International Civil Aviation Organization

WORKING PAPER

A36-WP/108
TE/19
28/8/07
(Information paper)
English only

ASSEMBLY — 36TH SESSION

TECHNICAL COMMISSION

Agenda Item 30: Other safety matters

AIRPROX INVESTIGATION IN THE UNITED KINGDOM

(Presented by the United Kingdom)

EXECUTIVE SUMMARY	
This Paper describes the comprehensive, well-established arrangements in the UK in respect of Airprox investigation and reporting. The UK's methodology brings together civil and military practitioners under the auspices of one joint organisation and is rooted firmly in the "Just Culture" principle of drawing lessons for the benefit of others rather than seeking to apportion blame. This is a model which the UK believes to have positive safety benefits. A co-operative and non-accusatory approach leads to mutual understanding and better resolution of the issues facing different users of the shared airspace.	
Strategic Objectives:	This Information Paper relates to Strategic Objective A: Enhance global civil aviation safety.
Financial implications:	Not applicable.
References:	ICAO Global Aviation Safety Plan (GASP) Appendix A (GSI-3 and GSI-6) *Effective Errors and Incidents Reporting and Analysis in the Industry* Doc 4444, PANS-ATM (*Procedures for Air Navigation Services – Air Traffic Management*) Paragraph 16.3 and Appendix 4. Doc 9859, *Safety Management Manual (SMM)*

1. INTRODUCTION

1.1 Formed in 1999, the UK Airprox[1] Board (UKAB) is an independent organisation where military and civilian people work together on all aspects of Airprox. To emphasise the joint nature of the work, UKAB is sponsored and funded jointly by the UK's Civil Aviation Authority (CAA) and Ministry of Defence (MoD).

[1] The word "Airprox" is used in this Information Paper both as the code word to designate 'aircraft proximity' and, for convenience, as a short form of 'aircraft proximity'.

1.2 The UK Air Accidents Investigation Branch (AAIB), Department for Transport, is responsible for the investigation of civil aircraft accidents and serious incidents within the UK. In situations where the initial reports of an Airprox indicate that the event was or may have been particularly serious, ie an actual risk of collision existed, the AAIB may elect to conduct an investigation. In these circumstances and by mutual agreement, the UKAB will work in parallel and in cooperation with the AAIB. The resulting UKAB report will focus purely on the Airprox itself whereas the AAIB may elect to take a broader perspective.

1.3 The mission of the UKAB is to enhance flight safety in the UK, in particular in respect of lessons to be identified and applied from Airprox occurrences reported within UK airspace. The activities of Airprox investigation; determination of cause; determination of the degree of risk; making Safety Recommendations; recording incident details on a database for analysis and publication of finalised Airprox reports are all coordinated by the one joint organization, the UKAB. This approach has stood the test of time.

2. ICAO PROVISIONS IN RESPECT OF AIRPROX

2.1 Procedures for Airprox (aircraft proximity) reporting are detailed in ICAO Doc. 4444, PANS-ATM (Procedures for Air Navigation Services - Air Traffic Management) Paragraph 16.3. PANS-ATM Appendix 4 covers the ICAO model Air Traffic Incident Report form and instructions for its completion.

2.2 PANS-ATM defines AIRPROX as follows:

"AIRPROX: The code word used in an air traffic incident report to designate aircraft proximity."

2.3 The following is an extract from PANS-ATM Chapter 16:

"16.3 AIR TRAFFIC INCIDENT REPORT

16.3.1 An air traffic incident report shall be submitted, normally to the air traffic services unit concerned, for incidents specifically related to the provision of air traffic services involving such occurrences as aircraft proximity (AIRPROX), obstructions on runways, runway incursions, or other serious difficulty resulting in a hazard to aircraft, caused by, among others, faulty procedures, non-compliance with procedures, or failure of ground facilities.

16.3.2 Procedures should be established for the reporting of aircraft proximity incidents and their investigation to promote the safety of aircraft. The degree of risk involved in an aircraft proximity should be determined in the incident investigation and classified as "risk of collision", "safety not assured", "no risk of collision" or "risk not determined".

16.3.3 When an accident/incident investigative authority conducts an investigation of an aircraft proximity incident, the air traffic services aspects should be included."

3. IN THE UK, HOW IS AN AIPROX DEFINED AND WHO FILES SUCH A REPORT?

3.1 In UK terminology, an Airprox is "a situation in which, in the opinion of a pilot or an air traffic controller, the distance between aircraft as well as their relative positions and speed have been such that the safety of the aircraft involved was or may have been compromised."

