

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

EUROPEAN STRATEGY FOR SAFETY MANAGEMENT IMPLEMENTATION BY AIR NAVIGATION SERVICE PROVIDERS

(Presented by European Organisation for the Safety of Air Navigation
(EUROCONTROL) on behalf of its Member States and those of ECAC¹)

SUMMARY

This paper describes the co-operative safety management programme conducted by the EUROCONTROL Agency, which, since 1995, is promoting and developing a harmonised approach for the safety management of air navigation services. The way in which this safety management programme relates to the European air traffic management (ATM) safety regulation is also described.

The EUROCONTROL approach meets ICAO requirements for the implementation of safety management in air traffic services, as specified in amended Annex 11 — *Air Traffic Services* and *Procedures for Air Navigation Services — Air Traffic Management* (Doc 4444, PANS-ATM).

This approach relies on a common safety policy (European Air Traffic Management Programme Safety Policy), supported by guidance material. This approach has been implemented in new multinational European programmes (e.g., RVSM, 8.33 kHz Horizontal Expansion), and in initiatives for resolving safety issues at European level (e.g., runway safety, level bust).

Suggested action by the conference is in paragraph 3.

¹ The ECAC Member States are: **Albania**, Armenia, **Austria**, Azerbaijan, **Belgium**, Bosnia and Herzegovina, **Bulgaria**, **Croatia**, **Cyprus**, **the Czech Republic**, **Denmark**, Estonia, **Finland**, **France**, **Germany**, **Greece**, **Hungary**, Iceland, **Ireland**, **Italy**, Latvia, Lithuania, **Luxembourg**, **Malta**, **Moldova**, **Monaco**, **the Netherlands**, **Norway**, Poland, **Portugal**, **Romania**, Serbia and Montenegro, **the Slovak Republic**, **Slovenia**, **Spain**, **Sweden**, **Switzerland**, **The former Yugoslav Republic of Macedonia**, **Turkey**, **Ukraine** and **the United Kingdom**).

The 31 Member States of EUROCONTROL appear in **bold**.

*French, Spanish and Russian versions provided by EUROCONTROL.

1. INTRODUCTION

1.1 In 1995, safety management in the provision of air navigation services was initiated in the ECAC Member States with the first issue of the European Air Traffic Management Programme (EATMP) Safety Policy. A major achievement of the EUROCONTROL Safety Management initiative is the recognition and appreciation of the concept by the air traffic management (ATM) community.

1.2 The safety benefits of implementing safety management systems in ATM have been widely recognised:

- a) ICAO amended Annex 11 and PANS-ATM to require the implementation of safety management in air traffic services;
- b) the EUROCONTROL Safety Regulatory Requirement “Use of Safety Management Systems by ATM Service Providers” (ESARR 3) has been issued, mandating the implementation of safety management by ATM Service Providers; and
- c) the EUROCONTROL ATM 2000+ Strategy clearly highlights the vital importance of safety management systems in contributing to necessary safety improvement.

1.3 The EUROCONTROL Agency has taken a number of actions to ensure that safety management principles are firmly embedded throughout European ATM and within the Agency itself.

1.4 The EUROCONTROL strategy for managing the safety of air navigation services relies on the following approach:

- a) adoption of a common framework for the definition of safety management systems;
- b) strong focus on continuous improvement of safety management processes;
- c) formal establishment of safety cases for new European concepts and systems;
- d) exchange of safety-related data as a means to identify key risk areas and initiate safety improvement initiatives;
- e) industry-wide co-operation to develop remedial actions addressing key risk areas and to enhance aviation safety; and
- f) important contribution of Research & Development (R&D) for improving the safety management methods and tools.

2. AN EFFECTIVE EUROPEAN STRATEGY FOR THE MANAGEMENT OF SAFETY

2.1 Adopting a Common Framework for Safety Management System

2.1.1 The EATMP Safety Policy defines the foundation of, and specifies the general requirements for a harmonised approach to safety management in the different service provider organisations participating in the European ATM Programme.

2.1.2 The EATMP Safety Policy meets as a minimum ICAO provisions and EUROCONTROL Safety Regulatory Requirements.

2.1.3 The EATMP Safety Policy specifies:

- a) safety achievement means for achieving high safety standards;
- b) safety assurance means for providing assurance that risks are being managed; and
- c) safety promotion means by which safety issues are communicated to ensure a culture of safe working within each organisation.

2.1.4 In support to the deployment of the EATMP Safety Policy, the EUROCONTROL Agency has developed guidance material and training in support of the implementation of safety management system in the provision of air navigation services.

2.2 Continuously Improving the approach for Safety Management

2.2.1 The effective Europe-wide management of safety is more than the development and implementation of safety management systems. It also means that safety management processes need to be regularly reviewed and improved based on the experiences gained during their application.

2.2.2 Considering the level of implementation of Safety Management System (SMS) achieved by the European Air Navigation Service Providers (ANSPs), there are already substantial experiences available for further developing and setting up these systems in ATM. EUROCONTROL puts significant effort into developing and promoting a European approach, which evaluates, adopts and improves the best practices that have already been successfully implemented with some individual ANSPs, in other sectors of aviation, and in comparable industries.

