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AGENDA ITEM 4: AIR NAVIGATION

LANDING INFORMATION DELIVERY SERVICE

(Presented by the People's Republic of China)

INFORMATION PAPER

SUMMARY

This paper introduces the Landing Information Delivery (LID) datalink-based ATC service launched by China in 2024. This service automatically transmits critical landing data (such as runway assignment, arrival procedures) to the cockpit via the existing ACARS datalink, reducing voice communication while enhancing safety and operating efficiency. China, through collaboration with ICAO, advocates global standardization and urges the states to adopt LID for sustainable aviation under the Green Civil Aviation Initiative.

LANDING INFORMATION DELIVERY SERVICE

1. INTRODUCTION

1.1 To address the heightened requirements for flight operating efficiency and safety made by the rapid global growth of civil aviation, the Civil Aviation Administration of China (CAAC) has innovatively developed and successfully implemented the Landing Information Delivery (LID) service based on existing air traffic control datalink infrastructure. LID is a customized, automated landing information push service for flight crews. It delivers accurate arrival procedures, approach types, landing runways, and provides information on stands according to the anticipated operating mode of the destination airport. This enables crews to finalize approach trajectory and profile settings before descent, avoiding last-minute modifications during the descent phase. It enhances the continuity of landing descent instructions and facilitates Continuous Descent Operation (CDO) by the crew.

1.2 Since LID service was provided in November 2024, significant results have been achieved at busy hub airports in places such as Shanghai. The service optimizes the collaboration process between pilots and controllers during the landing phase through automation and digitalization, providing efficient and safe operating support.

1.3 According to pilot feedback, LID is a valuable service that assists them in making informed decisions for the landing phase during the cruise stage prior to the Top of Descent (T/D). It also avoids the need for subsequent Flight Management System (FMS) modifications after entering terminal control sectors, particularly at airports with multiple runways. Pilots can read the LID information in the FMS (Figure 1) and print it if needed (Figure 2). Controller feedback indicates that LID significantly reduces the communication time required to issue landing information and effectively lowers ground-air communication load, allowing controllers to allocate more attention to radar monitoring and coordination.

Figure 1: LID Displayed on FMS

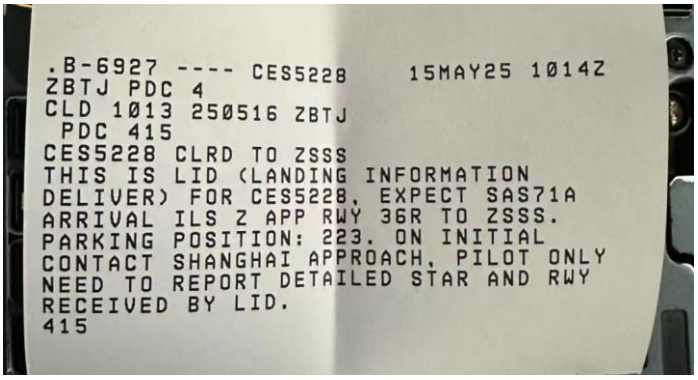

Figure 2: LID Printed from FMS

2. DISCUSSION

Innovation and Application Effectiveness of LID

2.1 The core concept of the LID system is the delivery of landing information to the cockpit via ACARS ATS datalink before the Top of Descent (T/D). This substantially reduces traditional voice communications, minimizes FMS operations during the critical descent phase, and prevents errors. Typically, runway assignment and operating mode settings are set up by approach controllers. The system can automatically send LID information, including Standard Terminal Arrival Route (STAR), approach type, runway assignment and stands, to the cockpit approximately 50 minutes before the Estimated Time of Arrival (ETA) for each flight. Pilots can input the data into the Flight Management System (FMS) well in advance during the cruise phase and report the received LID information directly upon initial approach communication. Upon confirmation by the approach controller, subsequent instructions can be issued directly.

2.2 Pilot results demonstrate that previous voice communication by which the Area Control Center (ACC) relayed arrival departures to the flight crew on behalf of approach control units can be entirely omitted. When contacting approach control, pilots can skip the step where approach controllers traditionally issue voice landing information. Compared to the traditional model, this reduces communication volume by at least 50%. The effectiveness rate of LID instruction delivery in Shanghai (correct replies / actual transmissions) has exceeded 97%. For 1 190 arrival flights in one day, it saved 396 minutes of VHF voice communication time, reducing the Shanghai Approach Control's daily voice communication time by 4%. Controllers can thus focus more on radar control services. Furthermore, LID incorporates a dual-link confirmation mechanism of ACARS receipt verification to ensure information transmission integrity (success rate ⩾ 99.9%). For flights equipped with FMCS DATALINK, the LID system can compare and confirm the actual effective information in the FMS after delivery via datalink and promptly alert controllers if discrepancies arise. This year, China will also explore application of this functionality for datalink verification of FMS input accuracy for departing flights.

Compatibility and Sustainability Advantages

2.3 LID's design relies entirely on existing ACARS datalink infrastructure, requiring no large-scale investment in new equipment. The states can achieve rapid deployment through low-cost transitions. China has verified the following implementation points:

a) Flexible Adaptability: Supports dynamic selection of information delivery timing (50±15 minutes before ETA), better accommodating scenarios like Continuous Descent Operation (CDO).

b) Airborne Equipment Adaptability: Current airborne equipment can receive LID push messages without any modifications, maximizing the benefits of existing datalinks and equipment.

c) AI Empowerment: Utilizes artificial intelligence models to predict runway assignments, balancing capacity at multi-runway airports. Based on the busyness of the approach airspace, it automatically arranges for landing flights to land on the nearest available runway, thus saving ground taxiing time.

Global Standardization and Technical Integration

2.4 To expedite the global interoperability of the LID service, China presented its progress on LID at the ATMRPP meeting held at the ICAO Headquarters in April this year, attracting experts' close attention. Experts recommended that once the bidirectional datalink confirmation mechanism matures, the initial voice notification and confirmation by the crew could also be eliminated, further reducing VHF ground-air voice communication load. Key conclusions from the meeting are as follows:

a) Continued discussion on updates on LID trajectory information within the Trajectory-Based Operation (TBO) operating framework;

b) The International Coordinating Council of Aerospace Industries Associations (ICCAIA) will coordinate with CAAC to incorporate LID into existing ACARS ATS services and address other technical details related to airborne equipment and standard enhancement; and

c) China will continue trials on automated datalink verification of departure procedures and runways for departing flights and report relevant progress to ATMRPP.

2.5 It is understood that SESAR is preparing to initiate similar datalink experiments in 2026. Experts concurred that unified LID operating standards represent the optimal solution. Therefore, China will actively collaborate with the relevant states and organizations to enhance the global standardization of LID.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to note the information contained in this Paper.

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