ATMB Carries out Datalink-based All-Phase Datalink ATC Service Validation

ACSICG/11 – IP/15

ATMB

2024.3.19

Introduction

Since 2019, ATMB of CAAC has carried out flight validation of All-Phase Datalink ATC Service based on the ACARS ATS in Zhengzhou, Guangzhou, Haikou, and Shanghai and other regions

Base on current avionics & A-G datalink network capabilities in China aviation:

- ✓ Support the research of All-Phase Datalink ATC Service planning and implementation roadmap.
- ✓ Explores the development path of hybrid digital and voice applications in China civil aviation.

Since 2019

" Carry out flight validation to support technical feasibility Roadmap's near-term (to 2025) planning objective of fully exploiting the existing system capacity of the China civil aviation and provide digitized emergency contact, information-based services in major airspace.

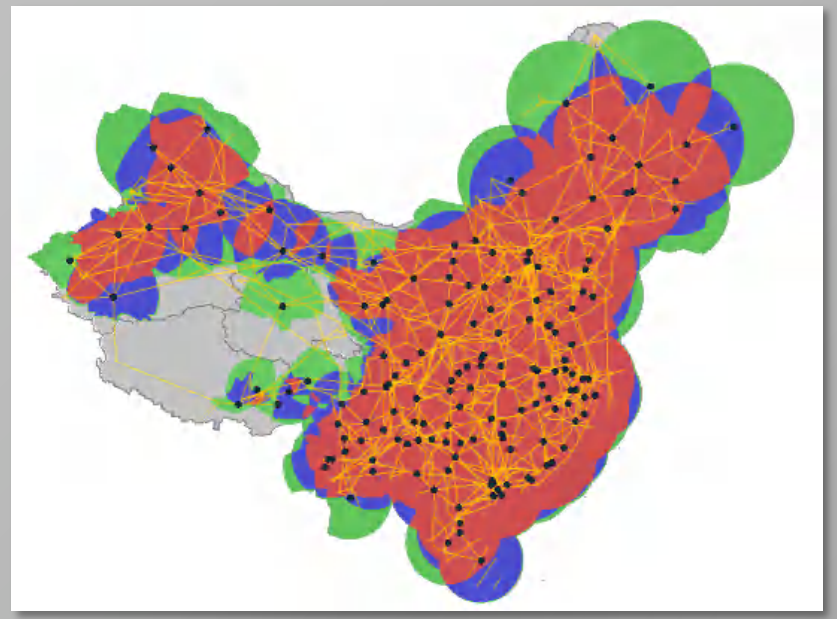
2024

" ATMB will carry out all-phase digital and voice hybrid flight validation in Xinjiang based on ACARS ATS & FANS 1/A. Involving 34 categories, >120 commonly used datalink ATC information, to explore the hybrid operation mode of voice and digital control in all-phases.

Avionic Systems

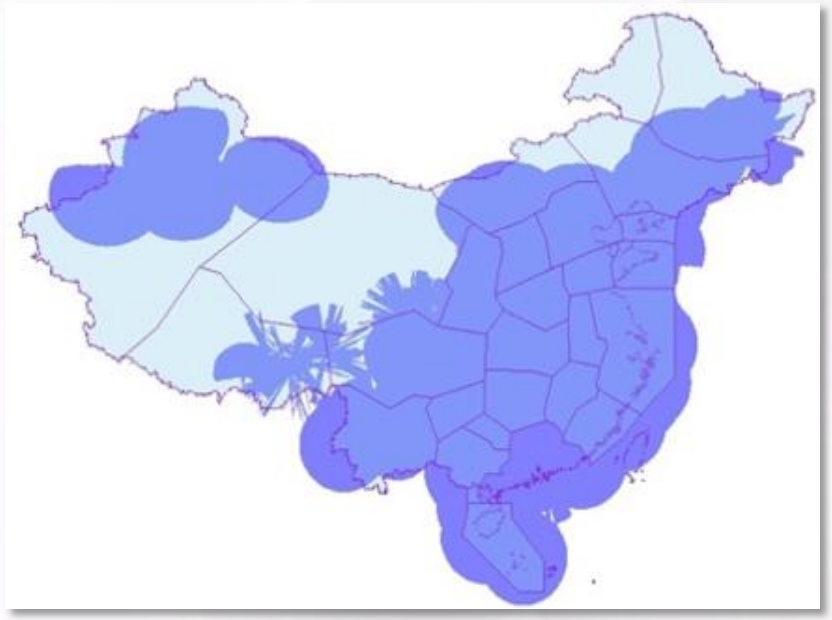
- ATMB explored China civil aviation existing aircraft airborne system using the ACARS ATS (supported by all the aircrafts of China civil aviation with >99 seats), reducing the need for costly upgrades.

