



事故调查和预防（AIG）专业会议（2008 年）

2008 年 10 月 13 日至 18 日，蒙特利尔

议程项目 1: 附件 13
1.6: 最后报告

发布安全建议

（由法国代表欧洲共同体及其成员国¹并由欧洲
民用航空会议其他成员国²提交）

摘要

本文件提出了关于确定建议、起草建议及对建议采取后续行动的一套完整的指导方针。文件提议将这些指导方针纳入国际民航组织 Doc 9756 号文件并完成附件 13 当中安全建议定义。

会议的行动在第 4 段。

1. 引言

1.1 在 2006 年 5 月 30 日—31 日在雅典举行的一次讲习班上，欧洲事故调查专家组（ACC）³就关于发布安全建议的若干个项目进行了工作：

- a) 确定建议（题目、内容）；
- b) 起草建议（形式、接受方）；和

¹ 奥地利、比利时、保加利亚、塞浦路斯、捷克共和国、丹麦、爱沙尼亚、芬兰、法国、德国、希腊、匈牙利、爱尔兰、意大利、拉脱维亚、立陶宛、卢森堡、马耳他、荷兰、波兰、葡萄牙、罗马尼亚、斯洛伐克、斯洛文尼亚、西班牙、瑞典和联合王国。所有 27 个国家均是欧洲民航会议的成员。

² 阿尔巴尼亚、亚美尼亚、阿塞拜疆、波斯尼亚和黑塞哥维那、克罗地亚、格鲁吉亚、冰岛、摩尔多瓦、摩纳哥、黑山、挪威、圣马力诺、塞尔维亚、瑞士、前南斯拉夫马其顿共和国、土耳其和乌克兰。

³ 调查专家组（ACC）于 1991 年成立。它包括欧洲民用航空会议 44 个成员国的安全调查当局，并有代表欧洲委员会、欧洲航空安全机构、前独联体国家的国家间航空委员会、美国国家运输安全委员会、加拿大运输安全委员会、航空器制造商、国际航协和航空公司驾驶员协会国际联合会的观察员参与。

c) 对建议采取后续行动。

1.2 会议重申了安全建议作为推动航空安全的一项主要工具的重要性。会议的讨论得以澄清关于安全建议的学说，从而产生了本文介绍的一套完整的指导方针。

2. 指导方针

2.1 确定安全建议

2.1.1 一旦查明一项安全缺陷并且需要有关实体采取短期行动以至少临时处理这一缺陷，就应该发布一项中期安全建议。这并不妨碍在调查过程当中改进和完成安全建议。

2.1.2 调查当局参与安全意见反馈的环节，发送有关调查过程当中发现问题的信息。在大多数情况下，事件是在降低标准情况下从事运行时发生的，无论这一点对于行动者而言是已知还是未知。随着运行逐渐游离接近于在安全运行和危险运行之间那条模糊不清的界线，风险也相应提高。因此，所发布的报告通过提醒业界注意标准程序所界定的安全限制，同时向运营人提供决策过程和相关事项的具体范例，就保持了风险意识。

2.1.3 在某些值得注意的情况下，一项调查查明了一个系统缺陷，而该缺陷却是在业界认为规章和标准所界定的安全限制范围之内。在这种情况下，就必须发布一项建议，以便于有关当局采取纠正行动。

2.1.4 其他事故涉及到已知因素的意料之外的组合，或涉及一种意料之外的因素。

2.1.5 通常而言，如果一项调查得出了关于（很可能的）原因的结论，则报告也应该针对每项原因提出已经采取的纠正行动或旨在预防其再次发生的安全建议。

2.1.6 如果一项建议提出运营人或行动者应该遵循程序，则这项建议是没有用处的，因其陈述了显而易见的事情。安全建议对于系统无法预见的情况是有用的。有系统的违规可能导致系统性的变化。

2.1.7 值得指出的是，安全建议本身无法得到强制执行。为了推动采取理想的纠正行动，则安全建议必须伴有强有力的证据和令人信服的分析为后盾。此外，将监管者作为建议的正式接受方（无论以直接形式还是间接形式）则强化了这一意见反馈系统，增强了安全建议后续机制，即使监管者不是有关建议的最终接受方。

2.1.8 有些时候，所建议的纠正行动需要巨大资源，例如科研经费，建议接受方可能担心纠正行动在若干年之后证明收效甚微。事实上，调查必须指出造成事件发生的主导条件，建议应该重点强调能够预防这些条件的因素。然而，事件的发生情形是由于许多“组成部分”，例如机组人员、航空器、空中交通管理、航空公司管理之间错综复杂的互动造成的，而这些组成部分又都不断演变。从这一角度而言，重要的是要在全局范围内评估某一特定建议行动的可能结果。事实上，一项安全建议应该描述安全问题，并提出采取安全行动的理由，同时应该将注意力集中到问题本身而非所建议的解决办法。

