Environmental Research and Consultancy Department
Civil Aviation Authority

Basic Principles of the Continuous Descent Approach (CDA) for the Non-Aviation Community

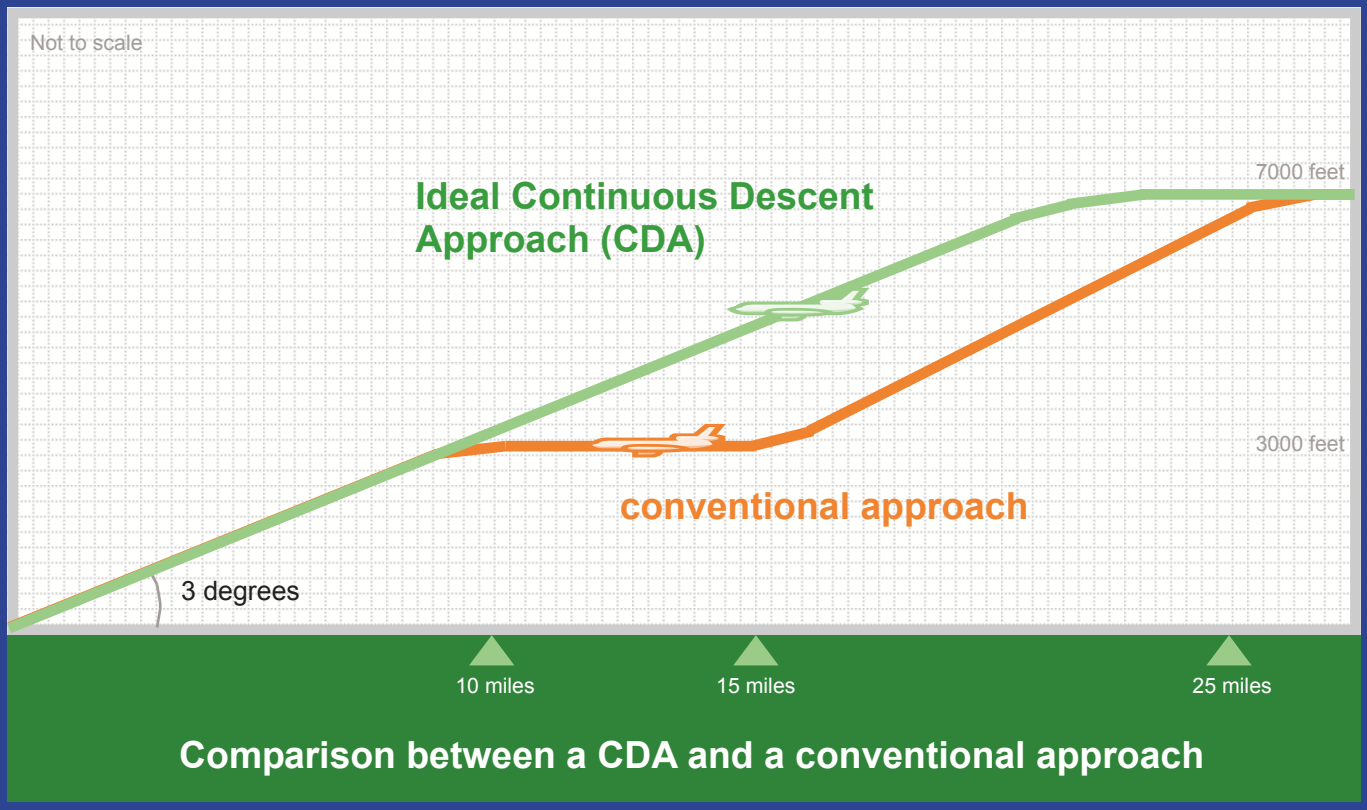
Introduction

This leaflet is a basic guide - avoiding detailed technical terms - on the Continuous Descent Approach procedure, commonly known as 'CDA'.

CDA is becoming more widespread for aircraft arriving at UK airports as it provides environmental benefits in terms of both noise and fuel burn.

This guide has been prepared by the Environmental Research and Consultancy Department (ERCD) of the Civil Aviation Authority.

What is CDA?



Comparison between a CDA and a conventional approach

The conventional approach

With the conventional aircraft approach, an aircraft would be given clearance by Air Traffic Control from the bottom level of the holding stack (normally an altitude of 6000 or 7000 feet) to descend to an altitude of typically 3000 feet. The aircraft would then fly level for several miles before intersecting the final 3 degree glidepath to the runway. During this period of level flight, the pilot would need to apply additional engine power to maintain constant speed.

