International Civil Aviation Organization

Fifth Meeting of the Surveillance Implementation Coordination Group (SURICG/5)

Web-conference, 22 – 24 September 2020

Agenda Item 4: Review the Action Items from SURICG/4 Meeting

INTRODUCTION TO THE MANAGEMENT AND APPLICATION OF 24-BIT AIRCRAFT ADDRESSES FOR CHINESE CIVIL AVIATION

(Presented by China)

SUMMARY

This information paper introduces the management of 24-bit aircraft addresses by CAAC and the application of aircraft address in ATM automation systems.

1. Introduction

1.1 According to ICAO Annex 10 Volume 3, 24-bit aircraft address are allocated by ICAO to the State of Registry or common mark registering authority. At any one time, no address shall be assigned to more than one aircraft.

1.2 In order to make use of aircraft addresses efficiently and standardly for civil aviation in China, CAAC issued "Regulation for Aircraft Address Management of Civil Aircraft ".

1.3 Each aircraft address is unique in the world, so it has a greater advantage than the traditional SSR code for aircraft identification. With the implementation of the National ADS-B Construction and the application of the Mode S radars, it has become possible to identify aircraft by 24-bit aircraft address in ATM automation system.

2. Description of the Regulations

2.1 In "Regulation for Aircraft Address Management of Civil Aircraft", CAAC clarifies some terms as follow:

1) The number of aircraft addresses allocated by ICAO to China is 262,144, from $3600\ 0000_{OCT}$ to $3677\ 7777_{OCT}$;

2) The Radio Regulatory Office of CAAC is authorized to perform unified management responsibilities, such as making scheme and assigning the address;

3) The 24-bit aircraft addresses should be assigned to the civil aircraft registered in China, the civil aviation ground surveillance systems installed in China, the surface-operating vehicles in civil airport, and research activities.

4) One 24-bit aircraft address can only be assigned to one civil aircraft at any one time;

5) When an aircraft changes its State of Registry, the previously assigned address shall be relinquished and a new address shall be assigned by the new registering authority;

6) The 24-bit aircraft addresses used by ground surveillance systems and surface-operating vehicles are valid for no more than 10 years, and the validity period of the 24-bit addresses for research activities is no more than 1 year.

3. Assignment of aircraft addresses in China

3.1 The aircraft addresses in China are divided into 64 blocks by CAAC, each block has 4,096 addresses, e.g. the 00 block is from 3600 0000_{OCT} to 3600 7777_{OCT}, the 01 block is from 3601 0000_{OCT} to 3601 7777_{OCT};

3.2 At present, 20 blocks have been used, which are mainly assigned to aircrafts, 2 blocks have been assigned to the ground surveillance systems and surface-operating vehicles;

3.3 Therefore, the aircraft addresses allocated to China can meet the needs of application at present.

4. Application of aircraft addresses in ATM automation systems

4.1 CAAC has shared some information, such as the DAPs implementation plan and related technical specifications, the implementation of National ADS-B Construction and ADS-B air traffic control operation, Mode S radars deployment and related activities, Mode S DAPs application in ATM automation systems.

-Refer to DAPs WG/3 – IP03 "CHN Mode S DAPs Implementation in China"

4.2 In the first phase of ADS-B air traffic control operations, China has analyzed ADS-B data quality and found 2 main problems about the application of 24-bit aircraft addresses. One is the duplication of 24-bit aircraft addresses, the other one is that the 24-bit aircraft addresses in FPL are not standardized.

-Refer to SEA/BOB ADS-B WG/15 – IP08 "Update ADS-B Implementation in China"

4.2.1 Reasons for the duplication of 24-bit aircraft addresses

1) The components which set the 24-bit addresses in the aircraft avionics are failed and replaced by the spare parts. However, the 24-bit address set in the spare part is different from the original registered address;

2) The incorrect use of commercial aircraft address by general aircraft;

4.2.2 Reasons for the non- standardized FPL

1) Missing 24-bit addresses in the FPL

2) Filling incorrect 24-bit address or the wrong type of equipment capability in FPL;

3) The flight identification (FLT ID) input by some crews in the cockpit don't match the flight plan;

4.3 These two problems of 24-bit addresses application have an impact on the accuracy of aircraft identification automatically. The ATM automation system may make mistake in track coupling.

4.4 In order to solve the above problems, CAAC has ordered airlines to do that:

1) Ensure their aircraft's 24-bit addresses shall be consistent with the assigned address;

2) Correct the ADS-B functional defects that have been found by the equipment manufacturer in time;

3) Verify the capabilities of Mode S transponder and airborne ADS-B equipment, input the 24-bit addresses, flight identification and the capabilities in FPL correctly according to ICAO and Civil Aviation of China regulations.

5. Action by the Meeting

5.1 The meeting is invited to discuss about:

1) In order to reduce or eliminate the duplication of aircraft addresses between countries, the states should order that the address of one aircraft shall keep the consistency and uniqueness of the corresponding nationality and registration number. If the aircraft corresponding relationship changes, the aircraft must be required to apply for a new address.

2) If the aircraft operator or type of aircraft changes, the address must be verified and reconfirmed.

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