International Civil Aviation Organization

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Continuous Descent Operations (CDO)

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Workshop on preparations for ANConf/12 − ASBU methodology
(Dakar, 16-20 July 2012)

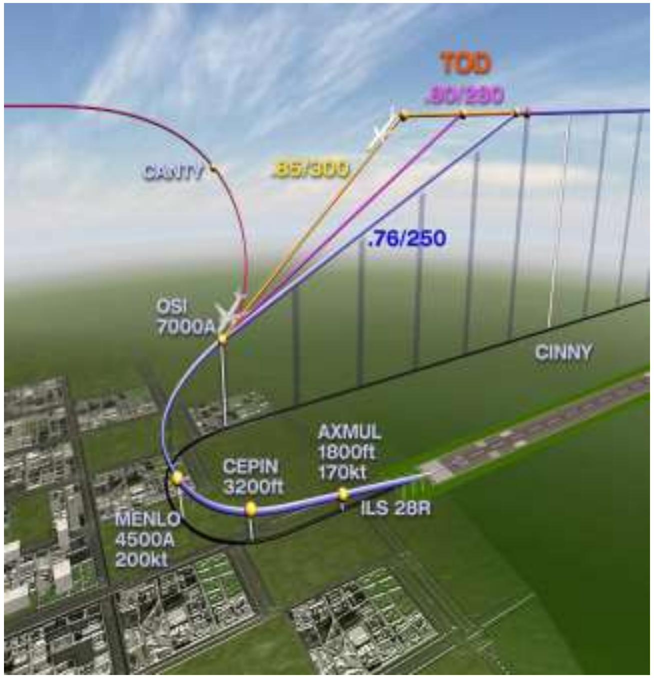
Intended Audience

Intended audience:

- Airspace and procedure designers
- Air traffic managers and controllers
- Service providers (Airports and Air Navigation Service Providers (ANSP))
- Pilots
- Military authorities
- Environmental

Objectives

Understanding Continuous Descent Operations procedures and profiles.



Understanding Continuous Descent Operations procedures and profiles.

- What is a CDO?
- Differences in profiles
- Idle descent
- Benefits

Continuous Descent Operations

A CDO should always be considered when implementing new PBN approach or arrival.

Understanding Continuous Descent Operations (CDO)

Continuous Descent Operations:

- Are enabled by airspace design, procedure design and ATC facilitation
- Where the aircraft descends continuously
- Employing minimum engine thrust, in a low drag configuration
- Usable by 85% of the aircraft, 85% of the time

Optimum CDO

An optimum CDO starts from the Top of Descent

Reducing:

- ATC/Pilot communication
- segments of level flight
- noise
- fuel burn
- emissions

While Increasing:

- predictability to ATC/Pilots
- flight stability.

