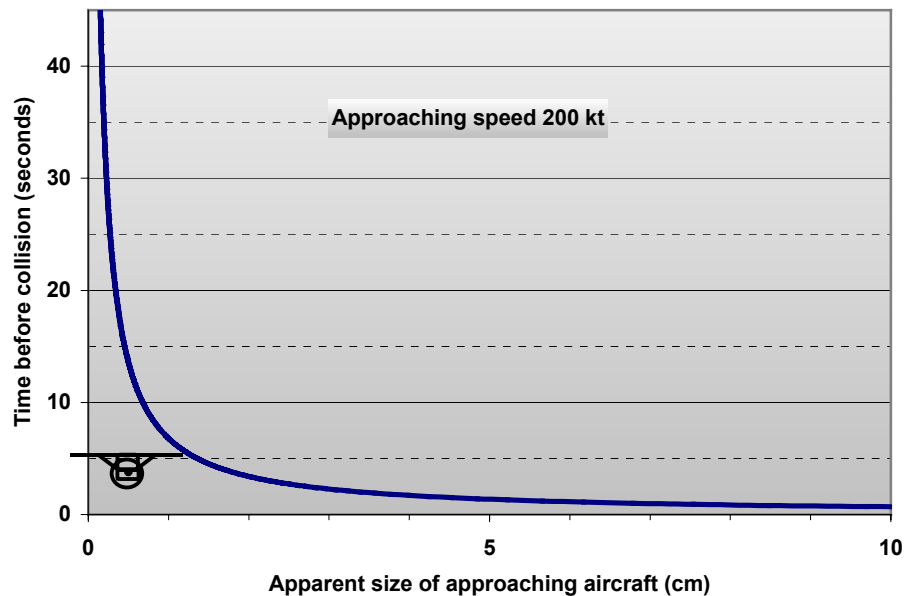
The outside visibility limitations are shown below for the C177, due to the dead angle caused by the door and windshield posts.



It is, in addition, possible to observe a coincidence between the blind spot of one eye and the dead angle of the other.

2.1.2.3 Increasing Size of the Target During Approach

When two planes are approaching, their pilots will obviously see the other plane get bigger. However this increase in size does not follow a law of linear variation. The following drawing illustrates this phenomenon. It represents the view that a pilot flying a plane at 100 kt has of another approaching plane also flying at 100 kt and with about a ten-meter wingspan. In order to better illustrate the drawing, place it at arm's length.



2.1.2.4 Response Time

Response time cannot be considered as a constant. It depends on the pilot and on the aircraft. It includes the recognition of the target (aircraft), the analysis of a potential collision, the decision to avoid it, action on the controls and the time required to maneuver the aircraft. Some seconds are necessary to go through this sequence. Moreover, the element of surprise can delay or block the pilot's response time.

The previous illustration shows the size of an aircraft approaching at low speed five seconds before impact. Detection of this small target, integrated into the workload of the pilot, is not easy.

Apart from the limits inherent in the visual system, conflicting trajectories present very particular characteristics:

- **Convergence at a constant bearing, characterizing conflicting trajectories, and poor contrast between an aircraft and its environment can cause failure in peripheral vision, especially sensitive to the movement of strongly contrasted objects.**
- **The ergonomics of the cockpit and the peculiarities of the human eye can mask certain parts of the airspace.**
- **The small size of the other aircraft just before collision makes detection difficult. Moreover, its sudden increase in size creates a strong element of surprise.**
 - **Finally, avoidance maneuvers are not immediate.**

The see-and-avoid rule can therefore be faulted due to the physiological limits of human sight, accelerated speeds and the ergonomics of aircraft. In a report on a collision between a public transport plane and a glider (in February, 1999) the BEA reached the conclusion on "**the inadequacy of the see-and-avoid concept, considering current characteristics of aviation.**"

Two other factors can contribute to lessen outside vigilance:

- **The in-flight workload is often heavy. During a VFR or IFR flight with a single pilot, the pilot must fly the aircraft, navigate and monitor outside. Sometimes outside monitoring can be delegated to another person present onboard (instructor, another pilot or passenger). This transfer of monitoring, which can be considered as crew work, this mutual confidence, is often made without any verbal exchange or, even sometimes, unconsciously.**
- **It is also possible that during cruise flights, when the workload is light, a certain hypo-vigilance can appear.**

2.2 Knowledge of Regulations

The classification of airspace, identified by a letter, has been in effect in France since April 2, 1992. This classification, corresponding to the stipulations of Annex 2 to the Chicago Convention, allows controlled airspace to be distinguished from uncontrolled airspace, and to associate them with the air traffic services offered. Controlled airspaces are of class A, B, C, D, and E. The uncontrolled airspace is of class F and G. In France, only airspace of classes A, D, E, G exist.

