International Civil Aviation Organization

Eleventh Meeting of the South China Sea Traffic Flow Review Group (SCSTFRG/11)

Bangkok Thailand, 04 – 06 July 2023

Agenda Item 4: Discussion on PBN Routes Development and FLAS/FLOS Optimization

FEASIBILITY STUDY ON RE-DESIGNATION OF ATS ROUTE A1 TO UNIDIRECTIOANAL PBN ROUTES

(Presented by China)

SUMMARY

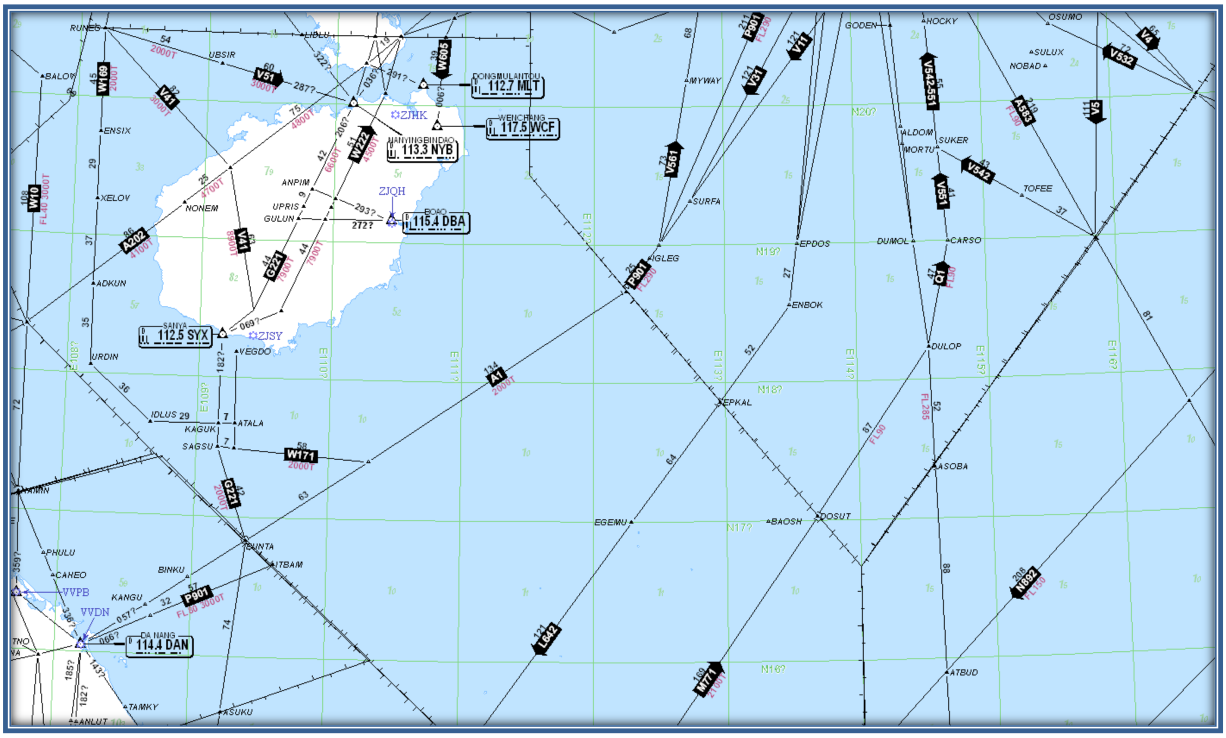
This paper presents the feasibility study of parallel uni-directional routes design based on A1 Which is the main transport hub of Northeast Asia and Southeast Asia and has been identified as the priority area 1 in the South China Sea area to promote the development of civil aviation in the Asia and Pacific Region.

1. INTRODUCTION

1.1 A1 is the major transport trunk link up with Southeast Asia and Northeast Asia, which services hinge airport of Mainland China, Hong Kong China, Japan, Republic of Korea, Viet Nam, Cambodia and Thailand etc. that demonstrate large demand on it, attract even more attention with the rapid development of civil aviation and the air traffic flow. With its rising significant in the Asia and Pacific Region, A1 has become an important node of promoting the development of civil aviation in the core zone of the South China Sea.

