Continuous Descent Arrivals (CDA) Workshop #2

FAA Operational Evolution Plan (OEP): Version 8 – CDA Core & Ring elements

Presented to: EIPT Ops Panel & guests
By: Sandy Liu, FAA Office of Environment & Energy
Date: April 18, 2006
Continuous Descent Arrival (CDA)

- Define CDA
- UPS Programs:
  - Environmental benefits
  - Supplemental Flight Efficiencies (by Airline Ops Cntr)
- Proposed Core (implementation) & report to Ring (R&D)
- FLOW-4: FY07 LOB commitment to CDA “Concept of Operations” development
Continuous Descent Arrivals (CDA) Workshop #2
April 18-19, 2006 in Atlanta, GA

CDA Procedure

Demonstrated CDA

Conceptual CDA

Streaming/Sequencing

Descent from Cruise

Initial Approach

Low Noise Descent Leg

Missed App.

Intermediate metering point
Initial separation established

Wake Vertex Separation
4 - 6 nm

Conventional

Low Noise

FAF

B767 CDA on Sep 22
B757 CDA on Sep 15
B767 STD on Sep 08
B757 STD on Sep 28
CDA - Definition (USA)

A CDA is an flight procedure where the vertical profile of an arrival has been optimized so that it can be flown with engines “idle” from a high altitude (potentially from cruise) until touch down on the runway.

i.e. Standard Terminal Arrival (STAR) with an optimized vertical profile.

Does not include “step downs” or intermediate level flight operations as in current STARs.
OEP CDA Coordination

CORE: (Primary Office of Delivery: Carl Burleson)
- CDA procedures can follow the “Special” process.
- The AOC approach to enhancing efficient aircraft “Streaming” is transparent to FAA and viable.

RING: (POD: James McDaniel – Safe Flight - 21)
- Advance and demonstrate CDA for high traffic conditions:
  - Prescribe CDA safe separation at LAX
  - CDA design for use in Corner Post at ATL
- Investigate the CDA “Pilot Discretion” opportunities within NAS.
- Coordinate CDA experience with industry through workshops.
Core Status

- UPS “Special” application for basic CDA procedure at Louisville airport is under FAA review for acceptance. Target approval/implementation 4th Qtr 06.

- UPS Arrival Stream Modernization – AOC to aircraft uplink with speed guidance while enroute. Target implementation 4th Qtr 07. Initial testing on May 8-11, 2006 to demonstrate and assess performance with uplink capability.
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<td>FLOW-4: Efficient Arrival Streams</td>
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<td>“Special” Nighttime Low Traffic CDA at SDF</td>
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<td>Enhanced Streaming for CDA at SDF</td>
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Ring Status

• Basic CDA procedures being adapted for high traffic situations and the broader “pilot discretion” opportunities.

• Pursuing “Concept of Operation” development for CDA to initiate in FY07 with LOB support from AJT, AVS, and AGC.
FINDINGS – Noise Exposure Contour

Before

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<tr>
<th>DBNL</th>
<th>35.0</th>
<th>40.0</th>
<th>45.0</th>
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<td>sq.m1</td>
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<td>241.17</td>
<td>198.83</td>
<td>77.32</td>
<td>24.36</td>
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After

CDA reduces noise impact area.

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<th>DBNL</th>
<th>35.0</th>
<th>40.0</th>
<th>45.0</th>
<th>50.0</th>
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<td>46.05</td>
<td>19.71</td>
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**FINDINGS – Fuel Burn**

CDA reduced the average fuel consumed.

* The significant savings indicated are well above the variability of the measured data. However, the absolute savings shown are only representative samplings and are dependent on the specific aircraft configuration, operations, and weather factors.
**FINDINGS – Flight time**

CDA reduced the average time to fly (from last 180 nautical mile to runway).

* ~ 2.5 minutes savings*

* ~ 2 minutes Savings*

* The significant savings indicated are well above the variability of the measured data. However, the absolute savings shown are only representative samplings and are dependent on the specific aircraft configuration, operations, and weather factors.*
## Preliminary UPS Cost/Benefit

### Theoretical Fuel and Cost Savings - Annual

<table>
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<tr>
<th></th>
<th>B-757 279 lbs/flight*</th>
<th>B-767 465 lbs/flight*</th>
<th>Total</th>
<th>Fuel Savings</th>
<th>Annual Dollar Savings</th>
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<tbody>
<tr>
<td>West Coast Arrivals 12-13 Aircraft/Night</td>
<td>49,800 Gallons</td>
<td>111,740 Gallons</td>
<td>161,540 Gallons</td>
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<td>Next Day Air Outbounds 80%</td>
<td>201,250 Gallons</td>
<td>186,444 Gallons</td>
<td>387,694 Gallons</td>
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<td>Total</td>
<td>251,050 Gallons</td>
<td>298,184 Gallons</td>
<td>549,234 Gallons</td>
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Flight Procedures Management Program (Order 8260.43A) - continued

Priority:

1- correct safety deficiency
2- new installed nav aid or runway
3- FAA initiative (Flight Plan)
4- airport w/ no existing IFR
5- reduction in TO/landing minima
6- eliminate requirement for NOTAM
7- flow improvement
8- other benefits (new criteria or noise reduction)
9- Public procedures
10- Special or Private procedure
CDA Workshop II – Outcome Goals

1. Identify a preliminary list of 10 operators and airports with low traffic that could benefit from CDA “pilot discretion” procedures.

2. Agree that two options practical to pursue:
   – Procedural (VNAV) approach
   – “Special” charted procedure

3. Feedback to TARGETS (adapt CDA characteristics)

4. Agree on a data format/set to support business and procedure application submissions.