

ELEVENTH AIR NAVIGATION CONFERENCE

Montreal, 22 September to 3 October 2003

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

**2.2 Safety certification of ATM systems
:**

CERTIFICATION OF ATM SYSTEMS

(Presented by African States¹)

SUMMARY

The purpose of this paper is to discuss in brief the concept of ATM services certification and to propose the adoption of a worldwide methodology for the delivery of authorizations to ATS service providers.

Action by the conference is in paragraph 4.

1. INTRODUCTION

1.1 The activities of ICAO relating to safety are part of the programme of technical work of the Organization in the air navigation field. Apart from these activities, ICAO worked out the global aviation safety programme (GASP) which complements these activities and facilitates the assignment of priorities and also serves as a summary on the activities of the organization related to safety.

* English and French versions provided by African States.

¹ Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cap Verde, Central African Republic, Chad, Comoros, Congo, Cote d'Ivoire, Democratic Republic of the Congo, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libyan Arab Jamahiriya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Togo, Tunisia, Uganda, United Republic of Tanzania, Zambia, Zimbabwe

1.2 In this connexion, several objectives were achieved including the introduction of air traffic management (ATM) safety management systems and the certification of the aerodrome operations. These two fields were covered respectively by:

- a) Amendment No. 41 of Annex 11 — *Air Traffic Services* which introduced the obligation for air traffic services (ATS) providers and authorities of the contracting States to set up safety control programmes; and
- b) Amendment No. 4 of Annex 14 — *Aerodromes, Volume I — Aerodrome Design and Operations*, which introduced the obligation to certify international aerodromes from 27 November 2003 and set up a safety management system from November 25, 2005.

1.3 In addition and within the framework of the evaluation of the conformity of States to the provisions of Annexes 11 and 14 to the Chicago Convention, ICAO will proceed with the extension of the universal safety oversight audit programme (USOAP) as from the year 2004 and Safety Oversight audits related to air navigation services and aerodrome operations will be carried out.

2. DISCUSSION

2.1 The safety of ATM system operations depends on a great number of criteria, in particular the qualification of personnel, the quality and reliability of the aeronautical data, operational procedures and the means of the air traffic services departments, installations and means of navigation, equipment embarked and interactivity between these elements to create a safe operational environment.

2.2 Most contracting States of the AFI region have not set up yet any safety management programmes nor established regulations for air traffic management safety.

2.3 The disparity and the extent of the fields concerned with the improvement of safety can affect in a considerable way the reactivity of States for planning and implementation of the new requirements. Moreover, the absence of clear, concise and accurate guidelines at the regional level relating to methodology of application and in particular with regard to the systems of safety management in the ATM field are likely to limit compliance with the requirements referred to above.

2.4 The management and regulation of ATM safety systems are complex tasks which require means and considerable efforts from the States. The multitude of activities related to safety which result from this situation require a range of aptitudes, resources and expertise that most AFI States are not able to achieve. Consequently, it is necessary to adopt a worldwide approach which calls upon procedures and methods standardized or to adopt a cooperative approach for the implementation of safety programmes control in the ATM field.

2.5 In general, the development of CNS technologies facilitates the achievement of ATM objectives. The certification of safety systems requires a fundamental work of evaluation of the risk and safety for the activities of the systems.

2.6 Consequently, the certification of ATM systems safety requires resources and a specific expertise for each task. The African States consider that this activity should be considered and treated in a

similar way as that of aircraft certification and on-board equipment. Consequently, certification will relate primarily to the respect of manufacture standards and installation of the communication, navigation and surveillance equipment operated in the air traffic management field. Certification should also cover ATM operational staff qualifications (air traffic controllers) as well as ATS incident feedback procedures.

2.7 In fact, the above elements could be integrated on a systematic basis in the safety management system (SMS), the reference criteria for certification and the certification body of which need to be set up. ATM systems certification lays on recurrent questions concerning:

- a) certification scope;
- b) certification body;
- c) accreditation of the certification body, in order to evaluate the value or credibility of a certification at international level; and
- d) certification authority.

2.8 ICAO answered some of the above questions in the aerodrome and related service fields *Manual on Certification of Aerodromes* (Doc 9774). However, it is obvious that ATM services that are not based in an airport raise different problems, which are still to be studied separately.

2.9 This does not prevent the adoption of provisions to invite States to set up a regulation for the homologation of the ATM systems and ATS providers.

2.10 With new autonomous and private ATS providers, it is necessary to define on a worldwide scale criteria of homologation of the ATS providers based primarily on the safety aspects.

3. CONCLUSION

3.1 The system of safety management required by Annex 11 to the Chicago Convention is likely to reinforce the capacity of States to supervise the providers and to ensure that self controls and failure correction mechanisms are set up.

3.2 Furthermore, taking into account new private ATS service providers, it is necessary to:

- a) create an agreement system for air navigation service providers. The agreements would be delivered by States based on criteria and standards established on a worldwide scale by ICAO; and
- b) rules for the interoperability of the system used by the air navigation service providers based on essential equipment, specifications implementation rules, etc.

4. ACTION BY THE CONFERENCE

4.1 The conference is invited to:

- a) take note of the information presented in this paper; and
- b) adopt the following recommendations:

Recommendation 2/xx — Certification of ATM systems safety

It is recommended that ICAO establish additional specifications to those of Doc 9774, for certification of the ATM services, on:

- a) CNS equipment;
- b) ATM procedures;
- c) ATM personnel; and
- d) Safety management system.

Recommendation 2/xx — Agreement of ATS service providers

It is recommended that ICAO establish specifications and approval criteria for ATS service providers and set up requirements to:

- a) deliver an operating agreement; and
- b) establish rules for the interoperability of systems used by the ATS service providers.

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