1.2 As highlighted in the previous meetings of South China Sea Traffic Flow Review Group - major traffic flow figures indicated a significant increase in traffic movements on A1 from year 2010 to year 2019 with an annual increase of 11.9%. As trunk routes, A1 carried a total about 2,884 movements a week into the South China Sea. As the impact of the Covid19, route A1 is also one of the international routes with the fastest recovery in traffic volume. As of May 2023, the average daily number of flights over the route A1 has recovered to 75 percent of the 2019 level.

1.3 China would like to reiterate the view that States/Administrations along route A1 are encouraged to be engaged in the research on the re-designation of parallel uni-directional routes and consequently give priority in order to manage the traffic flow concerned more effectively.



Segment of route A1 (within Sanya FIR)

2. DISCUSSION

Route Structure

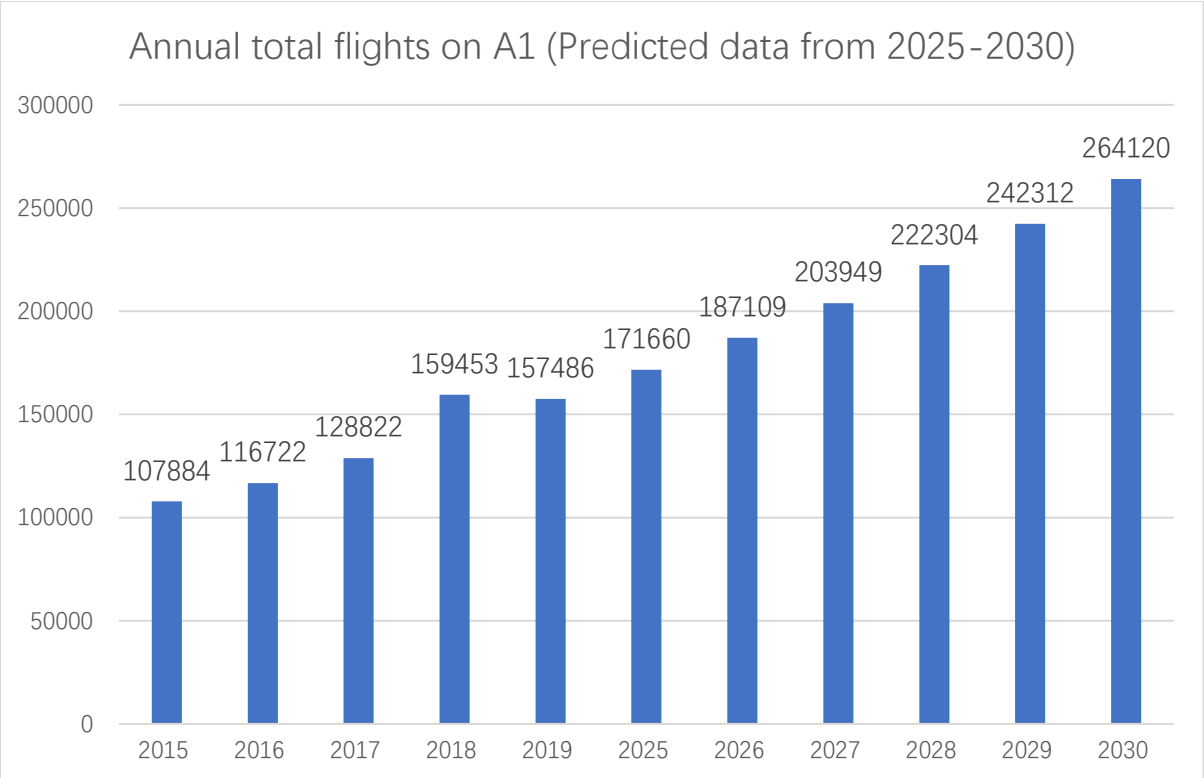
2.1 *Route A1.* The segment of route A1 in Sanya FIR is IKELA-LENKO-BUNTA. 20 NM transfer spacing parameters has been used at the same level under the condition of radar control and the whole area is covered by VHF. Daily volume in Sanya FIR segment was about 432 aircrafts and daily peak is 547 aircrafts in 2019.