The lack of sufficient knowledge of the rules applying to these classes of airspace often leads pilots to make errors.

In the case of pilots having limited experience or flying little, the nuances between spacing, traffic and flight information are not always assimilated.

- **Spacing:** Air traffic control sets a distance between the positions of two aircraft. The use of spacing implies that air traffic control knows the position of all aircraft.
- **Traffic information:** Air traffic control informs the pilot of the presence of other aircraft, where the position is known or observed (Radio, radar...), in order to help prevent a collision. To supply safe and effective information on traffic the controller needs to know of all the planes flying in his airspace. That is why radio contact is mandatory in airspace where traffic information is provided.
- **Flight information:** Air traffic control gives useful advice and information for the safe and effective operation of flights. A controller or an AFIS agent can, within this context, give information regarding one flight to another aircraft but he does not have complete knowledge of all the traffic.

2.3 Use of Radio Communications

The use of radio, compulsory in certain airspace, is optional in others. Analysis of accidents shows that pilots can thus stay without radio contact, often through fear or habit. By behaving thus, they deprive themselves of the flight information that could be supplied to them. Furthermore, they do not inform the control tower or other aircraft of their presence in the zone.

On the other hand, it sometimes appears that radio use brings a false sense of security. Pilots believe that they are benefiting from traffic information or spacing while, in reality, only flight information is supplied to them. In this case, danger can come from an aircraft unknown to the controller. The latter is applicable to pilots flying under IFR.

2.4 Use of Transponder

As previously mentioned, air traffic control has several methods to identify, separate, and inform pilots. Radio is an information vector that works both ways. Radar also allows controllers to know the position of aircraft better. The first primary radars required no onboard device but radars used today only detect an aircraft if it is equipped with a transponder. Gradually more and more aircraft are equipped with one, as are all commercial airliners and planes flying IFR. Other planes are also often equipped with a transponder, gliders and home-built planes less so. This device, if it is switched on, allows the plane to be tracked on radar screens but it may also allow pilots of planes equipped with the TCAS system to have first-hand knowledge of potentially dangerous traffic. This TCAS system is becoming widespread among commercial airliners.

In the BEA accident report about the mid-air collision on July 30th 1998 off the coast of Quiberon, it is noted that “ *a certain number of users do not apply section RAC 1-05 of the Aeronautics Information Manual relative to the requirement made upon the pilot of a plane equipped with a transponder to use code 7000 with altitude showing in the absence of air traffic control instruction.*” This requirement was included in the documentation given to pilots in a way that could be interpreted as optional, which explains why it is still very little known. Moreover, the transponder is sometimes perceived as a surveillance device used by air traffic organizations to track down offences.

In the last two collisions involving a public transport plane it was found that if the tandem TCAS/transponder had been used, the risks of the collision would have been minimized.

2.5 Mid-air Collisions Near Aerodromes

There are rules, procedures or recommended practices appropriate for decreasing the risk of collision, notably in sectors where the traffic density is high.

This is the case around aerodromes. Some are controlled and radio contact is compulsory, others can be on air-to-air communication and radio use may be optional. For landing, a traffic pattern must be followed and, at aerodromes where radio is not compulsory, an integration maneuver should be performed.

In every case of a mid-air collision near an aerodrome, the radio was not used correctly or, the integration procedure or the runway circuit was not respected. On this last point, there are cases where the pilots ‘shortened’ runway circuits with a concern for efficiency to the detriment of safety.

The non-use of radio, excessive confidence in flight information and misinterpretation of regulations are factors encountered in the accidents studied.

3 - CONCLUSION

This study shows that all pilots whatever their age, their qualifications or the flight rules applied can be confronted with the risk of mid-air collision. The number of these accidents is low, but they often have serious consequences.

The increasing number of aircraft, the complexity of certain routes, the improved performances and ergonomics of cockpits should incite pilots to use all means available in order to detect and to be detected by others.

Finally, regulatory developments are indispensable because the see-and-avoid rule is often the only guarantee of avoiding a collision. This basic rule, in a context where there are more and more constraints, is no longer adequate.

4 - REDUCING THE RISK OF MID-AIR COLLISION

In addition to the recommendations made by the BEA with regard to the accidents in Quiberon and Montpellier, several measures can be suggested on the basis of the preceding findings in order to reduce the risk of mid-air collisions. First of all, considering the limitations of human sight which makes it difficult to spot an aircraft on a collision course, that is to say on a constant bearing, it is advisable to favor everything which can improve perception:

- Use of all the means available in order to be spotted: revolving lights, navigation lights, beacons are an invaluable help; they allow other pilots or controllers to spot the plane much earlier.
- Cleaning the windshield: the study showed that an obstacle, even small, could hide a plane until it is too late to undertake avoidance maneuvers. Flight documents and other objects placed above the instrument panel cause reflections that can hamper visibility through the windshield.
- Systematic use of radio. Contacts organized at the local level among VFR pilots and controllers, themselves often pilots as well, could lead to less reticence and facilitate the correct use of the flight information.
- Systematic use of the transponder, if it is available on board (and if it works with altitude displayed). This allows the controller to know about the traffic and can permit, as a last resort, the crew of a transport aircraft equipped with TCAS to detect conflicting traffic.
- Respect for the approach/arrival path and runway circuits, whatever the imperatives on profitability or schedule.