3.2 It is the convention in the UK that only pilots[2] or air traffic controllers can file an Airprox[3]. Such reports come from across the whole spectrum of aviation activity: military; general aviation, including gliders; air traffic controllers, area, terminal and aerodrome as well as commercial air transport pilots and their air traffic controllers. Aircraft can be flying inside or outside controlled airspace, some not in receipt of an air traffic control service. Whilst Airprox reports are not accepted from members of the public, such reports are acknowledged informally.

3.3 The UK's Airprox reporting scheme[4] is not 'mandatory' in the accepted sense of the word. Commercial air transport pilots and civilian air traffic controllers may well be required to submit an occurrence report under the UK's Mandatory Occurrence Reporting Scheme but the decision to classify such a report as an Airprox is at the behest of the reporter. Pilots flying purely for recreation are strongly encouraged to submit – and indeed, do submit - Airprox reports as necessary in the overall interests of flight safety.

3.4 A loss of separation is not necessarily an Airprox nor indeed is a 'TCAS RA': the decision to submit an Airprox report rests with the pilot or air traffic controller involved, having due regard to the definition above.

3.5 Once filed, only the person who submitted the Airprox report can withdraw it if, in the light of further information from e.g. a radar replay, it is decided that another form of safety report would be more appropriate.

4. INVESTIGATION

1.1. Approximately 200 Airprox reports are received each year, about 90% of which result in full investigations by the UKAB (the other 10% of reports being withdrawn by the originator). The investigation is directed by UKAB Secretariat staff (see Section 5 below), often in communication

[2] In the UK, reports are also accepted from parachutists notwithstanding that such persons are outside the definition of 'pilot'.

[3] On a case-by-case basis, a report is very occasionally accepted from someone who is not one of the pilots in the subject incident but is judged by the Director UKAB to be competent to make such a report. This might for example happen where the pilot of a glider being winch-launched would not have been able to see an aircraft approaching from ahead whereas the groundcrew, comprised of other knowledgeable people, would have full visibility of events.

[4] Note that the UK's Airprox reporting scheme applies to Airprox within UK airspace, defined as comprising "all Classes of airspace within the London and Scottish FIRs, UIRs, the Shanwick Oceanic FIR/UIR and Channel Islands Regulated Airspace." When flying in UK airspace, foreign civil/military pilots are expected to submit an Airprox report if appropriate.

with military unit/airline operator/flying club/air traffic service unit and/or pilot(s)/controller(s). Receipt of a report triggers an extensive information-gathering phase. Occasionally both pilots in an incident submit reports but, if not, then tracing action is taken. Such action must be initiated as soon as possible, whilst radar and RT recordings are still available. The success rate in tracing the other aircraft is about 95%.

1.2. On receipt of a report at the UKAB, a reference number is assigned and data such as radar recordings are impounded and subsequently called forward for analysis if required. Transcripts are produced from the recordings of RT/landline conversations and instructions given at the time. Head up display and cockpit voice recordings from military aircraft and GPS data from glider data loggers are other useful sources of information. Most importantly, reports are collected from all of the pilots and/or controllers involved, allowing each of them to say what happened as they saw it from their perspective.

4.1 Further investigation is then carried out by staff from the Safety Regulation Group (SRG) of the CAA, by their counterparts from the MoD, and/or by staff from the UKAB Secretariat – the Airprox Inspector. Either radar data or 'best information' facilitates calculation of miss distance for inclusion in the Airprox Inspector's report, this - where possible - including a radar-based diagram of the incident. Once the investigation is complete, the report is put before the Board (see Section 5 below). Comment on what happened is invited from the Board Members together with the Members' assessment of the cause(s) and 'risk level' in each of the cases (typically 20) tabled at each Board meeting.

5. THE UK AIRPROX BOARD: ITS CONSTITUTION AND METHOD OF WORKING

1.3. In 'people' terms, the UKAB is comprised of two main sections, a Board supported by the Secretariat. Six people form the Secretariat: two from military backgrounds, two whose experience is civilian and two administrators. One of the civilians has a background in air traffic control, the other is from flight operations: the two staff having military backgrounds mirror this arrangement. In addition to bringing broad experience in their chosen professions, Secretariat staff are – or become – multi-disciplined, to be able to tackle all aspects of any given Airprox. Although not always possible, any new investigation is allocated to the Airprox Inspector with the most appropriate background.

