



International Civil Aviation Organization

**THE NINTH MEETING OF PERFORMANCE BASED NAVIGATION
IMPLEMENTATION COORDINATION GROUP (PBNICG/9)**

Video Conference, 22 - 24 March 2022

Agenda Item 5: CDO/CCO Implementation

CDO/CCO IMPLEMENTATION IN INDONESIA
(Presented by Indonesia)

SUMMARY

This paper presents the implementation of CDO/CCO in Indonesia.

1. INTRODUCTION

- 1.1 Indonesia refers to Doc 8168 Aircraft Operations Procedures for Air Navigation Services, Doc 9931 Continuous Descent Operations (CDO) Manual, and Doc 9993 Continuous Climb Operations (CCO) Manual in designing flight procedures.
- 1.2 The implementation of CDO/CCO is one of the mandatory factors for designing SID/STAR procedures in Indonesia.

2. DISCUSSION

The standard for Implementing CDO/CCO

- 2.1 In designing the SID/STAR procedures, Indonesia flight procedure designers consider the altitude limitation for climbing and descent to implement CDO/CCO based on the airspace and obstacles condition in the area.
- 2.2 The majority of the 16 international airports that implemented PBN SID/STAR procedures have implemented CDO/CCO.
- 2.3 CDO/CCO implementation is one of the materials that is given in PBN socialization for ATS personnel.

Challenges in CDO/CCO Implementation

2.4 In implementing the CDO/CCO, Indonesia has faced some challenges. One example is in New Yogyakarta International airport.

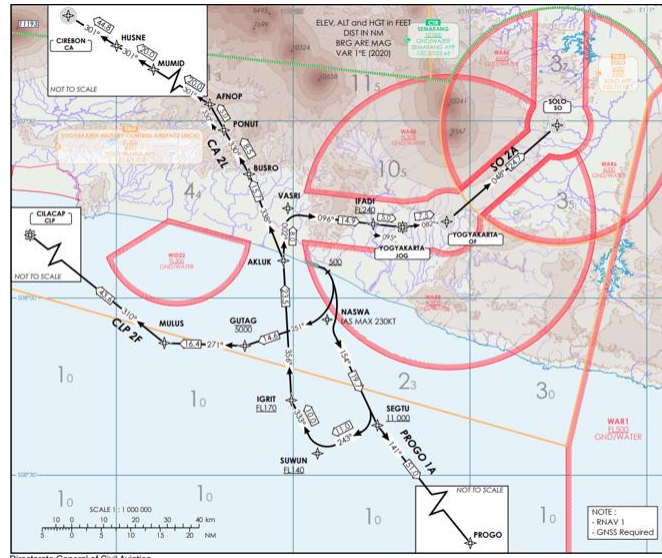


Figure 1a. SID RWY 11 New Yogyakarta International airport

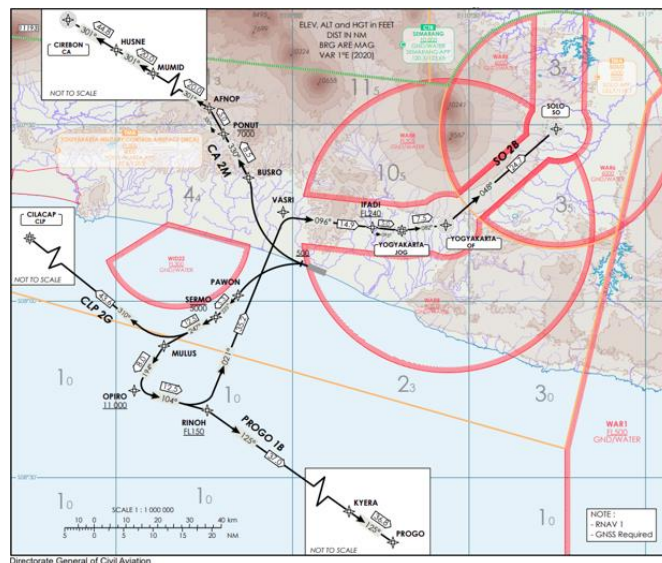


Figure 1b. SID RWY 11 New Yogyakarta International airport

2.5 Figure 1 shows the airspace condition above New Yogyakarta International Airport. Due to the surrounding military airspace, the SID procedure on this airport is adjusted to the altitude limitation (below 5000 feet). To implement CCO, the aircraft is directed to south before heading north to connect with ATS route. In this SID, CCO is implemented but not effective because of airspace limitation.

CDO/CCO Implementation Contribution in Reducing Carbon Emissions

- 2.6 One of the airports with flight procedures that have applied CDO/CCO on their implementation is Soekarno Hatta Airport – Jakarta.
- 2.7 The implementation of CDO/CCO in Soekarno Hatta Airport has contributed to the reduction of fuel consumption and resulted in fewer carbon emissions.
- 2.8 In average, the carbon emissions resulted for aircraft (type A320) taking off before the implementation of RNAV1 is ± 2910 kg while the carbon emissions after the implementation of the procedure is ± 2860 kg. With the number of traffic movements 300 traffic/day, the implementation of CCO contributed in the ± 5.4 ton/years reduction of carbon emisisions.
- 2.9 On the other hand, for the landing aircraft (type A320), the carbon emission before implementation RNAV1 about ± 496 kg, and after the implementation is ± 476 kg. With the number of traffic movements 300 traffic/day, the implementation of CDO contributed in the ± 2.1 ton/years reduction of carbon emisisions.

3. ACTION REQUIRED BY THE MEETING

- 3.1 The meeting is invited to:
 - b) Note the information contained in this paper; and
 - c) Discuss any relevant matters as appropriate.

**Summary of the paper to be included in the meeting report:
Indonesia has presented the CDO/CCO implementation in Indonesia, including the challenges and contribution to the carbon emissions reduction.**