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TECHNICAL COMMISSION

Agenda Item 35: Aviation safety and air navigation standardization

OPERATIONS AT PLATEAU AIRPORTS

(Presented by China)

REVISION NO. 1

EXECUTIVE SUMMARY

China, with a large number of plateau airports serving substantial traffic flows, has rich practical experience in plateau operations. This working paper outlines the CAAC's approach to managing operations at plateau airports by setting out operation access conditions different from regular airports and special operational requirements for the reduction of safety risks in order to ensure safe and smooth operations at plateau airports. The CAAC wishes to share with ICAO and other member states its managerial experience and standards in this regard in a bid to enhance operational safety at plateau airports across the globe.

Action: The Assembly is invited to:

- a) consider China's policy measures regarding operations at plateau airports and recommend that interested member states adopt similar management measures;
- b) pay more attention to operations at plateau airports and recommend that ICAO develop the relevant guidance materials; and
- c) recommend that ICAO develop unified Standards and work aids in order to help enhance global capabilities in operations at plateau airports.

<i>Strategic Objectives:</i>	This information paper relates to the Safety Strategic Objective.
<i>Financial implications:</i>	N/A
<i>References:</i>	Annex 6

¹ Chinese version provided by China.

1. INTRODUCTION

1.1 Operations at plateau airports face a complex operational environment and have the following characteristics compared with airports in general:

- a) Airports are at high elevations with decreased air density and compromised aircraft performance;
- b) Airports are often located in mountainous areas with unfavorable clearance conditions requiring complex flight procedures design, and added difficulties to fly;
- c) Volatile weather and complex and abruptly changing local terrains often give rise to turbulences, wind shears and low visibility;
- d) Difficulties in deploying navigation facilities and vulnerability of communication signals to terrain blockages and reflections;
- e) Thin oxygen conditions cause oxygen deficiency in the human body, slowing down people's thoughts and reflexes and making them prone to errors, oversights and omissions.

1.2 Due to those characteristics, flight operations at plateau airports are more difficult, riskier and less accessible. If they are managed in the same way as ordinary airports, the probability of flight accidents would increase. Due to safety considerations, operations at plateau airports are subject to more restrictions, often at the expense of operational efficiency.

1.3 The western part of China is a mountainous region, in which 34 plateau airports are located, among them, 18 have an altitude over and above 2438 meters (8000 feet). Since 2004, in order to solve the problems of plateau operations, the CAAC has carried out systematic studies and, based on accumulated operational experience, promulgated and implemented the *Provisions for the Management of Operations at Plateau Airports, Classification Criteria and Operational Requirements for Special Airports and Medical Guidance on the Installation and Utilization of Oxygen-supply Systems at Plateau Airports*. RNP AR navigation technologies have been applied at 11 airports with complex terrains. Some of the airports are now equipped with engineered material arresting Systems (EMAS). All those measures have helped ensure safe operations at plateau airports and markedly improved their operational efficiency.

1.4 In recent years, traffic at plateau airports in China witnessed an annual increase of over 15%. In 2015, 65.6 million passengers were carried at those airports, among them, 6.3 million were passengers of high plateau airports. This has greatly contributed to the desire of travel of highlanders and their local economic and social development. Problems of operations over plateau airports are dealt with success.

1.5 Worldwide, plateau airports are mainly found in Asia, the Americas and Africa. Standout countries include China, Nepal, Mexico, Ethiopia, Peru, Bolivia and Ecuador. According to statistics, there are at least 45 high plateau airports and the number of plateau airports are in the hundreds. Problems for them are all similar and can be resolved by referencing to effective solutions.

2. **DISCUSSION**

2.1 Definitions: According to CAAC standards, plateau airports refer to airports with an altitude at or over 1524 meters (5000 feet). Among them, those having an elevation ranging from 1524 meters (5000 英尺) to 2438 meters (8000 feet) are defined as regular plateau airports, and those at or above 2438 meters (8000 feet) as high plateau airports.

2.2 Operation access conditions: According to CAAC standards, operators applying for operations to and from plateau or high plateau airports must meet the time and number requirements for operational experience and take-offs and landings. Managers required for high plateau operations must have managerial experience appropriate and corresponding to such operations.

2.3 Manual and procedural requirements: According to CAAC standards, operators must include in its operational manual special provisions for plateau operations. In addition, the CAAC also sets out clear requirements for the selection of crew, management of continued airworthiness and maintenance, dispatch and clearance, and emergency response.

2.4 Aircraft requirements: According to CAAC standards, the takeoff & landing flying envelope, barrier clearance capability, oxygen supply capability, cabin pressurization systems, communication capability and RNP operational capability must all be commensurate with plateau operations. The CAAC has also put forward specifications for the aircraft essential systems list and installation of sensitive components.

2.5 Personnel requirements: the CAAC has laid out requirements for pilots in terms of qualifications, time of fly, age, fitness, time spent in theoretical study on the ground and flight simulator hours. It also has requirements for maintenance staff, flight dispatchers and cabin crew.

2.6 Operational requirements for special airports: the CAAC has worked out a special airports list, establishing exclusive requirements for specified airports, such as requiring the formulation of a procedure for take-off with one engine inoperative and the application of RNP AR procedures.

2.7 Ongoing research by the CAAC also includes standards for the construction of plateau airports and their emergency rescue operations.

3. **CONCLUSION**

3.1 Contents discussed in this paper may serve as useful reference for interested countries in formulating their own policies regarding operations at plateau airports. The CAAC is ready to provide any relevant materials as requested.

3.2 Plateau airports the world over are faced with similar problems. The measures that the CAAC has adopted may serve as a blueprint for global plateau operations.