

INTERNATIONAL CIVIL AVIATION ORGANIZATION

A32-WP/48

EX/17

3/7/98

ASSEMBLY — 32ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 19: Implementation of the ICAO Communications, Navigation and Surveillance/Air Traffic Management (CNS/ATM) Systems

ECONOMIC ASPECTS OF THE IMPLEMENTATION OF CNS/ATM SYSTEMS

SUMMARY

In this paper the Council reports on work since the 31st Session with regard to economic aspects of assistance to States in the implementation of CNS/ATM systems. Proposed action by the Assembly is at paragraph 7.

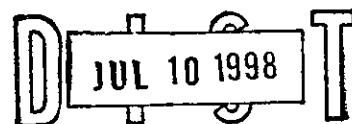
REFERENCES

Doc 9660, *Report on Financial and Related Organizational and Managerial Aspects of Global Navigation Satellite System (GNSS) Provision and Operation*
Doc 9161/3, *Manual on Air Navigation Services Economics*
Doc 9082/5, *Statements by the Council to Contracting States on Charges for Airports and Air Navigation Services*
Report of the World-wide CNS/ATM Systems Implementation Conference (Rio de Janeiro, 11 to 15 May 1998)
Circular 257-AT/106, *Economics of Satellite-based Air Navigation Services*
State letter AN 1/18.2-94/37 dated 12 April 1994

1. INTRODUCTION

1.1 Assembly Resolution A31-6: *Consolidated statement of continuing ICAO policies and practices related to communications, navigation and surveillance/air traffic management (CNS/ATM) systems*, urges, *inter alia*, the Council to continue considering without delay economic, institutional, legal and strategic aspects related to the implementation of CNS/ATM systems. In response thereto work undertaken by ICAO in the economic areas (including related organizational and co-operative aspects) since the 31st Session of the Assembly is described below. The work has focussed on dissemination of policy and, primarily, practical guidance.

(5 pages)



1.2 The Council reports separately under the present Agenda Item on, *inter alia*, the general results of the World-wide CNS/ATM Systems Implementation Conference in Rio de Janeiro, 11 - 15 May 1998 (A32-WP/56); and under Agenda Item 20 on financial and organizational aspects of the provision of air navigation services (A32-WP/49), and on a proposal for an International Aeronautical Fund (A32-WP/50).

2. POLICY GUIDANCE

2.1 The *Statement of ICAO Policy on CNS/ATM Systems Implementation and Operation*, adopted by the Council in March 1994, specifically addresses CNS/ATM systems cost recovery policy stating that such cost recovery must be in conformity with Article 15 of the Chicago Convention and the *Statements by the Council to Contracting States on Charges for Airports and Air Navigation Services* (Doc 9082/5), the essence of which are equity and balance in the interests of providers as well as users of air navigation services.

2.2 A fundamental characteristic of CNS/ATM systems (except for airborne equipment) is that they are provided as part of the air navigation facilities and services, and hence the same basic economic principles apply to them as to other such facilities and services. What sets CNS/ATM systems apart technically from most other air navigation facilities and services is the improved technology and the extension of capacity they offer but that is a difference in degree not in substance. Consequently, policy guidance developed by ICAO on organizational and cost recovery aspects of air navigation services also applies to CNS/ATM systems.

3. GUIDANCE ON ECONOMIC ASPECTS OF CNS/ATM SYSTEMS

3.1 Subsequent to the 31st Session of the Assembly ICAO has published two documents addressing economic issues of particular relevance to implementation and operation of CNS/ATM systems. The first, published in 1997, is the *Manual on Air Navigation Services Economics* (Doc 9161/3) which was prepared by the Secretariat with the assistance of the Air Navigation Services Economics Panel (ANSEP). The Manual provides guidance on organizational structures, accounting and financial control, determining the cost basis for air navigation services charges, setting of charges and their collection, and financing of air navigation services infrastructure. Aspects of these subject matters which are of special relevance to CNS/ATM systems provision are identified and addressed throughout the Manual.

3.2 The other document is ANSEP's *Report on Financial and Related Organizational and Managerial Aspects of Global Navigation Satellite System (GNSS) Provision and Operation* (Doc 9660), published in 1996. The report focusses on such organizational and managerial aspects of GNSS provision as GNSS components being multinational facilities or services, ownership and control considerations, and competition; and financial aspects, including funding sources, cost recovery policy, determination and allocation of GNSS costs, compensation or assistance to States to cover costs of redundancies and/or relocation/retraining, cost recovery methodology, and liability aspects. The report also contains five recommendations, all of which have been approved by the Council, dealing with guarantees by States in the context of servicing and repayment of loans, co-operation among States in cost recovery, financial imperatives for accelerating the procedures for amendment of regional air navigation plans, the methodology for allocating GNSS costs attributable to civil aviation among user States, and the role of ICAO in financial and administrative aspects of GNSS implementation.

3.3 A document, published in 1995 before the 31st Session of the Assembly, which has also been found very useful is the *Economics of Satellite-based Air Navigation Services - Guidelines for cost/benefit analysis of communications, navigation and surveillance/air traffic management (CNS/ATM) systems* (Circular 257-AT/106), which contains the cost/benefit guidance material developed by ICAO focussing on the methodological approach of Net Present Value being applied on a step-by-step tabular basis which may be undertaken manually or through computer spreadsheets that are available on diskette from ICAO.

