International Civil Aviation Organization
Asia and Pacific Office

Nineteenth Meeting of the Asia Pacific Regional Aviation Safety Team (APRAST/19)

(Bangkok, Thailand, 6-10 February 2023)

Agenda Item 4: Presentations – State / Industry / ICAO

IMPLEMENTATION OF A-SMGCS LEVEL 5 TO STRENGTHEN RUNWAY SAFETY IN RESPONSE TO THE RECOVERY OF AVIATION DEMAND

(Presented by Republic of Korea)

SUMMARY

The purpose of the paper is to **introduce the experience of A-SMGCS Level 5 implementation process** to strengthen runway safety and improve airport capacity and **discuss the need to revise ICAO regulations**.

1. INTRODUCTION

1.1 Aerodrome control service environments are being developed remarkably using various methods such as electronic strips, A-SMGCS, or A-CDM to improve runway safety and airport capacity, but ground operation environments for pilots are still rely on voice communications, lighting, and signs as it used to be.

a) In particular, low visibility could increase the possibility to cause runway incursions, route deviations, large-scale delays, or cancellations.

b) To tackle this issue, the Republic of Korea introduced 'Follow the greens'* (practically operational A-SMGCS Level 4, '20.4) and achieved ground-breaking results reducing the occurrence of incorrect access to runways or taxiways by more than 70%.

c) But there are still concerns regarding runway incursions or route deviations due to difficulties in securing visibility during low visibility or sunlight reflection.

1.2 In response, we are implementing the A-SMGCS Level 5 with airport operators to strengthen runway safety, increase airport capacity, and reduce carbon emissions in line with Global Aviation Safety Plan (GASP) & Global Air Navigation Plan (GANP).

2. DISCUSSION

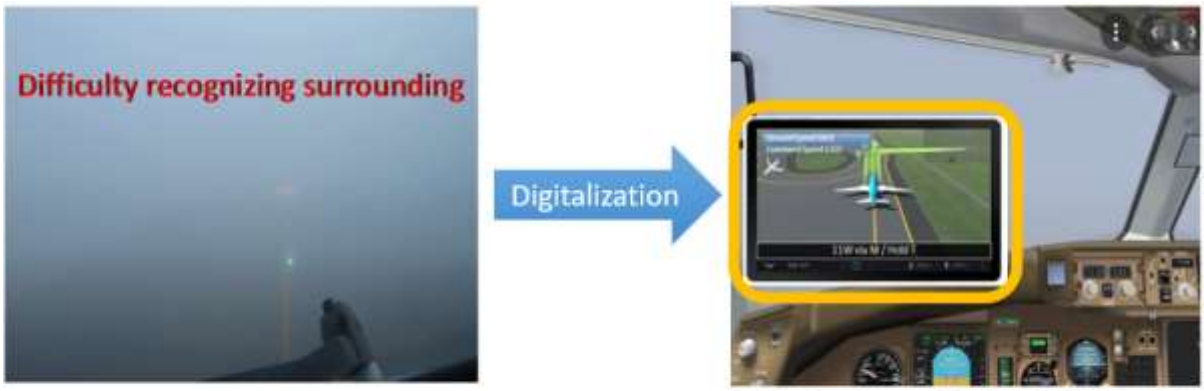
2.1 For implementation of A-SMGCS Level 5, on-board equipment in the cockpit is essential to provide pilots with real-time route guidance, other aircraft movements, and safety nets such as warning of route deviations or runway incursions based on information generated by A-SMGCS.

a) Of course, data link system is also indispensable for information linkage between A-SMGCS and on-board equipment in the cockpit, which is the first information sharing platform between the air traffic control system and the cockpit; and

Note- The term 'Follow the greens' means the installation of green lights at regular intervals on the centerline of the taxiway to provide automatic and real-time ground guidance to the pilots during the day and night.

b) This is a significant change from analog that depends on voice communication, lighting, and signs to digital, at the same time it is the first information sharing platform between air traffic control and cockpit system.

