International Civil Aviation Organization

Eleventh Meeting of the Air Traffic Management Sub-Group (ATM/SG/11) of APANPIRG

Singapore, 2 – 6 October 2023

Agenda Item 5: ATM Systems (Modernization, Seamless ATM, CNS, ATFM)

AN INTELLIGENT AUXILIARY SYSTEM FOR AIRPORT RUNWAY SURFACE CONDITION ASSESSMENT IN CHINA

(Presented by China)

SUMMARY

This paper presents an intelligent auxiliary system for runway surface condition assessment in China. Since China has implemented GRF nationwide on schedule, fulfilled our obligations as a state party of ICAO, after undergoing three years of operation, we have gained substantial operational experience and also identified the challenges and difficulties within it. As a result, we have developed such a system to assist us in addressing the challenges we currently face.

1. INTRODUCTION

1.1 The new ICAO methodology for assessing and reporting runway surface conditions, commonly known as the Global Reporting Format (GRF), allows for the harmonized assessment and reporting of runway surface conditions and an enhanced flight crew assessment of take-off and landing performance.

1.2 The benefits of this new methodology of assessing runway surface conditions cannot be overemphasized in that it brings about better traffic management, reduced runway excursions as well as improved safety and efficiency of flight operations.

1.3 However, after undergoing three years of operation, we have identified the challenges that we need to address. Firstly, the assessment using a straightedge and visual observation is highly susceptible to deviations, and the authenticity of runway conditions cannot be guaranteed. Secondly, an excessive load of work has been generated since identifying and reporting any significant changes requires much more frequent measurement and monitoring time for aerodrome personnel. Thirdly, the missing real-time changes, manual assessing and reporting may lag behind fast-changing runway conditions.

1.4 In response to the aforementioned challenges, China has developed and implemented an intelligent auxiliary system for runway surface condition assessment, achieving impressive results.

2. DISCUSSION

Intelligent Auxiliary System for runway surface condition assessment in Beijing Capital International Airport

2.1 With the aim of promptly detecting and notifying any significant changes, we developed a GRF auxiliary system fixed station. This involved installing edge-light fixed points and embedded monitoring devices on the runway shoulders, allowing for continuous 24-hours measurement. This system enables real-time identification of contaminants and measures the range and depth of pollutants.

2.2 We have installed data collection terminals on the front of the vehicles. After the runway inspection vehicle enters the runway, it can automatically gather data on the runway surface condition, depth of contaminants, extent of pollutants, and more. This facilitates enables precise and efficient comprehensive coverage of runway condition data.

2.3 Upon receiving the data collected by the mobile terminal devices, this system can automatically generate SNOWTAM, which significantly enhances the timeliness of transmitting SNOWTAM to the air traffic control department.

2.4 By utilizing this system, the duration of a single runway inspection can be shortened by 3 to 5 minutes. With four daily inspections taken into account, this would result in a total reduction of 20 minutes in runway occupancy time.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper; and

b) discuss any relevant matters as appropriate.

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