2.2.3 The EATMP Safety Team was established in 1995 to provide a forum for ANSPs safety managers to exchange information and experience. The mission of the EATMP Safety Team is to:

- a) promote, develop and maintain an efficient approach for safety management; and
- b) provide focus on safety issues and safety improvement throughout Europe.

2.2.4 This co-operation by addressing pan-European safety concerns and issues is essential for the development of a common safety management culture.

2.3 **Establishing Safety Cases for European Air Traffic Management Programmes**

2.3.1 Safety cases establish clear managerial and regulatory responsibility and demonstrate that safety risks have been assessed and can be mitigated. Safety cases are now implemented as the standard approach for all European ATM Programmes.

2.3.2 A methodology has been developed for assessing the risks related to the introduction of new systems and changes to existing systems. Additional guidance has been developed to ensure a systematic and structured approach for safety cases elaboration.

2.3.3 As an example of this approach, the EUROCONTROL Agency, in co-operation with stakeholders, set up and developed the Reduced Vertical Separation Minimum (RVSM) Pre-implementation and the RVSM Post-Implementation Safety Case, to prove that the implementation of RVSM in Europe satisfies and will continue to satisfy the criteria defined in the EUR RVSM Safety Policy.

2.3.4 Other examples of safety case analyses are related to the 8.33 kHz Channel Spacing Horizontal Expansion, Global Navigation Satellite System (GNSS), Air-Ground data link communications, Automatic Dependant Surveillance Broadcast (ADS-B) and Mode-S programmes. These analyses are being progressed in liaison with the Safety Regulation Commission (SRC) of EUROCONTROL.

2.4 **Sharing Safety-Related Data**

2.4.1 Sharing safety-related data on safety occurrences, notably their causes, the proposed remedial actions, and lesson learnt in the investigation process, is considered as a major means to further improve the safety performances of the European ATM.

2.4.2 The High-Level European Action Group on ATM Safety (AGAS)² advocates particularly improving the sharing of safety-related-data between regulators, ANSPs and, where appropriate, aircraft and airport operators.

2.4.3 The mechanism for a systematic exchange of safety-related data is progressively being established in the ECAC Member States, with the support of several ANSPs.

2.4.4 In order to ensure the consistency and quality of the shared safety-related data, the EUROCONTROL Agency is supporting the implementation of comprehensive and harmonised reporting systems. A common taxonomy for ATM safety occurrence has been developed jointly by the EATMP Safety Team and the SRC. This taxonomy is partially integrated into the new version of ICAO Accident/Incident Reporting (ADREP) System.

2.4.5 It should also be noted that the European Community, through a recent legislative action, requires its Member States to set up a mandatory system of reporting occurrences in civil aviation, to collect, store and protect safety relevant information and to participate in an exchange of information as provided for Annex 13 — *Aircraft Accident and Incident Investigation*. This system is supported by the development of an automated tool, implementing ICAO standards, which ensures compatibility between the national reporting systems and creates a network for the exchange of information.

² The “EUROCONTROL’S Strategic Safety Action Plan To Enhance European ATM Safety” report (see AN-Conf/11-WP/80) details the recommendations made by the High-Level European Action Group on ATM Safety (AGAS).

2.5 Co-operating on European Identified Safety Issues

2.5.1 Co-operation is essential to the understanding and development of seamless safety provision throughout the aviation system. The increasingly complex interactions between the airborne and the ground-based environments mean that all parties have a contribution to make to the understanding and resolution of safety issues.

2.5.2 The runway safety initiative (described in AN-Conf/11-WP/81)³ demonstrates how effective co-operation, in this instance between ICAO, the Joint Aviation Authorities (JAA), the Group of Aerodrome Safety Regulators (GASR) and EUROCONTROL, can enhance the effectiveness and credibility of a working group and lead to new recommendations to improve safety.

2.5.3 A similar initiative has been started to address the issue of level bust in Europe. An industry-wide task force, involving representatives from several European aircraft operators and ANSPs, is preparing recommendations for reducing the risk of level bust.

2.6 Supporting Safety Management Implementation by a Safety Research & Development Programme

2.6.1 R&D is considered as a major support to the improvement of the safety management approach.

2.6.2 The EUROCONTROL Safety R&D programme is organised along four major axes:

- a) *monitoring safety performances* — to broaden the visibility on actual safety level and encourage a pro-active safety culture;
- b) *maintaining the resilience* — to study the impact on safety of some current changes to ATM (operational concept, Human Machine Interface (HMI), socio-technical system, procedures, etc.) and propose guidelines to preserve safety;
- c) *anticipating future risks* — to identify methods to anticipate future key risk areas in ATM; and
- d) *organising for Safety* — to study the safety processes and supporting tools in the safest ATM organisations as a means to promote best practices.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to:

- a) recommend the sharing of best practices for ATM safety management system implementation at regional and international levels; and
- b) encourage co-operation for safety improvement by sharing and disseminating lessons learnt from ATM incident investigation at regional and international levels.

³ “Runway Safety Issues in Europe – The Prevention of Runway Incursions”.

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