2.1.9 在航空器事故调查过程中查明的安全事项往往不是促成事故的原因，但是却暴露出安全缺陷。应该在最后报告当中处理这些安全缺陷。某些国家在最后报告的“安全建议”部分列出了与事故原

因无关的安全方面的建议。另一些国家制定了不同于最后报告的其他作法，将与事故没有关联的安全隐患通知给有关当局，尽管最后报告通常对所采取的行动做出介绍（国际民航组织 Doc 9756 号文件）。

2.2 起草建议

2.2.1 在任何情况下，安全建议都不得就一个事故或事故征候来假设过错或责任。必须相应进行起草工作。

2.2.2 应该概述促使建议产生的事实，因为建议必须是在一封信件或一个专用数据库当中独立存在，而审查实体可能没有意识到其确切背景。

2.2.3 促成建议产生的事实和分析必须伴有强有力的证据和明确的因果关系为后盾。它们必须具有说服力。

2.2.4 为了确保采取适当行动，每项安全建议都应该列出具体的接受方。这个接受方应该是预期采取行动来处理建议的第一个实体，通常是对有关的安全建议事项负有责任的国家有关当局，但也可能是其他实体（例如制造商、运营人、服务提供者）。

2.2.5 与建议接受方做出详细解释和事先进行协调，有助于起草一份合适的具有说服力的案文。独立并不意味着孤立。

2.2.6 一项安全建议应该指明要实现什么目标，但是为负责有关事项的当局留出余地来确定如何实现建议的目标。安全调查当局可能缺乏所需的详细信息和经验，来评估具体而详尽的建议对于接受方产生的财务、运行和政策影响。

2.2.7 对事故或事故征候进行调查的国家，须在适当时候将其调查产生的安全建议发送给其他有关国家的事态调查部门，如涉及到国际民航组织的文件或活动，还须将此发送给国际民航组织（附件 13，6.9 段）。

2.2.8 最后报告包含发送给国际民航组织的安全建议时，因涉及到国际民航组织的文件或活动，这些报告必须附上信件，概括提议采取的具体行动（附件 13）。

2.2.9 安全建议的类型各不相同。某些建议是在事故发生之后提出的。其他建议则源于报告当中的论据或基于安全研究。此外还有长期性的安全建议或一般意义的安全建议。其起草方式可能有所不同。

2.3 回应和后续行动

2.3.1 在发布一项安全建议之后，应该按照在起草阶段的对话方式来保持对话。

2.3.2 需要对调查当局发布的所有建议提供系统性的、十分明确的公开答复。

2.3.3 应该给那些可能受到一项安全建议的负面影响的人士提供机会，在发布建议之前就建议草案提出意见。这一过程的保密性必须得到保障。

2.3.4 安全调查当局应该实施程序，监控其发布的安全建议的进展情况。

2.3.5 接受方应该向安全调查当局通报已采取的或正在考虑采取的预防行动，或将不采取任何行动的理由。

2.3.6 安全建议的接受方应该在适当的时间范围内，确定为了管理既定安全风险所设想的立场和/或行动。

2.3.7 在面临复杂的发生情况和考虑发布新的建议时，（通过电子手段）分享建议及其有效性方面的经验将是有帮助的（见关于分享安全建议的工作文件）。

2.3.8 将发布的所有建议都译成英文并且设立共同数据库，这是使其易于查询的两个切实可行的措施（见关于分享安全建议的工作文件）。

2.3.9 最后，如果一个国家或组织并非安全建议的接受方，但是通过分享安全建议而对建议采取了行动，则应向安全建议的始发方通报已经采取的或正在考虑采取的预防行动。

3. 安全建议的定义

3.1 根据附件 13 的定义，安全建议是“从事调查的国家的调查机构，根据调查所得资料而提出的用以预防事故或事故征候的建议”。

3.2 从预防角度而言，附件 13 还确认了针对那些并非严格局限于某一特定事故或事故征候调查情况而发布安全建议的可能性。事实上，附件 13 建议 8.8 段规定，“除了源于事故和事故征候调查的安全建议以外，安全建议还可产生于多种来源，包括安全研究”。为了保持一致性，建议对安全建议的定义做出相应修订。

4. 拟议的行动

4.1 请会议：

- a) 审查本工作文件提出的起草和发布安全建议的指导方针；
- b) 根据附录 B 的提议将这些指导方针纳入国际民航组织 Doc 9756 号文件当中；和
- c) 审议附录 A 提出的对安全建议定义的拟议修订。

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附录 A

对附件 13 的拟议修订

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第 1 章 定义

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安全建议 从事调查的国家的调查机构，根据调查所得资料而提出的用以预防事故或事故征候的建议。除了源于事故和事故征候调查的安全建议以外，安全建议还可产生于多种来源，包括安全研究。为了保持一致性，提议对安全建议的定义做出相应修订。

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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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