Pilots in VFR, or flying IFR in airspace where there can be VFR flights, should be made aware of the existence of the real risk of collision and of the importance of being vigilant at all times. Especially:

- Alertness is necessary during the flight to ensure against collisions. For this purpose, good flight preparation, whether under VFR or under IFR, allows the workload to be decreased and, in particular, consultation of flight documentation.
- Perfect knowledge, regularly updated, of the airspaces is indispensable to know the requirements and services offered, as well as the interaction with other flights (by sight or by instruments).
- The level of vigilance should be increased around very busy zones (areas of radio navigation, aerodromes) and when the aircraft is flying with the sun behind its tail.
- The explicit sharing of outside monitoring is desirable before a flight with two persons.

Finally it would be advisable to improve the operation of the see-and-avoid rule, without underestimating the limitations. This comes about with good and regular training of private pilots in:

- methodical execution of the outside monitoring. Dynamic monitoring favoring the search for a target is certainly more effective than a simple glance towards the sky. Pilots should be trained to search and detect,
- the correct execution of an avoidance maneuver. Pilots should be trained to appraise the relative movement of another aircraft and to conceive and quickly execute the correct avoidance maneuver.

Note: the production of films or simulation programs intended for schools and training centers could contribute to the application of these points.

APPENDIX

LIST OF MID-AIR COLLISIONS

DATE	PLACE	DPT	Summary
20/02/89	TARBES	65	Collision between a Merlin IV on IFR approach to Tarbes and a TB10 departing from the same aerodrome. After having left the ATZ (Air Traffic Zone) the TB10 returned to this zone without radio contact.
02/06/89	LES MEES	04	Collision between a Rallye tug plane towing a glider and a DG 300 Glider in transition in a zone of dense gliding traffic.
30/12/89	MOOREA	Polynesia	Collision between a PA28 and a DR400 in a controlled zone. The disregard of the phraseology rules caused confusion that led the controller giving information as to the absence of traffic.
05/05/90	WAMBRECHIES	59	Collision between a Rallye tug plane climbing and towing and a C185 descending after dropping parachutists.
25/09/90	CALVIGNAC	46	Collision at cruise speed at flight level 65 between a PA28 on route 230 and a TB10 on route 350. Both airplanes were respecting the semicircular rule.
13/07/91	VENETTE	60	Collision between a DR400 on initial climb and a Robin 2100 arriving overhead at the aerodrome below the runway circuit.
02/05/92	PLAISIR	78	Collision between a C152 and a DR400. Each aircraft was undertaking a navigation flight. They had taken off from two neighboring aerodromes in the Paris region.
06/11/92	15 NM TARBES aerodrome	65	Collision between two CAP10 on instruction flights.
13/03/93	PONT SUR YONNE aerodrome	89	Collision on initial climb between an microlight and a Jodel having taken off from two parallel runways.
23/07/93	MASSINGY	74	Collision between a PA28 and a C172 at cruising speed at 8 000 feet in the class E Chambéry TMA. The two planes had just crossed the class C airspace of the Geneva TMA on different routes.
11/11/93	TOUSSUS le NOBLE aerodrome	78	Collision between a C150 and a RF3 on a base leg. Both planes had just joined the runway circuit. The radio frequency was garbled.
23/12/93	LE CASTELET aerodrome	83	Collision on final approach between a Rallye and a CAP10 at the end of an aerobatic flight. The approach paths of each plane were very different.
25/07/95	LA POINTE	64	Collision between a TB10 and a DR400 during the arrival of a stage of the Tour de France for young pilots. One aircraft joined a holding pattern at a CTR entry point while the other aircraft arrived through the same point.
18/08/95	VINON aerodrome	83	Collision between a Rallye tug plane and a glider. The Rallye, on the last turn and on a short circuit, hit the back of the glider.
09/03/97	MONTARGIS aerodrome	45	Collision between a PA28 arriving overhead above the airfield and a Stampe undertaking aerobatic maneuvers without a radio.
30/07/98	QUIBERON	56	Collision between a Beechcraft 1900 having cancelled IFR and a C177 above the passenger ship NORWAY.
12/02/99	GORNIES	34	Collision between a A320 flying IFR descending towards Montpellier and a G103 glider on a local flight.