Twenty Fourth Meeting of the
Informal South Pacific ATS Co-ordinating Group (ISPACG/24)

Brisbane, Australia, 11-12 March 2010

Agenda Item 4: Review Open Action Items

CDA Trial Operation at Kansai International Airport (RJBB)

Presented by Civil Aviation Bureau, Japan

SUMMARY

This paper provides an update information on Continuous Descent Arrivals (CDA) which has started as an operational trial at Kansai International Airport during specified period from 7 May, 2009.

1. INTRODUCTION

1.1. Japan Civil Aviation Bureau (JCAB) began initial Continuous Descent Arrivals (CDA) trial to Kansai International Airport (RJBB) from 7th May 2009. The CDA is a descent profile clearance which is cleared via Radio Communication to participating aircraft, currently only Japanese air carriers for evaluations. The aircraft can then use its Flight Management System (FMS) to fly the most efficient descent to the arrival airport.

2. DISCUSSION

2.1. The CDA provides the following savings;

2.1.1. Reduced fuel burn and carbon dioxide (CO2) emissions by having the aircraft fly an optimized descent profile.

2.1.2. Reduced noise pollution since aircraft fly a power off descent.

2.1.3. Reduced engine wear

2.2. The CDA operational trial will continue more two or three months with only Japanese air carriers. The trial is limited between 23:00JST and 07:00JST when there is very little airport demand.

2.3. A complete CDA is projected to save between 500 pounds (lbs) (B763) and 1,000 pounds (B744) of fuel on each flight over the standard arrival profile into RJBB. Due to airport demand, it is not always possible for aircraft to fly the full CDA. When the arrival demand for the airport increase, aircraft flying the CDA may need to be vectored for arrival spacing, causing the CDA to be terminated. There are, however, still fuel savings to be gained for the aircraft flying partial CDA.

2.4. When developing a CDA, several considerations must be included. The goal is to create a profile that allows aircraft to fly an engine idle descent to the runway. If the CDA profile contains restrictions that require aircraft to level off, aircraft must add power to maintain altitude and the overall fuel savings is reduced. Ideally, the descent profile, when viewed from the side, is a wedge of airspace that keeps the aircraft on a continuous descent. The optimum altitude of waypoint/fix for aircraft to cross varies by different factors such as initial altitude, descent speed, aircraft type and winds.

2.5. When building the RJBB CDA, the first factors that were considered were minimum en-route altitudes (MEAs) of these exiting routes. Presently altitude restrictions of several waypoints/fixes are only at or above MEAs. There are no speed restrictions, but they will be needed for increasing the rates of full CDA. JCAB will continue operational trial to determine speed restrictions to implement regular operation during the same time period, between 2300 JST and 0700 JST for all arrivals.

2.6. The following procedures are applied for RJBB CDA trial;

(1) Participating aircraft: FMS equipped aircraft which is operated by Japanese airlines with ETA between 2300JST and 0700JST.

(2) Airspace where operational trial for CDA is operated: Kansai approach control area and ACC's control area.

(3) Route applicable to operational trial for CDA: Those arrival route for RJBB via KARIN, KAZRA or EVERT and join STAR's.

(4) Conditions on operational trial for CDA: Radar must be in operative at relevant ACCs and Kansai Radar Approach Control Area.

(5) Request and Clearance for CDA: CDA routes named as packages are used when pilot request CDA and when ATC clears CDA. There are altitude restrictions on CDA routes. ATC may add altitude restrictions when necessary due to traffic situations. CDA may not be cleared due to traffic situations.

(6) Timing for requesting CDA: Pilot should request CDA not later than 10 minutes before reaching Top of Descend (TOD) with position of TOD and estimated over time of KARIN, KAZRA or EVERT.

(7) Reports of beginning descend: Once CDA is cleared by ATC, Pilot should report ATC of beginning of descend.

(8) Suspension or cancellation of CDA: ATC may suspend or cancel CDA due to traffic situation even after CDA is cleared. Alternate instructions will be issued when CDA is suspended or cancelled.

3. CURRENT STATUS

3.1 There are five (5) flights on average per night which are operated by Japanese airlines with ETA between 2300JST and 0700JST.

3.2 After about nine (9) months operational trial, from 7th May to 23rd February, there were 777 aircraft which requested CDA operations from cruising flight levels, and then 726 aircraft had been approved CDA operations from ATC. About 93.4% aircraft had been approved their CDA requests. But 51 aircraft were not approved CDA when pilots had requested.

3.3 620 aircraft had conducted full CDA, and 106 aircraft had conducted partial CDA in about nine (9) months period. Full CDA means that aircraft could conduct CDA from its cruising level to landing. Partial CDA means that aircraft had been cancelled its CDA due to weather and/or traffic. About 85.4% aircraft had conducted full CDA.

4. FUTURE PLAN

4.1. JCAB will continue CDA operational trial at RJBB by Japanese airlines for another two (2) or three (3) months for evaluations to find how to increase or keep success rates for full CDA. After evaluations completed, CDA will be applied to all aircraft with ETA between 2300JST and 0700JST.

4.2. JCAB will continue to study the possibility to extend time period at RJBB and to establish for other airports. If there are no possibility to introduce CDA from TOD, JCAB will consider to apply the same profile descent in terminal area, such as OPD (Optimized Profile Descent) in U.S. It will be named as OPA (Optimized Profile Approach).

5. ACTION BY THE MEETING

5.1. The meeting is invited to note the information in this paper