



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**

ISSUING 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 presents a comprehensive set of guidelines on the identification of recommendations, their drafting and their follow-up. It proposes to incorporate these guidelines into ICAO Doc 9756 and to complete the definition of a safety recommendation in Annex 13.

Action by the meeting is in paragraph 4.

1. INTRODUCTION

1.1 During a workshop held in Athens on 30-31 May 2006, the European Group of Experts on accident investigations (ACC)³ worked on several items in relation to the issuing of safety recommendations:

- a) the identification of recommendations (subject, content);
- b) the drafting of recommendations (form, recipient); and
- c) the follow-up of recommendations.

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 The Group of Experts on Investigation (ACC) was established in 1991. It groups the Safety Investigation Authorities of the 44 ECAC Member States and benefits from the participation of observers representing the European Commission, EASA, the Interstate Aviation Committee from the Commonwealth of Independent States, the United States National Transportation Safety Board, the Transport Safety Board of Canada, aircraft manufacturers, IATA and IFALPA.

1.2 The meeting reasserted the importance of safety recommendations as a central tool for the progress of aviation safety. The debates enabled a clarification of the doctrine on safety recommendations, which led to a comprehensive set of guidelines presented hereafter.

2. GUIDELINES

2.1 Identification of Safety Recommendations

2.1.1 An interim safety recommendation should be issued as soon as a safety deficiency is identified and short term actions to address at least provisionally are required from the appropriate entities. This does not prevent the safety recommendation from being refined and completed during the investigation.

2.1.2 Investigation authorities take part in the safety feedback loop by disseminating information in relation to the findings raised in the course of their investigations. In most cases, an event occurs when operations are carried out in the context of a downgraded situation, be it known or unknown to the actors. The risk is increased as operations drift closer to the blurred line that stands between safe and dangerous operations. Then, the report issued maintains risk awareness by simultaneously reminding the community of the safety limits defined by the standard procedures, as well as by providing operators with concrete examples of the decision-making process and related issues.

2.1.3 In some remarkable cases, an investigation identifies a systemic failing within what the community believed to be the safety limit as delineated by regulations and standards. In such a case, a recommendation must be issued, so that the appropriate authority can take corrective actions.

2.1.4 Other accidents are related to an unforeseen combination of known factors or an unforeseen factor.

2.1.5 Normally, when an investigation concludes with (probable) causes, the report should include for each cause either the corrective actions that were taken or safety recommendations to prevent its recurrence.

2.1.6 A recommendation that operators or actors should follow procedures is useless because it would state something obvious. The safety recommendation is relevant for situations which are unforeseen by the system. Systematic non-compliances may lead to systemic changes.

2.1.7 It is worth noting that a recommendation is not enforceable per se. In order to influence the intended corrective action, the recommendation must be backed by strong evidence and a persuasive analysis. Also, having the regulators as formal addressees (directly or indirectly) reinforces this feedback system by enhancing the safety recommendation follow-up process, even when they are not the final addressees.

2.1.8 The recommended corrective actions sometimes require significant resources, such as in research and development, and the addressee might fear that the corrections prove, some years later, to have very little curative impact. Indeed, the investigation must point out the prevailing conditions that led to the event, and the recommendation should focus on the factors that could preclude these conditions. However, the circumstances of the event are characterized by intricate interactions between many “components”, such as the crew, the aircraft, Air Traffic Management, airline management, all evolving over time. From this perspective, it is important to globally assess the possible consequences of a given

recommended action. In fact, a safety recommendation should describe the safety problem and provide justification for safety actions while attention should be focused on the problem rather than the suggested solution.

2.1.9 During aircraft accident investigations, safety issues are often identified which did not contribute to the accident but, nevertheless, show safety deficiencies. These safety deficiencies should be addressed in the final report. Some States include safety recommendations not related to the causes of the accident in the “safety recommendations” section of the final report. Other States have developed means other than the final report to notify the appropriate authorities of safety deficiencies that are not related to the accident, although any actions taken are usually described in the final report (ICAO Doc 9756).

