



WORKING PAPER

**ACCIDENT INVESTIGATION AND PREVENTION (AIG)
DIVISIONAL MEETING (2008)**

Montréal, 13 to 18 October 2008

**Agenda Item 1: Annex 13
1.6: Final Report**

SHARING SAFETY RECOMMENDATIONS

(Presented by France, on behalf of the European Community and its Member States¹,
and by the other States Members of the European Civil Aviation Conference²)

SUMMARY

This paper discusses how safety recommendations can be shared and used more effectively. It describes the various steps towards a common international safety recommendation database compatible with the ADREP/ECCAIRS reporting system.

Action by the meeting is in paragraph 3.

1. INTRODUCTION

1.1 The 36th Session of the International Civil Aviation Organization (ICAO) Assembly adopted the Working Paper³ presented by Portugal, as a common European paper, which identified improved implementation of Safety Recommendations as an area in which States' Safety Programmes could be better supported and enhanced. A large number of recommendations have a general impact on safety and could concern other States who are not directly addressed. Nowadays, it is very difficult for a State to be aware of the whole range of safety recommendations issued by the various investigation authorities. Some States have also taken safety related actions that are not directly inspired by incident/accident report analysis. Finally some recommendations are addressed to ICAO or other international organizations. To avoid duplication of effort, it was recommended to make use of the work

¹ Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom. All these 27 States are also Members of the ECAC.

² Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Croatia, Georgia, Iceland, Moldova, Monaco, Montenegro, Norway, San Marino, Serbia, Switzerland, The former Yugoslav Republic of Macedonia, Turkey and Ukraine.

³ ICAO, 36th session of the Assembly held in Montreal, September 18-28, 2007; Item 28: Protection of certain accident and incident records and of safety data collection and processing systems in order to improve aviation safety, Working Paper A36-WP/224 TE/74 entitled "Development of States' Safety Programmes", presented by Portugal, on behalf of the European Community and its Member States, by the other Member States of the European Civil Aviation Conference (ECAC), and by Eurocontrol. Available at : http://www.icao.int/icao/en/assembly/a36/wp/wp224_en.pdf

already done and to share mutual experiences. Electronic tools for safety recommendations such as IT portals and easily accessible databases have been envisioned.

1.2 In accordance with this vision, the European safety investigation authorities developed, in association with the Joint Research Centre (JRC), Eurocontrol and the European Aviation Safety Agency (EASA), a common database system to encode, follow up and share the information relating to safety recommendations on a wide scale. This working paper aims to introduce this database and its components.

2. DISCUSSION

2.1 Safety enhancements expected

2.1.1 The European working group that gathers together European investigation authorities concluded that recommendations raise two challenges: 1) It is easier to get a positive reaction on recommendations following a disaster than following a serious incident. 2) Recommendations issued by an investigation authority seldom lead to, or are even used in, ICAO work on safety issues.

2.1.2 The responsibility of correctly demonstrating the need for specific changes rests with the originator of the recommendation. It is generally better to quote other distinguished investigation authorities that have similar conclusions to give more leverage for a persuasive safety case. A common sharing of occurrence data and information on safety recommendations will be more efficient in convincing safety recommendation addressees that changes are needed.

2.1.3 The adoption of the ADREP 2000 taxonomy and its implementation in the ECCAIRS⁴ system have since facilitated electronic exchanges of safety data. The rising worldwide utilization of ECCAIRS should help in increasing the ability to recognize emerging risks and increasing threats prior to their manifestation in an accident.

2.1.4 Sharing experience of the effectiveness of past safety recommendations and their related corrective actions (when carried out by the addressees) should be helpful when facing complex occurrences and considering the issue of new recommendations.

