



ICAO

International Civil Aviation Organization

The Ninth Meeting of the APANPIRG ATM Sub-Group  
(ATM/SG/9)

Video Teleconference, 01 – 05 November 2021

## Agenda Item 6: ATM Coordination (Meetings, Route Development, Contingency Planning)

### ADS-C CDP IMPLEMENTATION IN FUKUOKA FIR

(Presented by Japan)

#### SUMMARY

This paper presents the implementation process and short-term progress report for the Automatic Dependent Surveillance-Contract (ADS-C) Climb Descend Procedure (CDP) in the Pacific Ocean airspace of the Fukuoka Flight Information Region (FIR).

## 1. INTRODUCTION

1.1 The Automatic Dependent Surveillance-Contract (ADS-C) Climb Descend Procedure (CDP) is designed to improve Air Traffic Service (ATS) to properly equipped aircraft. ADS-C CDP allows Oceanic Air Traffic Controller (ATC) to approve an altitude change request when other standard separations (e.g., ADS-C distance-based 30 NM longitudinal separation minima) do not allow for a climb or descent through the altitude of a blocking aircraft.

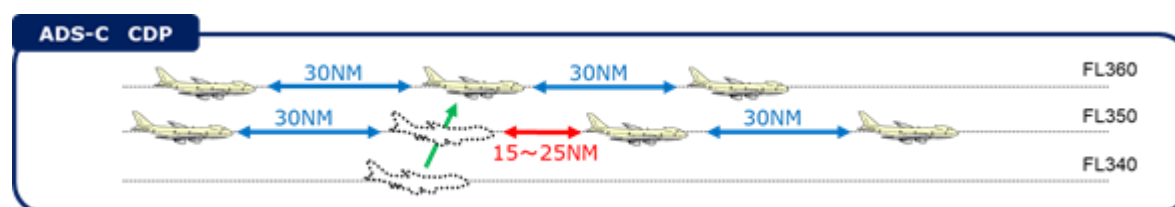


Figure 1 presents an example of adopting ADS-C CDP.

1.2 The implementation of the ADS-C CDP leads to facilitate increased access to optimum flight levels for aircraft operating in airspace where no ATS surveillance service is available and allow more flights to achieve their preferred vertical profiles, thereby increasing both airspace capacity and efficiency as well as aircraft operators' efficiency.

1.3 In the long-term vision for the future air traffic systems of Japan, named as "Collaborative Actions for Renovation of Air Traffic Systems (CARATS)," the Japan Civil Aviation Bureau (JCAB) established the implementation plan of ADS-C CDP in accordance with the Global Air Navigation Plan (GANP) of the International Civil Aviation Organization (ICAO), in 2015.

1.4 JCAB also decided to implement ADS-C CDP after starting the Trajectorized Oceanic Traffic Data Processing System (TOPS), a new Oceanic ATC system, instead of the Oceanic Data Processing (ODP), which was a legacy Oceanic ATC system and difficult to upgrade of adopting ADS-C CDP. TOPS started its operations on 3 February 2019.

## 2. DISCUSSION

### Plan and progress of trial operation

2.1 Although the traffic volume in the Pacific Ocean airspace is still low due to the impact of COVID-19, JCAB has implemented ADS-C CDP in the Pacific Ocean airspace of Fukuoka FIR from 9 September 2021 as a trial phase. The detailed implementation process of ADS-C CDP in Fukuoka FIR was presented on the IP/04 at the Twenty-sixth Meeting of the Regional Airspace Safety Monitoring Advisory Group (RASMA/26).

2.2 The detail of the trial operation is noticed and published by the Aeronautical Information Publication Supplement (AIP SUP). The AIP SUP is shown in the Attachment.

2.3 **Table 1** shows a summary of the actual record that Air Traffic Controllers (ATC) attempted to change an aircraft altitude by adopting ADS-C CDP from 9 September to 2 October 2021. A total of 23 aircraft were approved altitude change by adopting ADS-C CDP during the period. Eight aircraft were unable to change altitude due to the following three reasons.

- The requesting altitude was the same as the blocking aircraft altitude.
- Distance between the preceding aircraft and the following aircraft did not meet longitudinal separation standards, 15 NM or 25 NM.
- The following aircraft was faster more than Mach 0.02 faster than the preceding aircraft.