The Continuous Descent Approach (CDA)

In contrast to a conventional approach, when a CDA procedure is flown the aircraft stays higher for longer, descending continuously from the level of the bottom of the stack (or higher if possible) and avoiding any level segments of flight prior to intercepting the 3 degree glidepath. A continuous descent requires significantly less engine thrust than prolonged level flight.

What are the benefits of CDA?

✈ Higher for longer
Because the aircraft flying a CDA is higher above the ground for a longer period of time, the noise impact on the ground is reduced in certain areas under the approach path.

✈ Less engine thrust
Noise on the ground is reduced further because a CDA eliminates the period of level flight when additional engine thrust would have been used.

✈ Noise reductions up to 5 decibels
Depending on the location and aircraft type, the noise benefit from a CDA compared to a conventional approach could be up to about 5 decibels *(a change of 3 decibels is just noticeable to the human ear).*

✈ Fuel savings and reduced emissions
There can be significant fuel savings (for the final arrival phase of flight) with a CDA because less engine power is required - this also means that aircraft emissions will be reduced.

What are the limitations of CDA?

✈ Aircraft can still be heard
When an aircraft flies a CDA, it does not mean that its noise levels will be so low that it cannot be heard. A CDA simply provides a noise benefit compared to the conventional approach procedure, in certain regions under the approach path.

✈ Noise benefits only in certain locations
The noise benefits that a CDA offers are restricted to locations typically around 10 to 25 miles from the runway. There is no difference between a CDA and a conventional approach once the aircraft using the latter joins the final 3 degree glidepath.

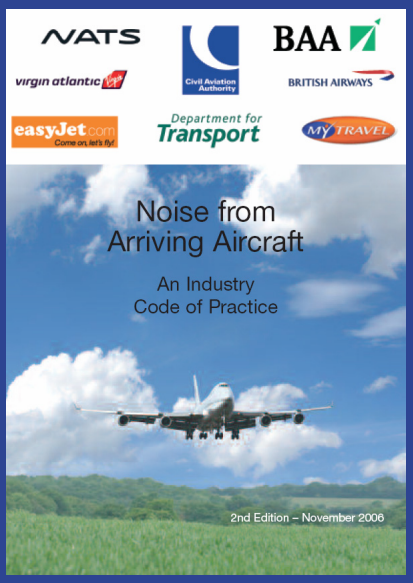
✈ Little effect on airport noise contours
Because the benefits of CDA are only experienced relatively far away from the airport, consistent use of the CDA procedure will not usually have a significant effect on the size and shape of standard airport noise contours.

✈ Cannot always be flown
It may sometimes not be possible to fly a CDA due to airspace constraints or overriding safety requirements. Also, when flying a CDA an aircraft may still require a short segment of level flight in order to reduce speed or to reconfigure.

Further reading

Noise from Arriving Aircraft
An Industry Code of Practice

2nd Edition - November 2006



This is an updated Code of Practice for limiting noise from arriving aircraft, which ERCD produced in conjunction with BAA, the Department for Transport, British Airways, easyJet, MyTravel, Virgin Atlantic and NATS.

It covers operational issues for flight crews and air traffic controllers, as well as considering airport, regulatory and strategic factors. The Code gives pilots, air traffic controllers and airport operators guidance on techniques to minimise noise from aircraft landing at airports.

Although primarily concerned with Heathrow, Gatwick and Stansted airports, the Code contains much of relevance to airports worldwide.

Available from the DfT website at:
http://www.dft.gov.uk/pgr/aviation/environmentalissues/arrivalscodeofpractice/

- **Noise from Arriving Aircraft: Final Report of the ANMAC Technical Working Group - Annexes**
  DETR, December 1999
  Available from the DfT

- **Development, design, and flight test evaluation of a continuous descent approach procedure for nighttime operation at Louisville International Airport**
  John-Paul Clarke, et al., Partnership for Air Transportation Noise and Emissions Reduction, January 2006
  Report No. PARTNER-COE-2005-02
  Available from the MIT website at http://web.mit.edu/aeroastro/partner/projects/project4.html

- **The role of advanced air traffic management in reducing the impact of aircraft noise and enabling aviation growth**
  John-Paul Clarke, International Center for Air Transportation, Massachusetts Institute of Technology
  Journal of Air Transport Management 9 (2003) 161-165

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