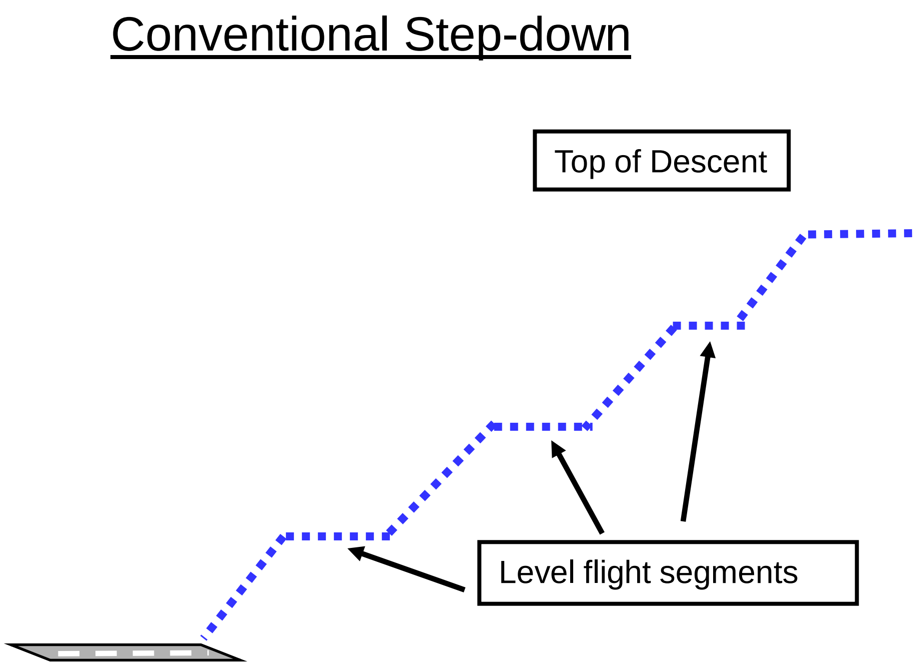
Optimum Vertical Path

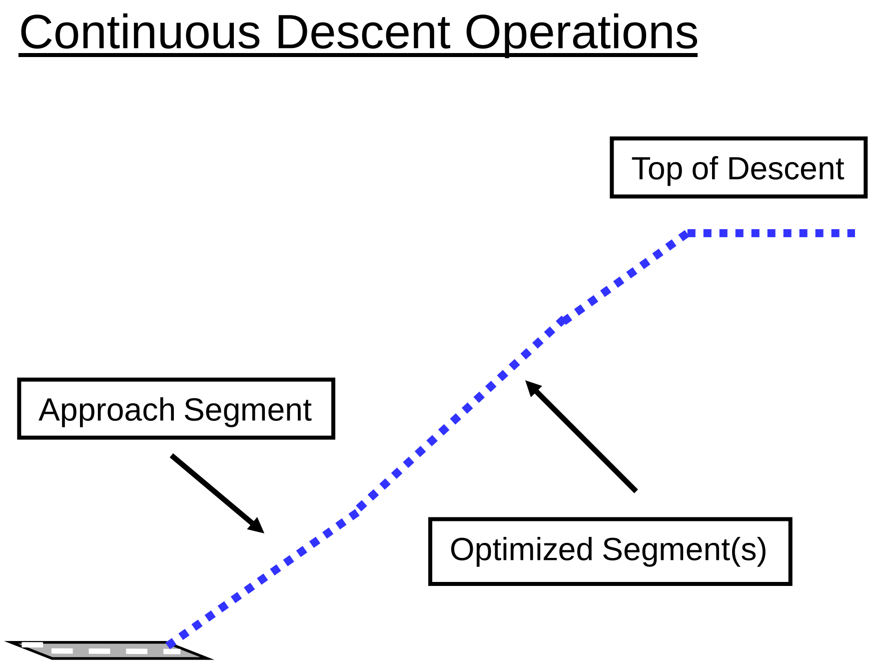
The optimum vertical path angle will vary depending on:

- type of aircraft
- its actual weight
- the wind
- air temperature
- atmospheric pressure
- icing conditions
- and other dynamic considerations

The maximum benefit is achieved by keeping the aircraft as high as possible until it reaches the optimum descent point determined by the onboard flight management computer.

