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ASSEMBLY — 37TH SESSION

TECHNICAL COMMISSION

Agenda Item 36: NextGen and SESAR as part of the global ATM system

IMPLEMENTING CONTINUOUS DESCENT APPROACH (CDA) IN MALAYSIA

(Presented by Malaysia)

EXECUTIVE SUMMARY	
This paper describes the CDA activities in Malaysia, the operational performance assessment, pilot feedback and Malaysia's future plans.	
Strategic Objectives:	This working paper relates to strategic objectives of global air navigation matters.
References:	Paper "Point Merge Integration of Arrival Flows Enabling Extensive RNAV Application and CDA, Eurocontrol, 2008".

1. INTRODUCTION

1.1 At the 45th DGCA Conference in Kuala Lumpur, Malaysia notified the Conference of the planned implementation of the Continuous Descent Approach. In his welcome address, His Excellency the Minister of Transport expressed the Department of Civil Aviation Malaysia's (DCAM) willingness to share her experiences implementing CDA.

2. CDA ACTIVITIES

2.1 The roadmap

Activity	**Remarks**	**Date of activity**
Obtaining top commitment	A presentation was made to senior management within the DCAM.	August 2008
Establishing a Collaborative Implementation Group	A group was formed comprising DCAM Malaysia Airlines, Air Asia, Malaysia Airlines Pilots' Association (MAPA), Singapore Airlines and the Association of Asia Pacific Airlines (AAPA).	September 2009

Training and awareness	Conducted briefings at all Approach Radar units (both civil and military) and members of the Collaborative Implementation Group. Published AIP Supplement for industry	Nov 2008 – Jan 2009 Dec 2008
Implementation		15 Jan 2009
Monitor and Assess Performance	Two post-implementation review meetings were conducted. Pilot and controller feedback was discussed. AAPA provided operational performance assessment data from pilots' feedback.	February and June 2009.

3. CDA TECHNIQUE

3.1 Different ANSPs and authorities are using or testing different CDA techniques, e.g. "tailored arrivals" in the US and Australia, "point merge" in Europe. Some require extensive use of P-RNAV applications while others are basic CDA (B-CDA) techniques incorporating a combination of tracking on standard instrument arrivals (STARs) and radar vectors with "distance to touchdown" information.

3.2 In determining the most appropriate CDA technique to employ, DCAM took into consideration the following:

a) the need to implement CDA as soon possible. IATA and Malaysia Airlines both suggested that the implementation of CDA to be carried out as early as possible using existing technology;

b) staffing resources available. Current controller staffing is below the desired levels. Release of staff for extended training may tax the system further;

c) infrastructure in place. Although the ATC surveillance system is good, the terminal airspace structure currently only employs basic RNAV STARs;

d) controllers' and aircraft operators' views; and

e) FAA's advice "one cannot copy CDA procedures and trials from one airport environment to another".

3.3 DCAM decided on a basic CDA technique with no change to the airspace to allow early implementation as the controllers are already very familiar with the basic CDA technique. Staffing resources will not be taxed for any extended training.

3.4 Taking advantage that most of our STARs merge at the arrival fixes and that a manual arrival management (A-MAN) system has been in place for over ten years, DCAM applied a concept found in Eurocontrol's point merge technique[1] - displaying iso-distance range marks on the radar monitor

[1] Paper "Point Merge Integration of Arrival Flows Enabling Extensive RNAV Application and CDA, Eurocontrol, 2008".

as visual cues to assist controllers achieve the required spacing prior to the arrival fix. When radar vectors had to be employed, the visual cues permitted accurate "distance to touchdown" information to be provided to assist the pilots to adjust their descent profile.

4. HAZARD IDENTIFICATION/RISK ASSESSMENT

4.1 Two hazards were identified:

a) the introduction of iso-distance range markings on the radar screen will lead to more clutter on the radar screen; and

b) the reduction from three merge points to two will lead to more aircraft tracking for a particular point.

4.1 There was a increase in workload but it was due to the increase in traffic in scheduled movements at KLIA and IFR movements at Subang. In a survey conducted, the controllers felt that there was no perceived increase in workload attributable to CDA.

4.2 A safety assessment was conducted and the specific safety risks associated with the hazards identified in para 4.1 were found to be "acceptable".

5. OPERATIONAL PERFORMANCE ASSESSEMNT FOR KUALA LUMPUR INTERNATIONAL AIRPORT (KLIA)

5.1 The airlines participating provided feedback using a pre-determined form agreed by all parties. Data collection dates were agreed upon from which 300 data sets were received. From the analysis conducted by AAPA:

Item	Findings
No. of data sets received	300 (256 complete + 44 incomplete)
CDA success rate	60.67%
Track shortening success rate	64%
Holding or track lengthening	20%
Average time saved based on aircraft type	A330 ~ 1.59 min per flight A320 ~ 3.05 min per flight B777 ~ 2.20 min per flight
Fuel Savings	100kg per flight
Potential annual savings at KLIA	USD 6.6 million
Potential annual CO2 savings	11,500 tonnes

Impact on pilot workload	- increase 20% - no change 70% - decrease 10%

6. PILOTS' COMMENTS AND SUGGESTION FOR IMPROVEMENT

1) ATC coordination between KUL & SIN is required in order for aircraft to descend as planned.

2) Unable to record data due to short sector (SIN-KUL) and busy with RWY & STAR changes.

3) Workload increased as pilots have to closely monitor crossing time imposed by ATC.

4) Earlier intention to be conveyed by ATC e.g. track to run info should be communicated to pilots for better planning & effectiveness.

5) ATC KUL should be prepared to separate between traffic at earlier phase. Advise speed & level to maintain as soon as possible.

6) CDA implementation is good but need to improve controller competency especially during heavy traffic.

7. FUTURE PLANS

7.1 DCAM expects to achieve better CDA operational performance in 2010 for KLIA when another position becomes operational at the Approach Radar sector that should see a reduction in workload and more efficiency during heavy traffic.

7.2 A third runway is planned for KLIA in the first quarter of 2012 that may result in a revision of the airspace structure. An automated A-MAN is also in the pipeline. CDA considerations will feature prominently during the planning phase.

7.3 As the Asia Pacific region transitions in tandem with the Asia Pacific PBN Implementation Plan, DCAM foresees that the B-CDA will also transition to a RNAV CDA.

8. CONCLUSION

8.1 The Assembly is invited to note the approach adopted by Malaysia in implementing CDA.

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