2.2 Drafting of recommendations

2.2.1 A safety recommendation should in no case create a presumption of blame or liability for an accident or incident. It has to be drafted accordingly.

2.2.2 The facts that led to the recommendation should be summarized as it must stand alone in a letter or in a dedicated database and as a reviewing entity may not be aware of its precise context.

2.2.3 The facts and the analysis that drive the recommendation must be backed by strong evidence and clear cause-and-effect relationships. They must be convincing.

2.2.4 In order to ensure that appropriate action is taken, each safety recommendation should include a specific addressee. This addressee should be the first entity expected to take actions to address the recommendation. This is usually the appropriate authority of the State which has responsibility for the matters with which the safety recommendation is concerned, but it may be other entities (e.g. manufacturers, operators, service providers).

2.2.5 Detailed explanations and pre-coordination with the addressee can help in drafting a well tailored and convincing text. Independence is not isolation.

2.2.6 A safety recommendation should identify what objective to reach, but leave scope for the authorities responsible for the matters in question to determine how to accomplish the objective of the recommendation. The safety investigation authority may lack the detailed information and experience required to evaluate the financial, operational and policy impacts on the addressee of specific and detailed recommendations.

2.2.7 A State conducting investigations of accidents or incidents must copy, when appropriate, any safety recommendations arising out of its investigations to the accident investigation authorities of other State(s) concerned and, when ICAO documents or activities are involved, to ICAO (Annex 13, 6.9).

2.2.8 When final reports contain safety recommendations addressed to ICAO, because ICAO documents or activities are involved, these reports must be accompanied by a letter outlining the specific action proposed (Annex 13).

2.2.9 There are different types of safety recommendations. Some are taken in the aftermath of an accident. Others stem from the argumentation in the report or are based on safety studies. There are also long term safety recommendations or safety recommendation of general interest. Their drafting may differ.

2.3 Response and follow-up

2.3.1 After the release of a safety recommendation, dialogue should be maintained in a similar manner to what had been done during its drafting phase.

2.3.2 Systematic, unambiguous and public answers to all the recommendations issued by an investigation authority are needed.

2.3.3 Those who could be adversely affected by a safety recommendation should be given the opportunity to comment on the draft recommendation before it is issued. The confidentiality of the process has to be ensured.

2.3.4 The safety investigation authority should implement procedures to monitor the progress of a safety recommendation that it has issued.

2.3.5 The addressee should inform the safety investigation authority of the preventive action taken or under consideration, or the reasons why no action will be taken.

2.3.6 The addressee of a safety recommendation should be required to determine within a suitable time period its position and/or the action(s) envisaged to manage any established safety risk.

2.3.7 Sharing recommendations (via electronic means) and experience on their effectiveness is helpful when facing complex occurrences and when considering issuing new recommendations (see WP on sharing safety recommendations).

2.3.8 The translation into English of all the recommendations issued and the setting up of a common database are two practical measures to make them easily accessible (see WP on sharing safety recommendations).

2.3.9 Finally, a State or an organization that was not an addressee of a safety recommendation but acts upon it as a result of sharing, should inform the originator of the safety recommendation of the preventive action taken or under consideration.

3. DEFINITION OF A SAFETY RECOMMENDATION

3.1 According to the Annex 13 definition, a safety recommendation is “a proposal of the accident investigation authority of the State conducting the investigation, based on information derived from the investigation, made with the intention of preventing accidents or incidents”.

3.2 From the point of view of prevention, Annex 13 also acknowledges the possibility of issuing safety recommendations with reference to circumstances which are not strictly related to the conduct of an investigation on a specific accident or incident. In fact, Annex 13 recommendation 8.8 provides that “in addition to safety recommendations arising from accident and incident investigations, safety recommendations may result from diverse sources, including safety studies”. For consistency, it is proposed to amend accordingly the definition of a safety recommendation.

4. **ACTION PROPOSED**

4.1 The meeting is invited to:

- a) review the guidelines for drafting and issuing safety recommendations presented in this working paper;
- b) incorporate these guidelines into ICAO Doc 9756 according to the proposed Appendix B; and
- c) consider the amendment proposed in Appendix A about the definition of a safety recommendation.