Step-down vs. CDO



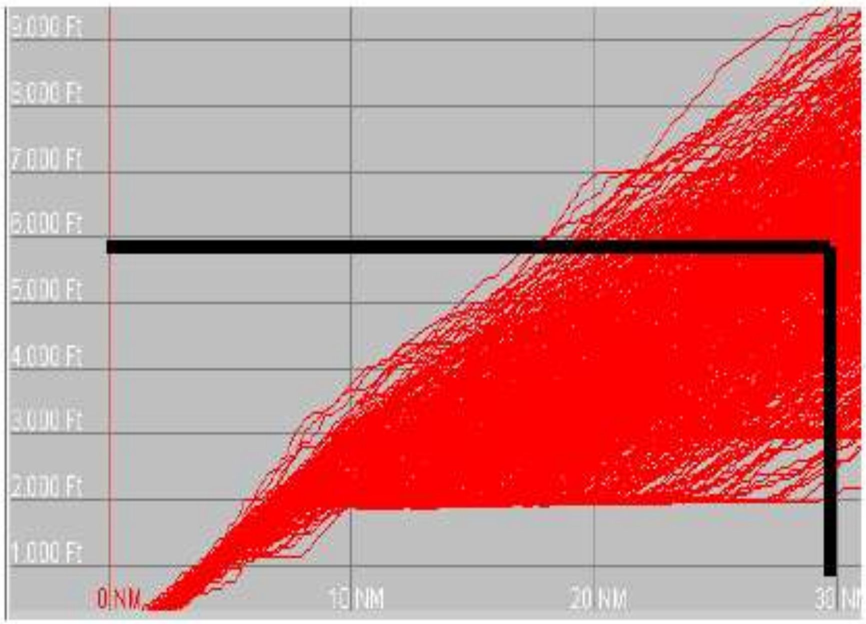


Benefits

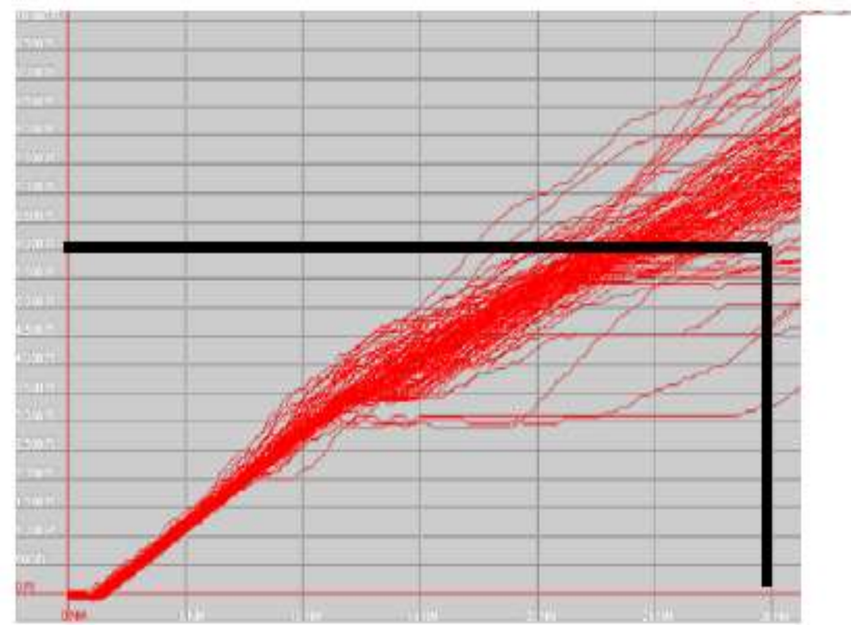
CDO offer the following advantages:

a) more efficient use of airspace;
b) more consistent flight paths and stabilized approach paths;
c) reduction in both pilot and controller workload;
d) reduction in the number of required radio transmissions;
e) cost savings and environmental benefits through reduced fuel burn;
f) reducing the incidence of controlled flight into terrain (CFIT);
g) operations authorized where noise limitations would result in operations being curtailed or restricted.

Actual CDO Operation



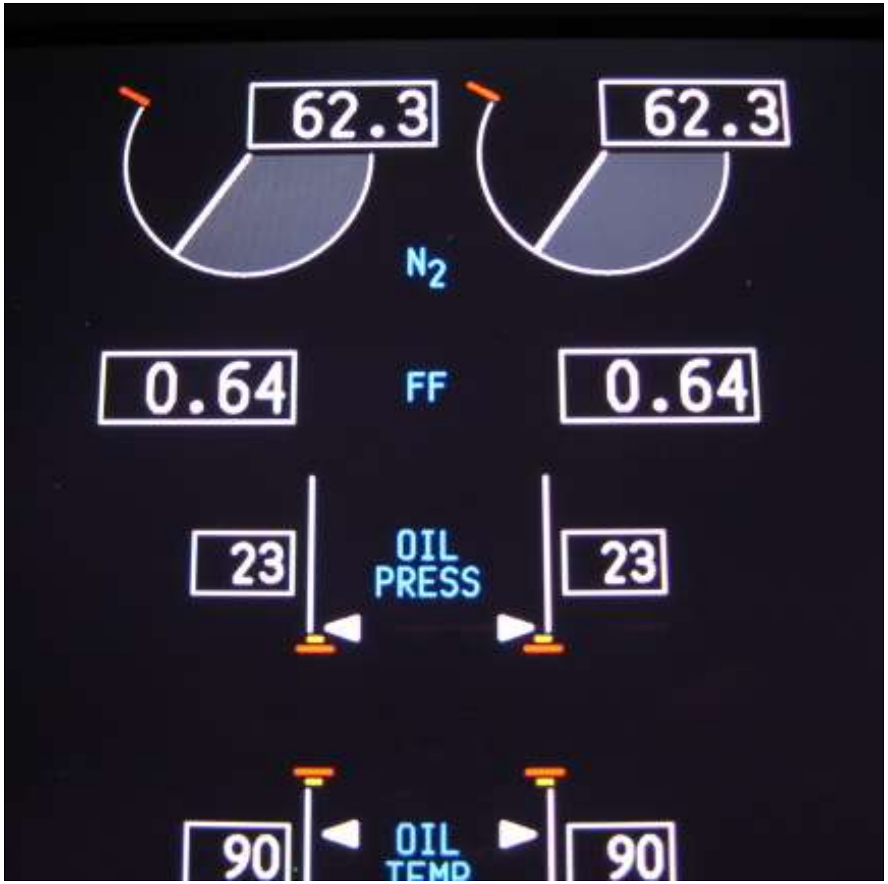
Flight tracks before CDO



Flight tracks after CDO

Importance of an Idle Descent

- Idle Descent
- 640 lbs/hr/engine
- 1280 lbs/hr
- 3.2 gal/min



Level-offs Use 4 to 5 Times More Fuel Than a Idle Descent!

Idle Descent

x 3.7=

Level, 210 kt, flaps up

x 4.0=

Level, 180 kt, flaps 5

x 4.4=

Level, 170 kt flaps 10

x 5.5=

Level, 160 kt, flaps 15

Concepts of operation

•CDO can enable specific strategic objectives and should be considered for inclusion within any airspace concept or redesign

•Objectives are usually identified by airspace users, ANSPs, airport operators as well as by government policy and may involve local communities, planning authorities and local government.

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