2.1.5 The quick dissemination of recommendations of general interest and a more effective use by the whole community of findings identified by an organization represent another domain of action. A recent study on safety recommendations⁵ of general interest for the community (i.e. not aimed at a specific operator) recommended that this dissemination task be handled at ICAO level, in a similar way to what has been undertaken for the Accident/Incident Data Reporting (ADREP) system. ICAO answered positively, though the safety investigation community does not currently have any appropriate tools to carry out this task.

⁴ **ECCAIRS**: European Co-ordination Centre for Aviation Incident Reporting Systems. ECCAIRS release 4 is a database developed by the European Commission that supports the ADREP 2000 taxonomy. This comprehensive software can manage high number of occurrences, facilitates exchanges of occurrence data, export of data in many suitable formats, enables graphic representations, etc.

⁵ Bureau d'Enquêtes et d'Analyses pour la sécurité de l'Aviation Civile (2006). *Etude – Recommandations de sécurité à portée générale en transport public – bilan 1995-2005*. Le Bourget, France: Author. From <http://www.bea.aero>

2.2 Description of the safety recommendation taxonomy

2.2.1 The investigation authorities of the European States expressed the need to enhance the sharing of safety recommendations. They also acknowledged their common view on the best practices for issuing and managing safety recommendations. In this context, they created a task force in November 2006 with a mandate to develop a specific taxonomy to store data related to safety recommendations. The task force grouped together members from AAIB, AAIU, BEA, BFU as well as EASA, Eurocontrol and JRC.

2.2.2 The main objectives of the task force were to review existing safety recommendation systems implemented at national level, agree on standardized definitions and provide a minimum list of attributes and values to be considered as a common framework. This taxonomy is hierarchically structured and includes categories that characterize the safety recommendation data and cover the main subjects of interest. In practice, this taxonomy should remain simple, easy to remember and easy to use, as it was designed initially at the level of details needed by users. Finally, this taxonomy was also designed to be modular, extendable and compatible with other worldwide recommendation systems (i.e. Australia, Canada, United States).

2.2.3 The next phase consists of implementing this taxonomy into a data system that will feature a user-friendly interface. To ensure high quality data collection, the user-interface will have full customization and will support rules during data entry. The three main entities, safety recommendations, responses and actions are the logical containers of attributes as defined by the structure of the taxonomy. Most of the values are stored in coding tables with drop-down lists thus limiting the use of free-text (except text and notes). The different organizations involved, originator, addressee, party concerned are clearly identified and this should facilitate a common sharing of information.

2.2.4 A unique identifier for the safety recommendations will be assigned by the originator and every recommendation can be detailed with its background. Various scenarios were taken into account. For example, a single recommendation is addressed to one appropriate authority, but it can involve several parties and may have multiple responses, from various responders. One response may generate multiple actions.

2.2.5 The status, assessment and classification for all entities will be stored in the system, ensuring a clear distinction between the originator and the addressee point of views.

2.2.6 In addition to text fields, recommended to be in English, the encoding sections should help to cope with the various languages and provide powerful means of data search. Similar safety recommendations may be issued by different originators but address one common topic. The system should help to identify previous replies given to a similar topic or assess the impact of a given recommendation. Such a classification of the information should facilitate follow-up of recommendations when issued as well as the identification of factors or safety issues emphasized by previous recommendations.

2.3 Nearing a common database

2.3.1 All these elements were brought to the attention of the JRC, ICAO and EASA during the October 2006 ECCAIRS Steering Committee where the ECCAIRS 4.3 release was also announced. This future release will introduce a new architecture for supporting different domains other than just aviation for example.

2.3.2 The recommendation tool will be developed on the future ECCAIRS common framework architecture. The ECCAIRS occurrence reporting system is already widely used at European and international level. It is logical to complement this infrastructure, making sure the process simplifies and enhances the safety data flow without creating a complicated and burdensome system. A safety recommendation will be commonly linked to one or more occurrences reported through ECCAIRS. However, it should also be considered as an independent system since safety recommendations can be collected, integrated and disseminated with or without the link to occurrences (see appendix). All existing utilities and functionalities for data viewing, editing, querying, and export become available at no extra cost. Historical data from existing systems will be made compatible thanks to a conversion process.

