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中国民用航空局
空中交通管理局
Air Traffic Management Bureau.CAAC

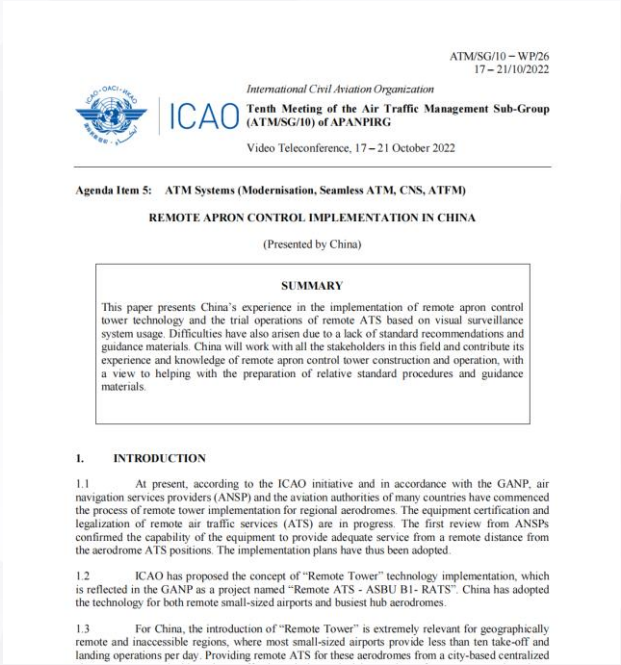
REMOTE APRON CONTROL IMPLEMENTATION IN CHINA

Presented by China

2022.09.08

SUMMARY

This paper presents China’ s experience in the implementation of remote apron control tower technology and the trial operations of remote ATS based on visual surveillance system usage.



ATM/SG/10 – WP/26
17 – 21/10/2022

International Civil Aviation Organization

ICAO **Tenth Meeting of the Air Traffic Management Sub-Group (ATM/SG/10) of APANPIRG**

Video Teleconference, 17 – 21 October 2022

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

REMOTE APRON CONTROL IMPLEMENTATION IN CHINA

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SUMMARY

This paper presents China’s experience in the implementation of remote apron control tower technology and the trial operations of remote ATS based on visual surveillance system usage. Difficulties have also arisen due to a lack of standard recommendations and guidance materials. China will work with all the stakeholders in this field and contribute its experience and knowledge of remote apron control tower construction and operation, with a view to helping with the preparation of relative standard procedures and guidance materials.