		Approved	Unable	Error	Total
9 - 11 Sep	(1st week)	4	2	2	8
12 - 18 Sep	(2nd week)	9	4	0	13
19 - 25 Sep	(3rd week)	5	2	0	7
26 Sep - 2 Oct	(4th week)	5	0	1	6
<b>Total</b>		<b>23</b>	<b>8</b>	<b>3</b>	<b>34</b>

**Table 1:** Summary of ADS-C CDP actual record

2.4 There were 3 cases that ADS-C CDP was not adopted due to system error.

2.5 ADS-C CDP is adopted in case that both requesting and blocking aircraft are available the ATS data link services, ADS-C and the Controller-Pilot Data Link Communications (CPDLC). On the other hand, ADS-C CDP allows not only the Performance-Based Communication and Surveillance (PBCS) approved aircraft but non-PBCS approved aircraft to change altitude.

2.6 In the 23 approved cases, there were 6 cases that the requesting aircraft was non-PBCS approved aircraft, there were 6 cases that the blocking aircraft was non-PBCS approved aircraft, and there was 1 case that both aircraft were non-PBCS approved aircraft.

Blocking aircraft Requesting aircraft	PBCS approved	non-PBCS approved
PBCS approved	10	6
non-PBCS approved	6	1

**Table 2:** Breakdown of ADS-C CDP adopted cases

2.7 According to the above experience, it is shown that implementing ADS-C CDP would allow not only PBCS approved aircraft but non-PBCS approved aircraft to meet their proposal and beneficial altitude. However, please note that JCAB encourages aircraft operators flying in the Pacific Ocean airspace, especially the North Pacific (NOPAC) routes to obtain the PBCS approval/authorization, because of the NOPAC redesign project which is considered and discussed between the Federal Aviation Administration (FAA) and JCAB.

2.8 There have not been significant issues reported from aircraft operators and ATC in the first month of the trial operation. The trial operation will be planned for approximately one and a half years, and the transition from trial operation to official operation will be estimated in March 2022. JCAB will report the progress of ADS-C CDP operation continuously at some international meetings to support the implementation of ADS-C CDP in other states of the Asia Pacific region.

### **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.



Attachment

AIP Supplement for Japan

AIP SUP  
124/21  
Effective from 09 SEP 2021  
Published on 12 AUG 2021

**OPERATIONAL TRIAL OF LONGITUDINAL SEPARATION MINIMA  
BASED ON DISTANCE USING ADS-C CLIMB AND DESCEND  
PROCEDURE(CDP)**

From 1500UTC 8 SEP 2021, operational trial will be conducted as follows.

1. ADS-C CDP(Climb and Descend Procedure)  
This procedure is that an aircraft on the same track is cleared to climb or descend through the level of another aircraft by air controller's decision. It is based upon ICAO PANS-ATM [Doc.4444] 5.4.2.8 and Circular342 ADS-C CDP.
2. Purpose of this operational trial;  
Longitudinal separation minima based on distance using ADS-C CDP is evaluated whether it can be applied stably.
3. Applicable time;  
24hours
4. Airspace of application;  
Data link airspace over the Pacific Ocean within Fukuoka FIR.
5. Requirements;  
Aircraft shall apply for ATS data link services using ADS-C and CPDLC; andThe following conditions of aircraft shall be confirmed by ATC at the time of application. (1)The last ADS-C reports contain position accuracy of 0.25 NM or better. (2)The altitude difference is not greater than 2000ft. (3) cruising at a single altitude. (4) not deviating from route. (5) It is possible to re-establish vertical separation within 15 minutes from demanding former ADS-C report.
6. Separation minimum  
Regardless of ENR3.5.3.11, it is as follows that longitudinal separation minima applied between aircraft which meet the requirement specified above. ①15NM when the preceding aircraft is at the same speed or faster than the following aircraft. ②25NM when the following aircraft is not more than Mach 0.02 faster than the preceding aircraft.
7. Contingency procedures  
When aircraft can not satisfy ATS data link services using ADS-C and CPDLC, pilot shall notify ATC as soon as practicable and follow the instructions provided by ATC.
8. Suspension of the operational trial  
This trial will be suspended for a period when the system shutdown of the data link systems is notified by NOTAM.
9. For further information  
Air Traffic Control Division, Air Navigation Services Department, Civil Aviation Bureau, Ministry of Land, Infrastructure, Transport and Tourism.TEL+81-3-5253-8749