International Civil Aviation Organization

Twenty Fifth Meeting of the Communications/ Navigation and Surveillance Sub-group (CNS SG/25) of APANPIRG

Video Tele-Conference, 18 – 22 October 2021

Agenda Item 4: Aeronautical Mobile Communications Service and Aeronautical electromagnetic spectrum utilization

4.1 Update on status of datalink applications and VHF capability sharing by States;

UPDATE OF AEROMACS APPLICATION AND SPECIFICATION IN CHINA

(Presented by China)

SUMMARY

Civil Aviation Administration of China (CAAC) attaches great importance to the application of AeroMACS technology in China. In April 2021, the CAAC Roadmap of New Generation Aviation Broadband Communication Technology was released. The goal of the preparation of the Roadmap is to promote the application of aviation broadband communication, build a civil aviation broadband network combining public and private network.

1. INTRODUCTION

1.1 AeroMACS is short for Aeronautical Mobile Airport Communications System. It is a wireless broadband technology, which supports the increasing need of airport data communications, as well as the information sharing on the airport surface for both fixed and mobile applications. AeroMACS Technical requirement was developed through the ICAO Communication Panel process and published in ICAO Annex 10 Volume III at the end of 2016.

1.2 AeroMACS is internationally standardized and globally harmonized. Up to now, AeroMACS network has been deployed in 23 airports in China, and applications including D-TAXI based on AeroMACS and Runway intrusion prevention were carried out.

1.3 On the basis of ICAO recommendations and considering the development trend of AeroMACS, L-DACS, ATG and other wireless communication technologies in the field of civil aviation, the CAAC Roadmap of New Generation Aviation Broadband Communication Technology was issued in April 2021.

2. CAAC ROADMAP

2.1 There are 4 typical application scenarios of aviation broadband communication technology in the field of civil aviation. The first is the mobile interconnection of aircraft, vehicles, runways, and airport ground facilities, which can be solved through the AeroMACS network; The second is the passenger oriented mobile communication application in the terminal area of the airport, which can be solved through the public network; Third, the air ground data link for data communication between aircraft and ground during flight phase, which can be solved through the L-DACS (L-band aviation broadband communication system) aviation network; The fourth is the passenger oriented service application such as WiFi service in the flight phase, which can be solved through the ATG network.

2.2 The promotion of aviation broadband communication technology is divided into three stages. By the end of 2025, it will be the demonstration and promotion stage. The main goal is to complete the application demonstration of "Aircraft-vehicle-runway-facility" coordinated operation based on AeroMACS and promote it in the Civil Aviation; By the end of 2030, it will be a comprehensive application stage. The main goal is to build a smart network infrastructure based on a new generation of aviation broadband communication system and a combination of public and private network; By the end of 2035, it will be the integration and sharing stage. The main goal is to build a new generation of aviation broadband communication system integrating air, space and ground, and realize full coverage of applications in the civil aviation.

2.3 The roadmap clarifies the responsibilities of the CAAC, airports, air traffic control, airlines, equipment manufacturers, data communication providers and other parties.

3. RECENT ACTIVITIES

3.1 Runway Intrusion Prevention System in Shanghai Hongqiao Airport

The main work is to realize the two-way data communication between the vehicle/driver and the tower controller through the AeroMACS network, and to provide the controller with safe, efficient, and reliable technology for vehicle operation management in the flight area. Hongqiao Airport deployed an AeroMACS network consisting of 7 base stations, covering the main flight area. AeroMACS + BDS vehicle-mounted equipment is installed on 6 vehicles to locate vehicles. The two-way data communication between vehicle-mounted mobile equipment and the airport flight zone management system is realized through the AeroMACS network, including information such as vehicle position reports per second and controller commands.

3.2 Coordinated Operation Management System in Chengdu Shuangliu Airport

The main work is to establish AeroMACS network covering all aircraft operation areas, combined with fixed and vehicle mounted AeroMACS-WiFi routers, support field staff to access AeroMACS network through AeroMACS terminal equipment or WiFi equipment, and realize two-way interconnection of real-time video, voice and data between aircraft operation site and Operation Control Center of Airlines, airports and other operation units.

3.3 Next Step

Based on the trial carried out in the early stage, prepare the overall pilot scheme of "Aircraft-Vehicle-Runway-Facilities" cooperative operation based on AeroMACS technology, which brings Air Traffic Control, Airlines and Airports into the scope of cooperative operation. AeroMACS network covering

all operation areas of the airport shall be installed in large and medium-sized airports, Airport AeroMACS Network Operation Management and Service System and "Aircraft-Vehicle-Runway-Facility" Cooperative Operation System shall be established, and Operation Specifications based on AeroMACS network shall be prepared.

4. ACTION BY THE MEETING

4.1 The meeting is invited to:

a) note the information contained in this paper.

b) discuss any relevant matters as appropriate.

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