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APPENDIX A

PROPOSED AMENDMENT TO ANNEX 13

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CHAPTER 1. DEFINITIONS

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Safety recommendation. A proposal of the accident investigation authority of the State conducting the investigation, based on information derived from the investigation, made with the intention of preventing accidents or incidents. In addition to safety recommendations arising from accident and incident investigations, safety recommendations may result from diverse sources, including safety studies". For consistency, it is proposed to amend accordingly the definition of a safety recommendation.

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APPENDIX B

PROPOSED AMENDMENT TO DOC 9756

ICAO Doc 9756 - Manual of aircraft accident and incident investigation Part IV – Reporting (first edition – 2003)

Chapter 1. – Appendix 1: Format and Content of the Final Report.

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4. SAFETY RECOMMENDATIONS

4.1 REGULATORY AND INVESTIGATION AUTHORITIES

4.1.1 The investigation authority is responsible for the investigation of all civil aircraft accidents and serious incidents occurring in or over its territory. However, evaluation of the findings of an accident investigation and the determination of the need for, and the initiation of, appropriate action to maintain and enhance safety is an important part of safety regulation, i.e. the responsibility of the regulatory authority. A good working relationship between the two authorities is thus essential, while this must in no way jeopardize the independence of the accident investigation.

4.1.2 Effective day to day liaison must be maintained between the regulatory and the investigation authorities, which is particularly useful in the immediate aftermath of any accident. However, the formal procedure by which the safety investigation authority identifies and conveys to the regulatory authority, or other entities, matters which it believes require action is by means of safety recommendations.

4.1.3 Recommendations can be made at any stage as the investigation progresses. Generally, they are part of the final report (Chapter 4 in the international model). The regulatory authority has formal procedures for the receipt and evaluation of such recommendations and initiation of necessary action. In its evaluation the civil aviation authority considers all the implications of the recommendation and action being proposed. The regulatory authority may act as a rulemaking authority or it may act as a safety oversight authority. When the regulatory authority is not the direct addressee of the recommendation, it just monitors the actions stemming from it.

4.2 SAFETY RECOMMENDATION DOCTRINE

~~4.1~~ 4.2.1 In accordance with Annex 13, the sole objective of the investigation of an accident shall be the prevention of accidents and incidents. A safety recommendation should in no case create a presumption of blame or liability for an accident or incident. It has to be drafted accordingly. Therefore, the determination of appropriate safety recommendations is of utmost importance. The safety recommendations are actions which should prevent other accidents from similar causes or reduce the consequences of such accidents. In order to ensure that appropriate action is taken, each safety recommendation should include a specific addressee. This addressee should be the first entity expected to take actions to address the recommendation. This is usually the appropriate authority of the State which

has responsibility for the matters with which the safety recommendation is concerned, but it may be other entities (e.g. manufacturers, operators, service providers).

4.2 4.2.2 Annex 13 requires that at any stage of the investigation of an accident, the accident investigation authority of the State conducting the investigation shall recommend to the appropriate authorities, including those of other States, any preventive action that is considered necessary to be taken promptly to enhance aviation safety. The interim safety recommendations made during the investigation may be presented in the safety recommendations part of the final report. Also, the preventive actions taken in response to the interim recommendations should be presented, as well as any other preventive actions taken by the appropriate authorities and the industry, such as changed operating procedures by the aircraft operator and the issuance of service bulletins by the manufacturer. Some States present the interim safety recommendations and describe the preventive actions taken in the factual information part, Section 1.18, in lieu of including this information in the safety recommendations part. Publishing the preventive actions taken in the Final Report has significant accident prevention value for those involved in similar operations.