Air-Ground Datalink Communication Network



ACARS Network Coverage

Covered major transportation airports & air routes in China.
China civil aviation over 99 seats aircraft 100% support ACARS.



VDL Mode 2 Coverage

Currently: >50% of China civil aviation over 99 seats aircraft supports VDL mode 2 network, mainly in Middle East China.
Future Objective: Realize coverage of the major transportation airports and air routes by 2025.

Validation Of Datalink Similar Callsign

- The existing ATC automation systems in all regions of China civil aviation have been equipped with similar callsign alert functions.
- The validation was conduct in Zhengzhou & Chengdu.

Since May 2021, published **169.70** messages per day, save an average of **38** minutes voice communication per day.

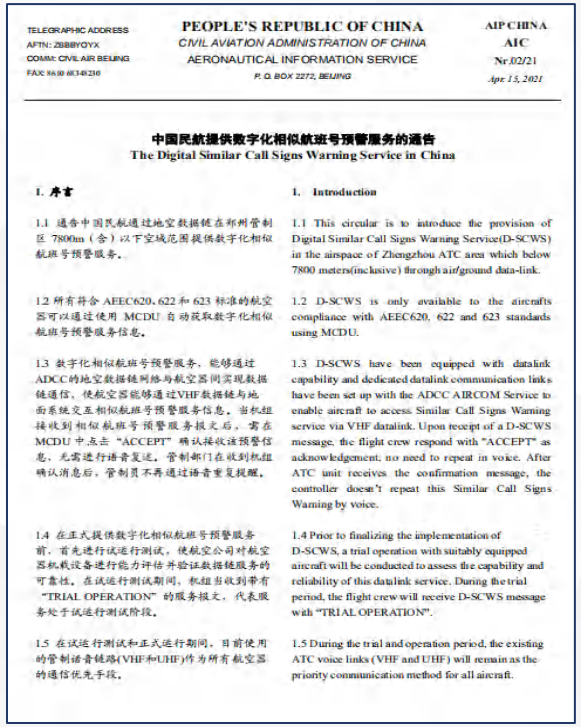
- Average delay of **2.32** seconds
- **97.78%** success rate

CCA1234

FLW INFO ONLY FOR ADVISE FROM ZHCC ATCC 0409 0500

SIMILAR CALLSIGN CES1234 CAUTION

TRIAL OPERATION FOR CCA1234 110CJH



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AIP CHINA
AIC
Nr.02/21
Apr. 15, 2021

中国民航提供数字化相似航班号预警服务的通告
The Digital Similar Call Signs Warning Service in China

1. 序言

1.1 通告中国民航通过地空数据链在郑州管制区 7800m（含）以下空域范围提供数字化相似航班号预警服务。

1.2 所有符合 AEEC620、622 和 623 标准的航空器可以通过使用 MCDU 自动获取数字化相似航班号预警服务信息。

1.3 数字化相似航班号预警服务，能够通过 ADCC 的地空数据链网络与航空器间实现数据链通信，使航空器能够通过VHF数据链与地面系统交互相似航班号预警服务信息。当机组接收到相似航班号预警服务报文后，需在 MCDU 中点击 "ACCEPT" 确认接收该预警信息，无需进行语音复述。管制部门在收到机组确认消息后，管制员不再通过语音重复提醒。

1.4 在正式提供数字化相似航班号预警服务前，首先进行试运行测试，使航空公司对航空器机载设备进行能力评估并验证数据链服务的可靠性。在试运行测试期间，机组当收到带有 "TRIAL OPERATION" 的服务报文，代表服务处于试运行测试阶段。

