WORKING PAPER

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TECHNICAL COMMISSION

Agenda Item 23: Consolidated statement of continuing ICAO policies and practices related to communications, navigation, and surveillance/air traffic management (CNS/ATM) systems

NEW CNS/ATM SYSTEMS IMPLEMENTATION ACTIVITIES IN THE REPUBLIC OF KOREA

(Presented by the Republic of Korea)

INFORMATION PAPER

SUMMARY

This paper provides information on the New CNS/ATM systems implementation activities in the Republic of Korea.

1. INTRODUCTION

1.1 The Republic of Korea (ROK), located in the core of East Asia, provides air traffic service by operating aeronautical communication, navigation and surveillance systems for safe and efficient aircraft operation within the Incheon Flight Information Region (FIR).

1.2 In 2003, the number of instrument flights in the Incheon FIR reached 310,124. A total of 42,856,802 passengers (21,397,514 domestic and 21,459,288 international) and 2,631,359 tons of cargo (422,565 tons domestic and 2,208,794 tons international) was transported through 16 airports including 6 internationals within the Incheon FIR. The volume of air transport is expected to increase continuously in the Incheon FIR.

1.3 While growth in air transport is welcome, the existing air traffic service infrastructure is expected to reach its capacity limit in handling traffic volumes projected for the 21st century. Therefore ICAO adopted the new CNS/ATM systems as a future system and recommended to the Contracting States to research, develop and implement the system in due course.

1.4 ROK decided to adopt the new CNS/ATM systems in 1992 and has actively been conducting and implementing projects for research and development (R&D) on various components of the systems and their applications.

2. IMPLEMENTATION STRATEGY

2.1 A strategic plan for the implementation of new systems in ROK has been prepared as follows;

— First, the fundamental systems will be installed around 2010 in line with ICAO Asia/ Pacific new CNS/ATM implementation plan to enhance the safety, regularity and efficiency of air transport and meet the air traffic demands of the 21st century within the Incheon FIR and the north-east Asian region.

— Second, the transition period from the existing systems to the new systems can be minimized without affecting the continuity of air traffic services.

— Third, some of the new CNS/ATM systems developed by the domestic technology will be introduced to contribute to the safety of civil aviation.

3. PLAN FOR CNS/ATM SYSTEMS IMPLEMENTATION

3.1 Implementation Phases

3.1.1 Preparation Phase (1992 – 2001)

3.1.1.1 The R&D of operational systems including the Ground Based Augmentation System(GBAS) and their trial have consistently been conducted. In addition, a study on the master plan for new CNS/ATM systems implementation was completed.

3.1.2 Phase I (2002 – 2005)

3.1.2.1 ROK will finalize the master plan until 2005 for the new CNS/ATM systems implementation and start the installation.

3.1.3 Phase II (2006 – 2010)

3.1.3.1 Most of the new systems will be installed during this period. The newly installed systems will be operated with the existing systems in order to ensure the air navigation safety and the adaptation period for the new CNS/ATN systems.

3.1.4 Phase III (2011 – 2015)

3.1.4.1 The installation of the new systems will be completed while the existing systems are gradually phased out. The utilization of airspace and improved flight operation will be further developed to maximize the use of the new CNS/ATM systems.

4. DETAILED ACTIVITIES

4.1 Communications

4.1.1 VHF and HF voice communications have been used for aeronautical mobile communications while AFTN and ATS direct speech circuits have been used for fixed telecommunications. In the future, datalink communications will be introduced and the communication networks will be integrated into a network with the digital technology instead of analog systems.

4.1.2 For the new aeronautical mobile telecommunications, the datalink-based D-ATIS and D-PDC services have been implemented at Gimpo International Airport using locally developed system since 2001. These systems were expanded to five major airports in 2003. The use of HF data communications or satellite-based datalink communications will also be expanded to improve the quality of long-distance mobile communications.

4.1.3 For aeronautical fixed telecommunications, the domestic AFTN was replaced by AFTN/AMHS at the end of 2001. The AIDC has already been implemented between Incheon ACC and Seoul Approach Control and its application will be further expanded to the neighboring countries.

4.1.4 The application of ATN integrating the above-mentioned communication networks with ISO/OSI protocol will be completed between 2005 and 2010.

4.2 Navigation

4.2.1 ICAO decided to use the Global Navigation Satellite System(GNSS) instead of the navigation aids that have been used up to present. This system is based on GPS, GLONASS and the augmentation systems to provide better performance. For standardization of the system, ICAO has provided the technical standards for GPS, GLONASS, SBAS and GBAS, and advised each States to develop and utilize the system.

4.2.2 To prepare for the future satellite navigation system, the research and development of GBAS and the pseudo-GPS have been carried out since 1997 and 2002, respectively. Successful completion of GBAS development project will enable the installation of GBAS at some airports in ROK from around 2007.

4.3 Surveillance

4.3.1 At present, there are 8 en-route and 14 approach control radars for surveillance. Incheon ACC was relocated to the new Incheon International Airport site in August 2001, and was modernized to accommodate the new CNS/ATM concepts by being equipped with Mode-S process, AIDC and ATFM functions.

4.3.2 ADS/CPDLC software is also being developed and tested for the purpose of utilization in airspace not covered by the existing radar and its backup system.

5. CONCLUSION

5.1 As explained above, ROK intends to complete the installation and begin operation of the new CNS/ATM systems suitable to its circumstances by the year 2015. For successful completion of this project, it is necessary to cooperate with the Contracting States in the Asia-Pacific region and it is believed that this project will greatly contribute to the development of international civil aviation.

6. ACTION BY THE ASSEMBLY

6.1 The Assembly is invited to note the information described in this paper.

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