2.3.3 The adoption of a common taxonomy and its implementation in a safety recommendation database system should facilitate electronic exchanges. At this stage, different scenarios can be proposed: data file exchanges and/or a centralized database. The first option is easy to implement since the different systems can be installed and managed at national level. Therefore, different means of communication (FTP, E-mails, etc.) can be used to share data. The second option would facilitate definitive data sharing if the central database is managed by a single organization. The two scenarios are not mutually exclusive and can be considered together.

2.3.4 It should be stressed that the recommendation tool can be broken down into two tiers. The first tier consists of a common “target” taxonomy, which can be implemented by any organization or IT vendor. The second tier is about to become a reality thanks to the next ECCAIRS common architecture framework (4.3). This gives more choices to authorities, therefore, the full recommendation database system represents the ultimate solution for the best use of each other’s safety work.

2.3.5 The sharing and wide dissemination of data that are related to the recent safety strategies embraced by authorities have required a certain level of mutual confidence between the many entities involved. In return, there were also requirements for an efficient communication process as well as for a common view of the applicable procedures and acceptable working methods. The preliminary work confirmed that such a step forward was possible in Europe. This is in line with the recent development of Safety Management Programmes.

3. ACTION PROPOSED

3.1 The meeting is invited to:

- a) approve the utility of implementing a common tool to share and manage safety recommendations;
- b) note that sharing safety recommendation fulfils the recommended practice laid out in Annex 13, paragraph 8.9; and
- c) recommend ICAO to adopt a common taxonomy for safety recommendations as part of the overall ADREP taxonomy, by using the preliminary work undertaken in Europe (see also note in Annex 13, paragraph 8.9).

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APPENDIX

SAFETY RECOMMENDATIONS AND ECCAIRS TOOLS

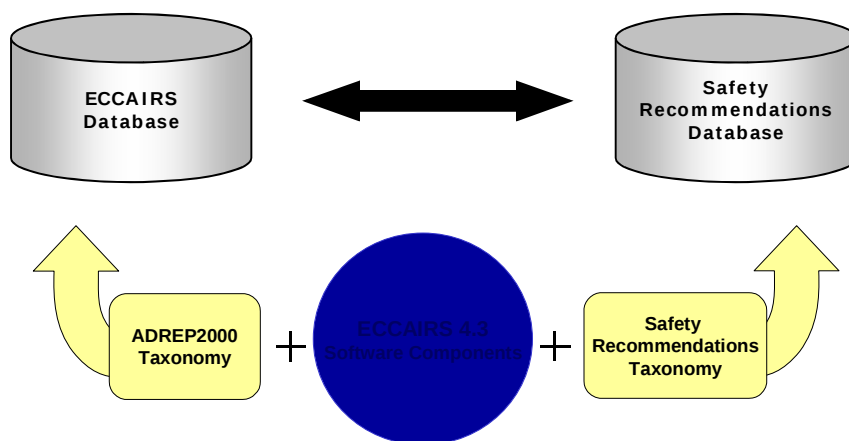
ECCAIRS 4.2 environment implements ICAO's current ADREP2000 taxonomy (data-definition). This taxonomy incorporates a limited section of recommendation types (ICAO ADREP chapters).

The ECCAIRS 4.3 release will introduce a new architecture for supporting different domains (broader than aviation). It will allow for all existing ECCAIRS tools to support a safety recommendation database on the sole condition that an appropriate taxonomy be available. All utilities and functionalities for data entry and data export will work easily with this new database.

The safety recommendations database should be considered as a stand alone database which can be linked to ECCAIRS (if available) in an n:n relation:

- one recommendation can be linked to various occurrences
- one occurrence can be linked to various recommendations

Two separate systems linked by a n:n relation



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