2.2 *Route W171.* The segment of route W171 in Sanya FIR is SAGSU-SAVNO-LENKO which services aircrafts departing from Sanya airport to Hong Kong and eastern of China since 2014. Its average daily movements are 25 and daily peak is 45 aircrafts.

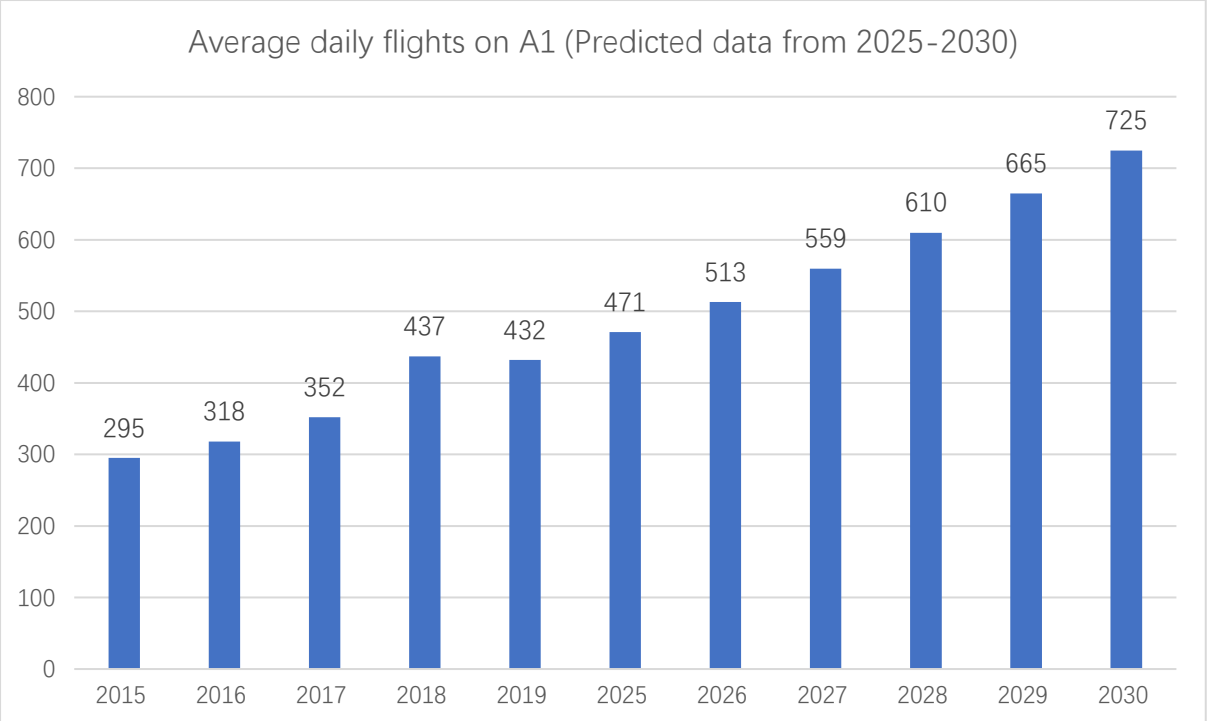
Traffic analysis

2.3 From 2015 to 2019, the annual average growth rate of flights on A1 in Sanya FIR is 9.92% of which the highest growth rate was 23.78% in 2018.

2.4 With the end of the pandemic, traffic on route A1 is expected to fully recover to 2019 levels in 2024. If the growth rate of 9% is calculated from 2025, by 2030, the A1 route will have 264,120 flights, or 725 daily flights, which is 2.3 times compared to the current 2023 traffic volume.