< Expectation effects >



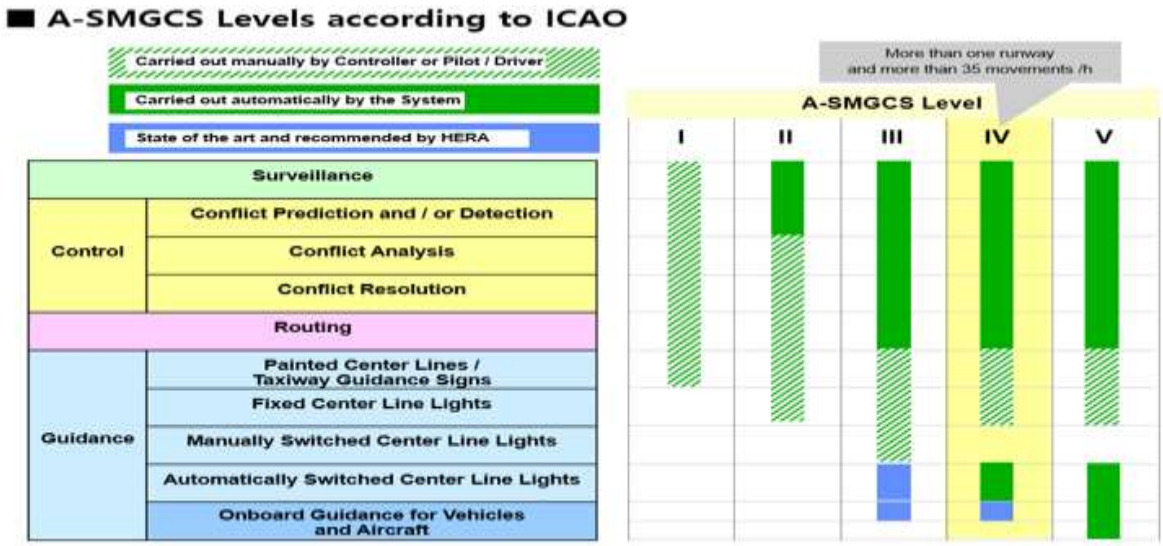
2.2 Due to a lack of standardized regulations, airport operators, airlines, and airport authorities went through trial and error in deciding that what types of on-board equipment are available in the cockpit and what kinds of data link systems are suitable for connecting A-SMGCS to the cockpit.

a) After submitting proposals for amendments to Annex 14 and Doc 9830 to the 41st ICAO Assembly (’22.9), currently we are participating in the development of ICAO regulations.

2.3 We are currently in the process of updating functions to improve after the test operation ('22.11), which transmits A-SMGCS information to on-board equipment in the cockpit of actual

operating aircraft with a pre-verification through airport operating vehicles (Runway inspection, GRF, RFF, and snow removal) and towed aircraft.

< A future global airport infrastructure >



3. ACTION BY THE MEETING

3.1 The Meeting is invited to comment the following two matters.

a) For A-SMGCS Level 5 implementation we are considering the electronic flight bag (EFB*, *refer to Doc 10020*) as an on-board equipment, and LTE, Wifi, and AeroMACS* (*refer to Doc 10044*) as a data link system; and

b) The majority of the States are using A-SMGCS with only a manual (*Doc 9830*), there is a need that Annex 14 should include related regulations, please share your opinions on what provisions you think should be included other than functions and purposes of A-SMGCS, and the systems that should be interfaced with (for instance air traffic management systems).

— END —

Note- Electronic flight bag (EFB) is an electronic information system, comprised of equipment and applications for flight crew, which allows for storing, updating, displaying and processing of EFB functions to support flight operations or duties. The aeronautical mobile airport communications system (AeroMACS) is an ICAO standardized data link system for the safety and regularity of flight operations in the aerodrome (airport) environment.