

ELEVENTH AIR NAVIGATION CONFERENCE

Montreal, 22 September to 3 October 2003

**Agenda Item 2: Safety and security in air traffic management
(ATM)**

**2.1 Safety management systems and programmes
:**

ICAO PROVISIONS AND GUIDANCE MATERIAL FOR ATS SAFETY MANAGEMENT

(Presented by the Secretariat)

SUMMARY

This paper presents a summary of the provisions of Annex 11 and the PANS-ATM in relation to safety management, and introduces the new *Manual on Safety Management for Aerodromes and Air Traffic Services*.

Action by the Conference is in paragraph 3.

1. INTRODUCTION

1.1 Safety has always been the primary objective of air traffic services (ATS), as specified in Annex 11 — *Air Traffic Services*, paragraph 2.2. This objective may be summarized as ensuring the safe, orderly and expeditious flow of air traffic. With the increasing significance of air transport to the world economy, and the increasing costs of operating aircraft, there is also a need to ensure that the ATS system is as efficient as possible. However, safety must always be the primary objective.

1.2 The ICAO provisions relating to safety management in ATS are found in Annex 11, Section 2.26, the *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444), Chapter 2, and the *Manual on Safety Management for Aerodromes and Air Traffic Services* (AN-Conf/11-IP/9 refers). These provisions require States to implement systematic and appropriate safety management programmes to ensure that their ATS systems achieve an appropriate level of safety. In this context, the expression “ATS system” can be seen as the totality of the hardware, software and personnel required to operate the system, together with the standards and procedures which govern its operation.

1.3 While the amendments introducing these provisions were applicable from 28 November 2002, States were not required to establish acceptable levels of safety and safety objectives for their air traffic services until 27 November 2003. Until that date, the establishment of acceptable levels of safety and safety objectives has the status of a Recommendation.

1.4 Section 2.26 of Annex 11 also specifies that, when applicable, the safety levels and safety objectives shall be established on the basis of regional air navigation agreements.

2. DISCUSSION

2.1 In the aviation context, safety is generally thought of, by the public, as being an absence of aircraft accidents. While the complete elimination of accidents would be desirable, it must be recognized that such “perfect safety” is an unachievable goal; failures and errors will eventually occur, in spite of the best efforts to avoid them. This is true of all forms of human endeavour. Most of the activities which we undertake in our daily lives involve some degree of risk. We regard a particular activity as “safe” when we assess the risk to be acceptably small.

2.2 The goal of aviation safety programmes is to control the processes which could lead to hazardous events, in order to minimize the probability of accidents.

2.2.1 An ATS safety management programme can address only those risks in the overall aviation system where ATS could be a contributory factor.

2.3 Implementation of a formal safety management programme requires more than a general statement that safety is paramount. It requires that performance targets in relation to safety be defined, and that mechanisms be put in place which will allow the organization to show that these safety targets are being met.

2.4 Chapter 2 of the PANS-ATM expresses the objectives of ATS safety management as ensuring that:

- a) the established level of safety applicable to the provision of ATS within an airspace or at an aerodrome is met; and
- b) safety-related enhancements are implemented wherever necessary.

2.4.1 Recognizing that some failures and errors will still occur, the achievement of these goals requires that procedures are put in place to:

- a) reduce as far as practicable the number of failures and errors which occur in the system; and
- b) enable errors and failures to be detected, and remedial action taken, before they lead to an accident.

2.5 The provisions of the PANS-ATM require that the safety management programme should, as a minimum, include:

- a) monitoring of overall safety levels and detection of any adverse trend;
- b) safety reviews of ATS units;
- c) safety assessments in respect of planned implementation of airspace re-organizations, the introduction of new equipment systems or facilities, and new or changed ATS procedures; and
- d) a mechanism for identifying the need for safety enhancing measures.

2.6 The PANS-ATM does specify in more detail issues which should be taken into account in establishing a safety management programme and the types of changes to a system which would require a safety assessment to be carried out. However, it was recognized that further guidance would be needed by many States, particularly with regard to issues such as the setting of acceptable levels of safety and the conduct of safety assessments. As provisions relating to safety management have also been introduced for aerodromes, it was decided to produce a joint document: the *Manual on Safety Management for Aerodromes and Air Traffic Services* to provide this guidance.

2.6.1 The publication of this manual as a joint document also represents a first step towards the adoption of a harmonized approach to safety management, as proposed in the system safety approach (AN-Conf/11-WP/5 refers) and described in the ATM Operational Concept presented in AN-Conf/11-WP/4.

2.7 The manual is structured so that the basic principles of safety management, common to both aerodromes and ATS, are covered first. These include, *inter alia*:

- a) factors affecting system safety, with a particular emphasis on human error;
- b) the importance of organizational issues, including responsibility and accountability for safety performance, and the need for a positive safety culture;
- c) safety assessment procedures; and
- d) assuring the on-going safety of the system through audits and monitoring.

2.8 This is followed by separate sections specific to implementation of these general principles to aerodromes and ATS. The manual also addresses the separate requirements of the State regulator, the aerodrome operator, and the ATS provider, recognizing that different States may have differing combinations of State authorities and private or corporatised bodies providing these functions.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to agree to the following recommendation:

Recommendation 2/ — Implementation of ATS safety management programmes and establishment of acceptable levels of safety

That States which have not already done so, take action in accordance with Annex 11, 2.26 to:

- a) implement systematic and appropriate ATS safety management programmes to ensure that safety is maintained in the provision of ATS within airspaces and at aerodromes; and
- b) establish the acceptable levels of safety and safety objectives applicable to the provision of ATS within airspaces and at aerodromes.

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