



THIRTEENTH AIR NAVIGATION CONFERENCE

Montréal, Canada, 9 to 19 October 2018

COMMITTEE A

Agenda Item 3: Enhancing the global air navigation system

3.5: Other ATM issues

GLOBAL STANDARDS, RECOMMENDED PRACTICES AND GUIDANCE MATERIAL FOR REMOTE (DIGITAL) TOWER TECHNOLOGY FOR AIR TRAFFIC SERVICES

(Presented by India)

EXECUTIVE SUMMARY

Under ICAO's Global Air Navigation Plan (GANP, Doc 9750) and aviation system block upgrades (ASBUs) framework (Block 1 module), remote (digital) tower is to be ready for deployment in timeframe of 2019-2025. While some service providers have implemented the remote towers or are carrying out trials for implementation of remote towers to fulfil individual operational needs. Despite technological readiness, there is an increasing need to adopt a uniform approach with common standards and guidance material to ensure harmonized implementation worldwide.

While ICAO has issued some guidelines for implementation of remote towers from air traffic services operation point of view, this paper briefly outlines the requirement of developing Standards and Recommended Practices for technological specifications of system, as diversified approach is being followed by various system providers and service providers. The required regulation/standardization needs are to be identified, including the need to incorporate the provision of remotely operated aerodrome control services in ICAO Annex 10 — *Aeronautical Telecommunications* or any other relevant documentation.

Action: The Conference is invited to:

- a) note the information contained in the paper;
- b) recognize that a uniform approach with common standards and guidance material is necessary in respect system for remote/digital tower along with operation procedures; and
- c) request ICAO to develop technology standards, recommended practices and guidance material for the aviation regulators and service providers.

1. INTRODUCTION

1.1 The development of new technologies enables the provision of aerodrome control services from locations/facilities where direct visual observation is not possible. Instead, provision of aerodrome control services is based on a view of the aerodrome and its vicinity through the means of technology. A remote tower can be located away from the aerodrome or it can be located in a building on or close to the aerodrome. The use of remote/digital tower can be used for operation of a single aerodrome, multiple aerodromes or at a larger aerodrome that require a facility to be used as an alternate facility in case of contingency operations.

1.2 Development, certification/validation activities associated with different mode of operation listed above are being undertaken by various service providers and system developers. In some States, remote tower services are already being provided by using technology.

1.3 The key drivers for the planning, development and implementation of remote/digital towers are the increased service levels, reduced costs and improved safety level through better use of safety nets and technology.

1.4 The digital/remote tower technology is changing the traditional way of providing air traffic service (ATS). The technology will be very useful and hold immense potential for countries like India wherein Government through its policy initiatives like Regional Connectivity Scheme (RCS) to start operations at small regional airports in remote areas to cater to the phenomenal growth in civil aviation.

2. DISCUSSION

2.1 Regulatory guidelines

2.1.1 It may be noted that ICAO vide State Letter AN 7/63.1.1-17/23 dated 6 March 2017, has proposed amendment to the *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444) which mandates ATS through remote control tower. The proposed amendment states that visual observation shall be achieved through direct out-of-the-window observation, or through indirect observation utilizing a visual surveillance system which is specifically approved for the purpose by the appropriate ATS authority. Visual surveillance system has been defined as an electro-optical system providing an electronic visual presentation of traffic and any other information necessary to maintain situational awareness at an aerodrome and its vicinity. The amendment shall become applicable on 8 November 2018.

2.1.2 Besides operational requirements as stated above, introduction of such a visual surveillance system in Doc 4444 has not defined the required level of system reliability, availability and integrity which will have safety implications to operations. There is no global guidance on the minimum technical requirements for system to provide such services. To provide ATS by using digital/remote towers will also require development of Standards and Recommended Practices (SARPs), guidance materials, operational procedures, development of safety case, regulatory approval, training and competency, etc.

2.1.3 With respect to technology following are the main concerns:

- a) minimum system/technology requirements to provide ATS at a single aerodrome, multiple aerodromes or for using as an alternate in case of contingency situations by using digital/remote tower technology;
- b) controller working positions (CWP) specifications and human machine interface (HMI) issues;
- c) camera and display technologies to provide an acceptable level of view to air traffic controllers for providing air traffic services;
- d) other system requirements such as use of radar and multilateration surveillance technologies, interfacing with the existing ATM data processing systems, data fusions from various sensors and data sources to provide safe and efficient ATS; and
- e) any other technological requirements for the system.

2.1.4 The aforesaid ICAO State Letter has made reference to European Aviation Safety Agency (EASA) guidance material published in 2015. Guidance from international organizations such as the European Organisation for Civil Aviation Equipment (EUROCAE) in the form of ED 240-“*Minimum aviation system performance specification for remote tower optical systems*” is also available. However, it is observed that for lack of global ICAO Standards and Recommended Practices and guidance materials, a diversified approach is being adopted by different States/service providers and equipment suppliers.

2.1.5 Global and harmonized approach with common standards and guidance materials for technology has become increasingly important for ATS by using Digital/Remote Tower to ensure that implementation will be uniform and safety, integrity and service levels of the system are not compromised for operational and technical requirements. Therefore, Standards and guidance materials are urgently required from ICAO for system implementation.

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