1.4. The Board is similarly comprised of civilian and military Members, the majority nominated either by civilian organisations or MoD. Members are drawn from across the aviation spectrum, from disciplines such as airline piloting; military ATC 'area' and 'terminal' control; rotary wing operations, military and civilian; civilian 'area', 'terminal' and 'airfield' air traffic control and 'general aviation' flying including gliding. In addition there are expert Advisors, people who are invited to attend and advise Board Members on specialist aspects of particular incidents. Advisors come from disciplines such as military low flying and air defence; safety regulators; the UK's predominant air traffic service provider, NATS; the UK's Directorate of Airspace Policy etc. A typical Board meeting thus has a total of 25-30 people at the table, people bringing their collective experience to the assessment of Airprox.

1.5. With such a spread of aviation disciplines, it is most important to ensure that the balance of Board membership remains equally weighted, civil/military and pilot/controller. It is therefore incumbent on Members always to attend Board meetings so as to ensure that this balance is maintained.

1.6. It is important to note that Members and Advisors are regarded as 'seasoned (experienced) professionals', nominated to the Board by various civil and military aviation agencies and organisations. Members sit on the Board as aviation experts in their own right, not 'representing' the organisations that nominate them. At a Board Meeting, Advisors are invited by the Chairman to inform and advise the Board on specialist aspects. Additionally, Advisors may be consulted during the investigation phase for specialist comment. It is also noteworthy that many of the Members and Advisors are active in an area of aviation other than their profession: two of the air traffic controllers are 'general aviation' pilots in their off-duty hours for example.

1.7. As mentioned above, the Board's role is to consider carefully all of the information presented and then determine two things:

5.5.1 What factor(s) caused the Airprox; and

5.5.2 What degree of risk was involved, using as a basis the ICAO risk classifications.

1.8. With regard to the cause, the UKAB has, over time, established certain 'standard phrases' such as 'late sighting by..' or '..flew over a notified and active gliding site' which the Board uses as appropriate. This facilitates entry into the UKAB database and brings a measure of consistency without excluding the possibility of new wordings as and when justified.

1.9. It is essential to stress that in making its assessment of an Airprox, the Board is **never** concerned with 'looking for someone to blame'. Names of individuals and organisations are held within the Secretariat solely to facilitate a full investigation: confidentiality is always respected. This policy accords with the UK position that a just culture is essential to facilitate safety improvements.

1.10. Unlike findings on 'cause', where more than one reason can influence the final outcome, there is only ever one finding on 'risk'. This is set out according to the agreed ICAO scale of A, B, C or D[5]. 'Risk A' (ICAO definition 'Risk of Collision') means that there was an actual risk of aircraft collision involved, usually when a number of safety nets had failed. At the other end of the scale, 'Risk C' (ICAO definition 'No risk of collision') means there was no collision risk: a safety net may have been breached but others sprang into place to ensure the situation did not deteriorate further or was recovered safely. A 'Risk B' situation (ICAO definition 'Safety not assured') covers the ground between these two extremes. It embraces the concept of safety being compromised to an extent where, although the risk of an actual collision may have been averted, the aircraft involved ended up too close together: safety had not been assured.

1.11. On occasion it is not possible fully to reconcile the differing views around the Board table. A vote is then taken, 14 Members across the full range of disciplines being entitled to vote. (In the event of a 7:7 split, the Chairman has the casting vote).

1.12. With cause(s) and degree of risk assessed, the Board may decide that one or more factors in the Airprox were worthy of highlighting as Contributory Factors. Also, the Board may decide to make one or more Safety Recommendation(s): in this regard see Section 6 below.

1.13. Finally, as has been mentioned it is UK practise that pilots and/or controllers can file Airprox and

[5] The Board is encouraged not to use Risk Category D unless fully justified by lack of information on the subject Airprox.

only the reporter can initiate withdrawal action. Experience has shown that there are occasions when the Board, whilst respecting the reporter's right to file, does not share the concern that safety was or may have been compromised. In such circumstances, the Board may – after discussion - determine that the cause of the Airprox was a 'sighting report' (from a pilot) or 'controller perceived confliction' (from an air traffic controller). Such assessments are automatically rated as Risk C, 'no risk of collision'.

6. SAFETY RECOMMENDATIONS

6.1 Where appropriate, Safety Recommendations are made when the Board believes that attention needs to be drawn to particular safety matters, e.g. where improved practices may prove beneficial or where risk bearing incidents are repeated. Subsequent 'acceptance' or 'non acceptance' and decisions on the action to be taken are matters for the organization concerned to decide, based on its own professional judgment.

6.2 The majority of UKAB Safety Recommendations are addressed either to the CAA, the MoD or jointly to both. It is well established practice that CAA and MoD give particularly thorough attention to such Safety Recommendations, the responses thereto being approved at very high-levels within the respective organizations. The UKAB advises addressees that the Safety Recommendation itself and the associated response will be published, on the internet and in hardcopy. If a Safety Recommendation has been 'accepted' but it is not possible to complete the necessary action in a short timescale then Updates are sought – every six months – and published, again on the internet and in hardcopy. An addressee can subsequently propose that a Recommendation be 'Closed' – it is accepted practice that the UKAB makes the final decision in this regard.