Annual total flights on A1 (Predicted data from 2025 to 2030)

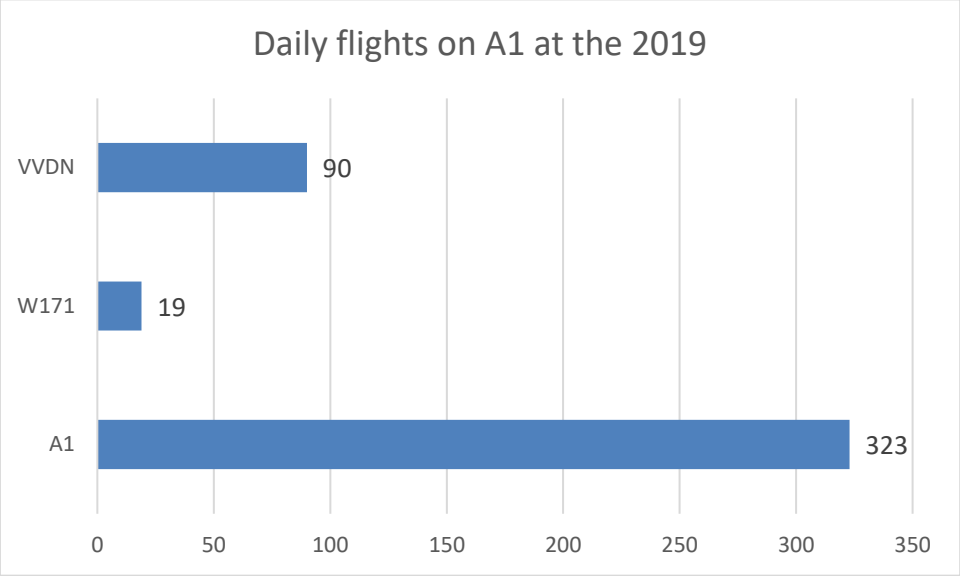


Average daily flights on A1 (Predicted data from 2025 to 2030)

2.5 Since 2014, W171 was put into use, a portion of departure flights from Sanya airport (SYX) to Hongkong China and Mainland China not only increases the volume of A1 but also increase the risk of danger by their vertical movement. Meanwhile, more and more flights depart from and arrive at Da

Nang airport that would bring new challenges to allocate flight level for economic cruising, solving traffic conflict and reducing carbon exhausts.

2.6 Both ascend and descend flight will converge gather in LENKO as shown above. Often aircraft are told to stay at lower level or make some maneuver to achieve favorable/optimum level. Thus, sometimes it has incurred a few of extra delay, additional fuel burn and extra carbon dioxide emission into the atmosphere. Data collected in 2019 has shown the congestion traffic flow.



Daily flights on A1 in 2019

2.7 With the rapidly changing distribution of traffic flow and the significant improvements in ATM facilities currently underway, China considers that the conventional two-way ATS route would not meet the demand of operation in the future and the closely spacing parallel uni-directional routes could enhance airspace capacity, increase the safety level of operations, deploy more economic cruising level, enlarge economic benefit and promote environmental protection.

Route Designation

2.8 Taking into account the existing route structure, the suggested South-westbound parallel uni-directional route in Sanya FIR is IGLEG-SYT13-BUNTA, and the suggested North-eastbound parallel uni-directional route in Sanya FIR is ITBAM-IKELA. The conventional ATS route A1 will be replaced by the new parallel uni-directional routes as designed.

Proposed parallel uni-directional routes (Within Sanya FIR)

2.9 Based on the analysis on current route structure and traffic flow, G221 connect the parallel routes by BUNTA for westbound traffic. At the meantime, it's suggested that Hong Kong, Ho Chi Minh, Vientiane, Phnom Penh and Bangkok, the related FIRs along with A1 take step to establish a parallel route with A1 accordingly with the same lateral spacing parameters at least in order to manage these traffic flow more effectively.

2.10 Considering the CNS/ATM capabilities, anticipated traffic flow density, airspace capacity requirements, aircraft performance requirements that are available to aircraft, China would like to recommend RNAV2 navigation specification on this parallel route group.

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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