3.4 Earlier this year ICAO published the *Global Air Navigation Plan for CNS/ATM Systems*, which addresses operational concepts and general planning principles relevant to CNS/ATM systems implementation and operations. While primarily technical in scope the plan also addresses in separate chapters such issues as organizational and international co-operative aspects; cost/benefit and economic impacts; and financial aspects.

4. SEMINARS AND WORKSHOPS

4.1 Two seminars on the Economics of CNS/ATM Systems Implementation have been held. The first in Montreal in December 1996 for States in the Americas and Caribbean; the second in Casablanca, at the invitation of the Government of Morocco, in October 1997 for States in Africa and the Middle East. The seminars addressed such subjects as the regional planning and implementation process; organizational issues, including structure, ownership and control, implementation options, and regional co-operation; traffic forecasts; cost/benefit methodology, and financial comparisons of implementation options; cost recovery policy and mechanisms, including cost determination and cost allocation; and financing.

4.2 While not targeting CNS/ATM issues specifically the ICAO regional workshops on airport and route facility management which address organizational and financial managerial aspects of airport and air navigation services infrastructure, pay specific attention to these subjects in the context of CNS/ATM systems operation. Similarly, the workshops on forecasting and economic planning address, *inter alia*, cost/benefit analysis of CNS/ATM system implementation and related traffic forecasting requirements. Both types of workshops are held at the rate of three every two years.

4.3 Under the auspices of ICAO's Technical Co-operation Programme, a round of workshops addressing cost/benefit analysis of CNS/ATM systems was held during the present triennium for different groups of States in the Asia-Pacific region. Under the ICAO Special Implementation Project Programme, a series of workshops on CNS/ATM national planning in various other regions also touch on cost/benefit analysis.

5. WORLD-WIDE CNS/ATM SYSTEMS IMPLEMENTATION CONFERENCE

5.1 This conference, held in Rio de Janeiro, 11 to 15 May 1998, developed a number of recommendations addressing financial matters pertinent to the implementation and operation of CNS/ATM systems, including organizational and co-operative aspects.

6. FUTURE WORK

6.1 It has been repeatedly stated that the technical obstacles to CNS/ATM systems implementation have been overcome and that the main challenges being faced by States are currently of an organizational and financial nature. Policy guidance in these two areas is largely in place. Moreover, most of the basic practical guidance required relating to organizational options, cost/benefit analysis, financial control, cost recovery and financing has been developed, but will need to be reviewed and expanded as required. Furthermore, while the cost/benefit work demonstrates the economic viability of CNS/ATM systems, States and other service providers need to develop sound business cases to convince funding institutions to invest in these systems. It is clear therefore that more effort needs to be made by ICAO to assist a large number of States both in implementing available guidance and in developing business cases. This is because inadequate organization of air navigation services operation and lack of sound financial management procedures are undermining the confidence of the financial community to provide these States with the financing required to implement CNS/ATM systems components.

6.2 The implementation and operation of major CNS/ATM systems components require, with rare exceptions, international co-operation because of the magnitude of investments involved and the capacity that will be provided. Assistance is, however, required in many regions to establish such co-operative ventures as well as other co-operative or joint ventures which can greatly benefit States. That subject and ICAO's role therein is addressed in A32-WP/49 on financial and organizational aspects of the provision of air navigation services. Also, it appears from recommendations of the World-wide CNS/ATM Systems Implementation Conference in Rio de Janeiro that ICAO is expected to be taking a more active role in assisting States in the establishment and operation of joint ventures.

6.3 The process of CNS/ATM systems implementation has reached a certain level of maturity. In the future increasing emphasis will be placed, from the economic and organizational perspective, on viewing CNS/ATM systems as parts or components of the overall air navigation services infrastructure. Nevertheless, pursuant to the recommendations of the World-wide CNS/ATM Systems Implementation Conference and in the context of the more generally pro-active stance on assisting States on financial aspects of the provision of air navigation services (on which A32-WP/49 elaborates in its paragraph 6.3), the Council has included in the work programme for the forthcoming triennium the following activities specific to CNS/ATM:

- a) address, as a matter of urgency, the issue of cost allocation amongst all users of GNSS, both aviation and non-aviation;
- b) continued promotion of awareness and provision of guidance on the economic benefits of CNS/ATM systems;
- c) further development of Circular 257 to include more specific cost/benefit and technical audit processes, including guidelines for the development of sound business cases;
- d) assistance to States in CNS/ATM systems implementation through the application of guidance on cost/benefit and business cases, including the development of model cases for homogeneous air traffic management areas and major international traffic flows, notably through the ICAO planning and implementation regional groups;

- e) in co-operation with other governmental and non-governmental organizations, assistance to States in identifying those areas in less developed regions where the implementation of CNS/ATM systems cannot be carried out on a self-financing basis;
- f) encouragement of regional co-operation among service providers to achieve efficient implementation and economic viability where necessary; and
- g) seeking of concessionary funding and the provision of expertise for the transition to CNS/ATM, *inter alia*, through the ICAO Technical Co-operation mechanism, voluntary donations, bilateral and multilateral co-operation programmes, governmental and non-governmental organizations and development banks.

7. ACTION BY THE ASSEMBLY

7.1 The Assembly is invited to note this paper and to offer comments and advice on the Organization's work with regard to the economic aspects of the implementation and operation of CNS/ATM systems components.

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