4.2.3 Investigation authorities take part in the safety feedback loop by disseminating information in relation to the findings raised in the course of their investigations. In most cases, an event occurs when operations are carried out in the context of a downgraded situation, be it known or unknown to the actors. The risk is increased as operations drift closer to the blurred line that stands between safe and dangerous operations. Then, the report issued maintains risk awareness by simultaneously reminding the community of the safety limits defined by the standard procedures, as well as by providing operators with concrete examples of the decision-making process and related issues. In some remarkable cases, an investigation identifies a systemic failing within what the community believed to be the safety limit as delineated by regulations and standards. In such a case, a recommendation must be issued, so that the appropriate authority can take corrective actions. Other accidents are related to an unforeseen combination of known factors or an unforeseen factor. Normally, when an investigation concludes with (probable) causes, the report should include for each cause either the corrective actions that were taken or safety recommendations to prevent its recurrence. A recommendation that operators or actors should follow procedures is useless because it would state something obvious. The safety recommendation is relevant for situations which are unforeseen by the system. Systematic non-compliances may lead to systemic changes.

4.3 4.2.4 A safety recommendation should describe the safety problem and provide justification for safety actions. In order to influence the intended corrective action, the recommendation must be backed by strong evidence and a persuasive analysis. An example of a recommendation is given in Table 1-4. The investigation must point out the prevailing conditions that led to the event, and the recommendation should focus on the factors that could preclude these conditions. However, the circumstances of the event are characterized by intricate interactions between many “components”, such as the crew, the aircraft, Air Traffic Management, airline management, all evolving over time. From this perspective, it is important to globally assess the possible consequences of a given recommended action. In fact, a safety recommendation should describe the safety problem and provide justification for safety actions while attention should be focused on the problem rather than the suggested solution. Consideration should be given to whether a safety recommendation should prescribe a specific solution to a problem or whether the recommendation should be flexible enough to allow the addressee latitude in determining how the objective of the recommendation can be achieved. A safety recommendation should identify what actions to take, but leave scope for the authorities responsible for the matters in question to determine how to accomplish the objective of the recommendation. This is particularly important if all the salient facts are not available and additional examination, research and testing appears necessary. In addition, the accident investigation authority may lack the detailed information and experience required to evaluate the financial, operational and policy impacts on the addressee of specific and detailed recommendations. Detailed

explanations and pre-coordination with the addressee can help in drafting a well tailored and convincing text. Independence is not isolation.

4.4 4.2.5 During aircraft accident investigations, safety issues are often identified which did not contribute to the accident but, nevertheless, are safety deficiencies. These safety deficiencies should be addressed in the Final Report. Some States include safety recommendations not related to the causes of the accident in the safety recommendations part of the Final Report. Other States have developed means other than the Final Report to notify the appropriate authorities of safety deficiencies that are not related to the accident, although the action taken are usually described in the Final Report.

4.5 4.2.6 In summary, the safety recommendations should include a convincing presentation of the safety problem with the attendant safety risks deriving from it, as well as a recommended course of action for the responsible authority to take in order to eliminate the unsafe condition. The safety recommendations should identify what action is required, but should leave considerable scope for the implementing authority to determine how the problem will be resolved.

4.3 RESPONSE AND FOLLOW-UP

4.3.1 After the release of a safety recommendation, dialogue should be maintained in a similar manner to what had been done during its drafting phase.

4.3.2. Systematic, unambiguous and public answers to all the recommendations issued by an investigation authority are needed.

4.3.3. Those who could be adversely affected by a safety recommendation should be given the opportunity to comment on the draft recommendation before it is issued. The confidentiality of the process has to be ensured.

4.3.4. The safety investigation authority should implement procedures to monitor the progress of a safety recommendation that it has issued.

4.3.5. The addressee should inform the safety investigation authority of the preventive action taken or under consideration, or the reasons why no action will be taken.

4.3.6. The addressee of a safety recommendation should be required to determine within a suitable time period its position and/or the action(s) envisaged to manage any established safety risk.

4.3.7. Sharing recommendations (via electronic means) and experience on their effectiveness is helpful when facing complex occurrences and when considering issuing new recommendations. The translation into English of all the recommendations issued and the setting up of a common database are two practical measures to make them easily accessible.

4.3.8. Finally, a State or an organization that was not an addressee of a safety recommendation but acts upon it as a result of sharing, should inform the originator of the safety recommendation of the preventive action taken or under consideration.

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