6.3 To date, 89% of the Safety Recommendations made by the UKAB have been 'accepted' and acted upon. Given that a UKAB Safety Recommendation identifies an issue that needs to be addressed, without saying how (that being a matter for the addressee(s) of the Recommendation), it is unrealistic to expect that every such Recommendation will be accepted. Detailed consideration by the addressee may conclude that further action either cannot be taken or is perhaps not justified. A figure of 85~95% of all UKAB Safety Recommendations 'accepted' is considered to be satisfactory and in accord with 'best practice' in for example air accident investigation.

6.4 In summary, the UK system in respect of UKAB Safety Recommendations is robust, open and widely respected. The Airprox Board takes a very responsible approach to making any Safety Recommendation; addressees take a very responsible approach to deciding their responses and all parties acknowledge the benefit of a process that – by wide dissemination of Safety Recommendations and responses through to the completion of action – is transparent and open to the widest international audience.[6]

[6] Full details of all UKAB Safety Recommendations, categorised by year of the associated Airprox, can be found on the "Safety Recommendations" page of the UK Airprox Board website, www.airproxboard.org.uk

7. COMMUNICATION

7.1 The UK considers it vital to communicate widely the outcome of its Airprox investigations and assessments. The UKAB website is located at http://www.airproxboard.org.uk/ where a considerable amount of information can be found, including full reports into all Airprox assessed by the Board. The website is supplemented by hardcopy publications (including articles in industry journals); CD-ROMS and approximately 10 presentations per annum at flight safety forums. Hardcopy publications are particularly appreciated in crew rooms where air crews and air traffic controllers can browse the Airprox reports. Presentations give the opportunity to emphasise the independent nature of the UKAB and the approach that is adopted: as one of the presentation slides emphasises - “we are definitely not looking for someone to blame”.

8. EXAMPLES OF THE FLIGHT SAFETY OUTCOMES

8.1 Actions taken in response to the UK Airprox Board’s many Safety Recommendations provide excellent examples of the safety benefits of the system. For example:-

8.1.1 The CAA required NATS to devise and implement a standard procedure for use in the North Sea Area, under conditions agreed with the helicopter operators, such that in circumstances when helicopters would otherwise be obliged to fly at the same altitude on conflicting tracks, an acceptable form of separation is assured from the outset;

8.1.2 The MoD conducted a comprehensive review of Visual Identification procedures taking into account their influence on ACAS equipment;

8.1.3 Following a joint review by CAA and MoD, an 8000fpm rate of climb and descent restriction has been introduced in UK Controlled Airspace within the London and Scottish FIR/UIR; and

8.1.4 A chart production company decided on a number of general specification changes which will be applied to all its VFR+GPS and Glider charts better to depict glider winch launching sites.

8.2 Flight safety lessons as identified by the UK’s Airprox activity are widely disseminated for the benefit of air crews and air traffic controllers, in particular through the internet and also by hardcopy publications.

8.3 Aware of the comprehensive database of Airprox incidents occurring in UK airspace, many enquiries are received for analyses. Such enquiries come from UK Government; industry and academia as well as from individual airlines and military units. The UKAB always endeavours to provide comprehensive answers to such queries where the purpose is flight safety related.

9. CONCLUSION

9.1 The adoption of a solution which brings together civilian and military operators and air traffic controllers is a model which the UK believes to have positive safety benefits. Such co-operation leads to mutual understanding of the issues facing different users of shared airspace. Strenuous efforts are made to communicate that the UK Airprox Board’s objectives are to identify what happened; what was the outcome; what lessons can be disseminated for the benefit of others and what if any action should be taken to reduce the risk of repetition. “Looking for someone to blame” is definitely not on the agenda:

striving for a “Just Culture” definitely is. An understanding of the safety issues arising from the UK’s Airprox system enhances national and international flight safety awareness with the sole aim of improving safety standards in the air.

10. ACTION BY THE ASSEMBLY

10.1 Delegates are invited to note this well-established, positive approach by a Contracting State to respond to its responsibilities in respect of Airprox reporting; investigation; assessment; communication of lessons identified and initiation of safety improvement actions.

10.2 The UK Airprox Board’s Director can be contacted at peter.hunt@airproxboard.org.uk who welcomes discussion on Airprox topics.

10.3 The UKAB website is located at http://www.airproxboard.org.uk/

— END —