1.5 在试运行测试和正式运行期间，目前使用的管制语音链路(VHF和UHF)作为所有航空器的通信优先手段。

1. Introduction

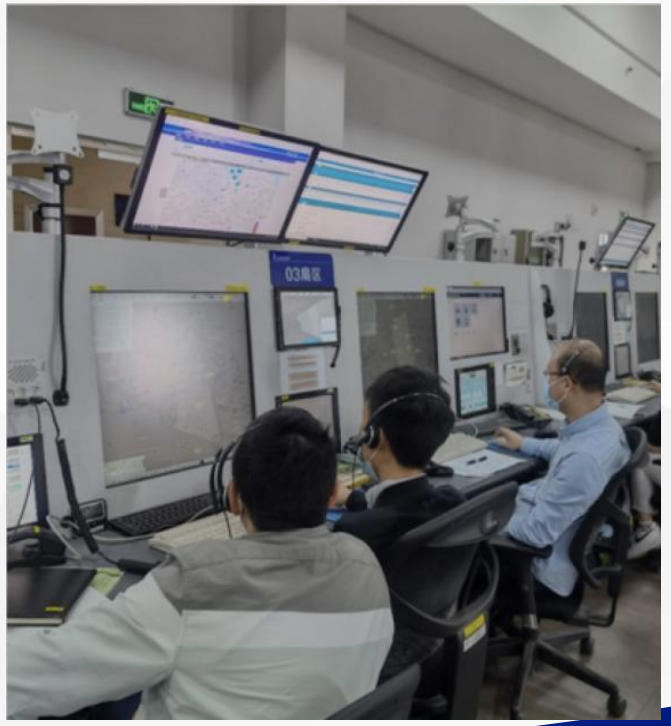
1.1 This circular is to introduce the provision of Digital Similar Call Signs Warning Service(D-SCWS) in the airspace of Zhengzhou ATC area which below 7800 meters(inclusive) through air/ground data-link.

1.2 D-SCWS is only available to the aircrafts compliance with AEEC620, 622 and 623 standards using MCDU.

1.3 D-SCWS have been equipped with datalink capability and dedicated datalink communication links have been set up with the ADCC AIRCOM Service to enable aircraft to access Similar Call Signs Warning service via VHF datalink. Upon receipt of a D-SCWS message, the flight crew respond with "ACCEPT" as acknowledgement, no need to repeat in voice. After ATC unit receives the confirmation message, the controller doesn't repeat this Similar Call Signs Warning by voice.

1.4 Prior to finalizing the implementation of D-SCWS, a trial operation with suitably equipped aircraft will be conducted to assess the capability and reliability of this datalink service. During the trial period, the flight crew will receive D-SCWS message with "TRIAL OPERATION".

1.5 During the trial and operation period, the existing ATC voice links (VHF and UHF) will remain as the priority communication method for all aircraft.



Validation Of Hazardous Weather Warning

- Upgrading the existing control system in Zhengzhou, realizing the flight-related turbulence and other flight route hazardous weather warning information publish to the associated crews.

Since September 2023, published **13.13** messages per day.

① Controllers publish digitalized hazardous weather warnings to designated flights through ground system.

② Publish to designated flight crew on demand base on datalink, no need to modify the avionics equipment.

FLW INFO ONLY FOR ADVISE FROM ZHCC ATC 1129 0632
TURBULENCE INFORMATION, AT06:10, PRECEDING AIRCRAFT REPORTED LIGHT TURBULENCE AT 7200 METERS, BEFORE TAMIX
ONLY FOR TEST FOR CCA2610

① Controllers publish digitalized hazardous weather warnings

② Crew view messages through MCDU

ATMB

Validation Of datalink-based D-FIS and Emergency COMM

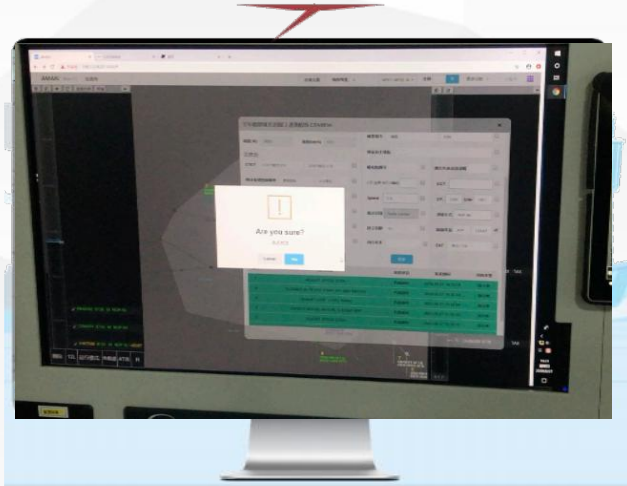
- Normalized operation of datalink-based D-FIS (Datalink-Flight Information Service) and emergency communication in Guangzhou airspace was started since 2022.

Since August 2022, published **189.11** messages per day.

- Average delay of **2.28** seconds
- **96.84%** success rate

- STAR & Arrival Runway
- Contact Frequency
- Callsign Mismatch
- Check Stuck Microphone
- Confirm Voice Radio Communication Failure
- Confirm Radio Failure Emergency
- Confirm Operation Normal
- ...

① Controllers publish digitalized D-FIS & Emergency Communication Alert



② Crew view messages through MCDU

THANK YOU