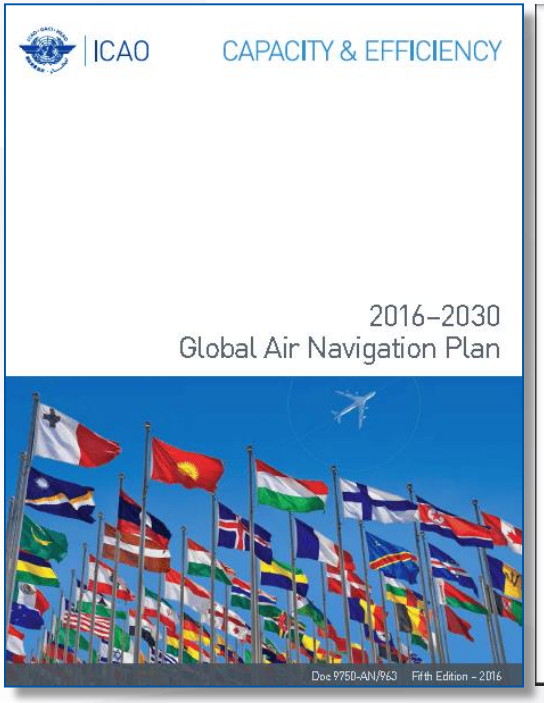
1. INTRODUCTION

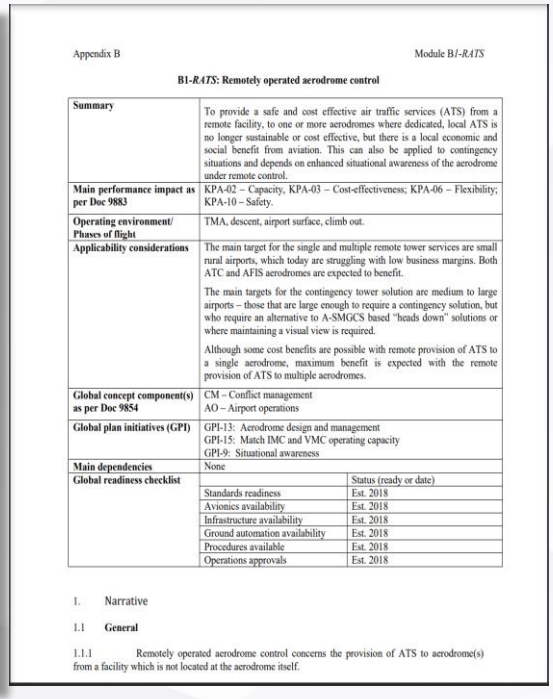
1.1 At present, according to the ICAO initiative and in accordance with the GANP, air navigation services providers (ANSP) and the aviation authorities of many countries have commenced the process of remote tower implementation for regional aerodromes. The equipment certification and legalization of remote air traffic services (ATS) are in progress. The first review from ANSPs confirmed the capability of the equipment to provide adequate service from a remote distance from the aerodrome ATS positions. The implementation plans have thus been adopted.

1.2 ICAO has proposed the concept of “Remote Tower” technology implementation, which is reflected in the GANP as a project named “Remote ATS - ASBU B1- RATS”. China has adopted the technology for both remote small-sized airports and busiest hub aerodromes.

1.3 For China, the introduction of “Remote Tower” is extremely relevant for geographically remote and inaccessible regions, where most small-sized airports provide less than ten take-off and landing operations per day. Providing remote ATS for these aerodromes from a city-based centralized

Background





Appendix B — Module B1-*RATS*

B1-*RATS*: Remotely operated aerodrome control

Summary	To provide a safe and cost effective air traffic services (ATS) from a remote facility, to one or more aerodromes where dedicated, local ATS is no longer sustainable or cost effective, but there is a local economic and social benefit from aviation. This can also be applied to contingency situations and depends on enhanced situational awareness of the aerodrome under remote control.	
Main performance impact as per Doc 9883	KPA-02 – Capacity, KPA-03 – Cost-effectiveness; KPA-06 – Flexibility; KPA-10 – Safety.	
Operating environment/ Phases of flight	TMA, descent, airport surface, climb out.	
Applicability considerations	The main target for the single and multiple remote tower services are small rural airports, which today are struggling with low business margins. Both ATC and AFIS aerodromes are expected to benefit. The main targets for the contingency tower solution are medium to large airports – those that are large enough to require a contingency solution, but who require an alternative to A-SMGCS based "heads down" solutions or where maintaining a visual view is required. Although some cost benefits are possible with remote provision of ATS to a single aerodrome, maximum benefit is expected with the remote provision of ATS to multiple aerodromes.	
Global concept component(s) as per Doc 9854	CM – Conflict management AO – Airport operations	
Global plan initiatives (GPI)	GPI-13: Aerodrome design and management GPI-15: Match IMC and VMC operating capacity GPI-9: Situational awareness	
Main dependencies	None	
Global readiness checklist		Status (ready or date)
	Standards readiness	Est. 2018
	Avionics availability	Est. 2018
	Infrastructure availability	Est. 2018
	Ground automation availability	Est. 2018
	Procedures available	Est. 2018
	Operations approvals	Est. 2018

1. Narrative

1.1 **General**

1.1.1 Remotely operated aerodrome control concerns the provision of ATS to aerodrome(s) from a facility which is not located at the aerodrome itself.

According to the ICAO initiative and in accordance with the GANP, air navigation services providers (ANSP) and the aviation authorities of many countries have commenced the process of remote tower implementation for regional aerodromes.

Preparations

Works

REGIONAL AERODROME

Trial operations of Remote Tower have been carried out in Xinjiang province since May 2021. The Remote Tower Centre in Xinjiang is designed to provide ATS for two rural small-sized airports。

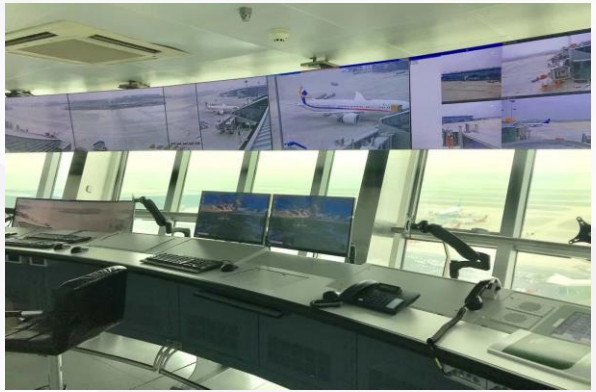
HUB AIRPORTS

Guangzhou Baiyun Airport's remote tower trial operations for apron control usage in a Mega-sized airport have been undergoing since 2021

Remote apron control Implementation at Baiyun airport

Starting point

In 2018, Guangzhou Baiyun International Airport, one of China's three major international aviation hubs, established the apron control unit.There exist visual blind spots due to the constraints of the on-site working environment, therefore, surveillance equipment was installed to compensate for the blind spots.



Remote apron control Implementation at Baiyun airport

Development

2019 The construction of a single-position remote apron tower was initially started.
2020 The validation of the remote tower for apron control was completed.
2021 The trial operations for the remote apron control tower are undergoing while the conventional apron tower remains in operation as a backup.

Technical Highlights of Remote Tower technology for apron control usage in Guangzhou Baiyun airport.

The visual surveillance systems

Cost-effective

Integrate the previous video sources installed in the vicinity of the parking stands of the airport's security system with the video sources provided by the newly installed surveillance equipment.

three-level surveillance modes

three sixty panorama scenes monitoring the airport maneuvering area

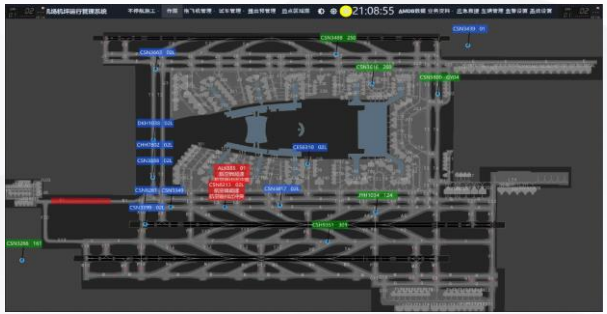
regional scenes monitoring the apron area adjacent to terminals

single-target surveillance scenes monitoring the parking stands

The apron operation management system based on the AMDB technology

The AMDB technology digitalizes geographic information and operational information of airport elements as structured data, including runways, taxiways, ground pavement markings, obstacles, navigation lighting systems, and taxi routes.

The AMDB ground graphics provides a real-time display of aircraft location, approach and departure status, runways, and construction areas, which digitalizes the management of the apron control operation.

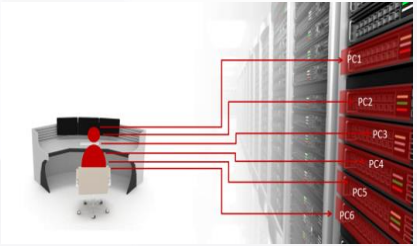


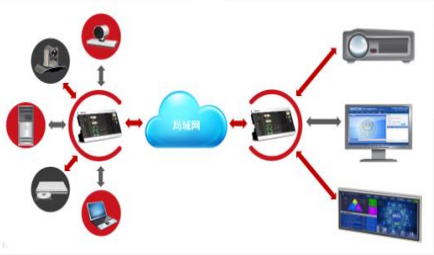
The controller-working position management system

Pre-define the display layout according to different working scenarios and can switch different scenarios with a single click of a button when needed

Improving the convenience and flexibility of the whole facility

Avoid the apron controllers from switching positions frequently





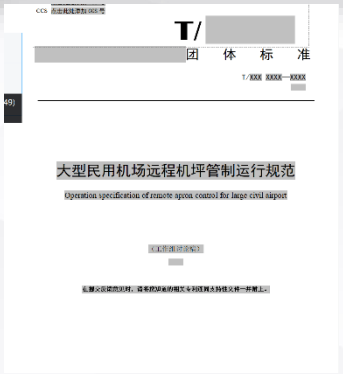
Conclusion

1

Difficulties have arisen in the further practical use of the visual surveillance system technology due to its uncertain reliability, therefore, the remote Apron control unit still utilizes the conventional tower as a backup

2

China Civil Aviation is working on the relevant guideline Materials for the visual surveillance system and remote tower technology.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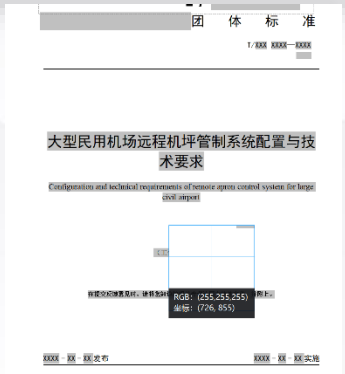
大型民用机场远程机坪管制运行规范
Operation specification of remote apron control for large civil airport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大型民用机场远程机坪管制系统配置与技术要求
Configuration and technical requirements of remote apron control system for large civil airport
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坐标：(726, 855)
XXXX - XX - XX 发布
XXXX - XX - XX 实施

The meeting is invited to

01 Take note of the implementation of remote tower for the apron control usage in China

02 Develop operation and technical specifications for the remote tower in the Asia Pacific region

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Thank you

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