



# ENV01 — Continuous Descent Operations (CDO)

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A continuous descent operation (CDO) (1) is an aircraft operating technique, enabled by airspace design, procedure design and ATC clearances in which arriving aircraft descend without interruption, to the greatest possible extent, by employing minimum thrust in order to optimise the descent profile in terms of fuel burn. The optimum vertical profile takes the form of a continuously descending path.

Operating at optimum flight levels is a key driver to improving fuel efficiency and minimise carbon emissions as a large proportion of fuel burn occurs during the climb phase.

Many major airports now employ PBN procedures which can enable both CDO and continuous climb operations (CCO) and, in a large number of cases, judicious airspace and procedure design has resulted in significant reductions in environmental impacts. This is particularly the case where the airspace design has supported CCO and CDO.

CDO does not adversely affect safety and capacity and will produce environmental and operational benefits including reductions to fuel burn, gaseous emissions and noise impact.

It is important that monitoring and measuring of CDO execution is defined across ECAC using harmonised definitions to avoid misleading interpretations of performance measurement. It is equally important that CDO execution is measured across ECAC, as far as practicable, using a harmonised methodology and parameters. Whilst reporting can be undertaken at the local level according to local legislation and requirements, when CDO execution is reported on an international basis, this measurement should always be based upon a harmonised method, parameters and metric. The proposed methodology (4) identified by the European TF on CCO/CDO is detailed at <http://www.eurocontrol.int/articles/continuous-climb-and-descent-operations>.

**Notes:**

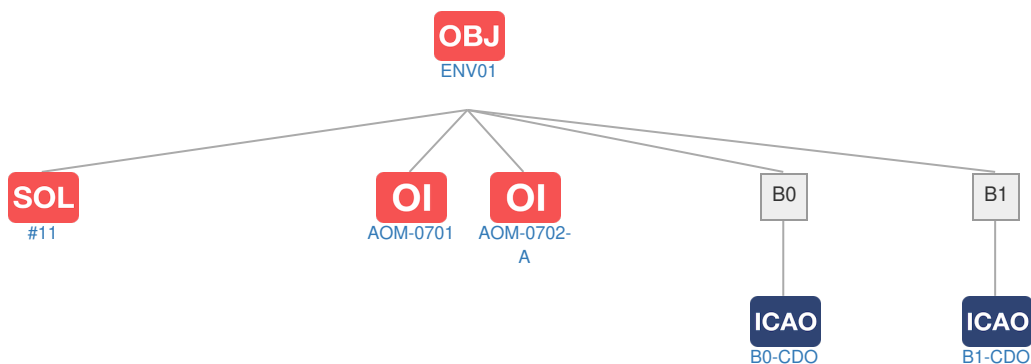
- (1) Since the publication of ICAO Doc 9931, the term Continuous Descent Operations (CDO) has generally replaced the term CDA (Continuous Descent Approach).
- (2) In principle, it is not required to implement CDO on a 24/7 basis, but it should be facilitated to the extent possible, according to local conditions.
- (3) The methodology is detailed in the European CCO / CDO Action Plan, see <https://www.eurocontrol.int/publication/european-cco-cdo-action-plan>.

**NOTE FOR MILITARY AUTHORITIES:** It is the responsibility of each military authority to review this Objective IN ITS ENTIRETY and address each of the SLoAs that the military authority considers RELEVANT for itself. This has to be done on top and above of the review of "MIL" SLoAs which identify actions EXCLUSIVE to military authorities.

<b>Edition</b>	2022
<b>Stakeholders</b>	Air Navigation Service Provider / Airport Operator / Airspace Users
<b>Type</b>	SESAR
<b>Scope</b>	Airport
<b>Status</b>	Active

## Context

### Related Elements



## Applicability Area(s) and Timescales

**Applicability Area:** See list of airports in MP Level 3 Implementation Plan - Annexes

Timescales	From	By	Applicable to
Initial operational capability	01-07-2007	-	Applicability Area
Full operational capability	-	31-12-2023	Applicability Area

## Links to ATM Master Plan Level 2

### **OI** Operational Improvement Steps

Code	Title	IOC	FOC	Related Elements
AOM-0701	<a href="#">Continuous Descent Approach (CDA)</a>	-	-	<b>OI</b> <b>OBJ</b> <b>ICAO</b>
AOM-0702-A	<a href="#">Continuous Descent Operations (CDO)</a>	01-07-2017	01-07-2021	<b>SOL</b> <b>OI</b> <b>EN</b> <b>OBJ</b> <b>DS</b> <b>ICAO</b>

### **SOL** Links to SESAR Solutions

Code	Title	Program	Related Elements
#11	<a href="#">Continuous Descent Operations (CDO)</a>	SESAR1	<b>SOL</b> <b>OI</b> <b>OBJ</b> <b>DS</b> <b>EOC</b> <b>ICAO</b>

### **PCP** Links to PCP ATM Sub-Functionalities

Code	Title	Related Elements
No record found		

### **ICAO** ICAO Block Modules

Designator	Title	Related Elements
B0		
B0-CDO	Improved Flexibility and Efficiency in Descent Profiles (CDOs)	<b>OI</b> <b>OBJ</b>
B1		
B1-CDO	Improved Flexibility and Efficiency in Descent Profiles (CDOs) using VNAV	<b>SOL</b> <b>OI</b> <b>OBJ</b>

## References

### Applicable legislation

Regulation (EU) 598/2014 of 16 April 2014 on the establishment of rules and procedures with regard to the introduction of noise-related operating restrictions at Union airports within a Balanced Approach and repealing Directive 2002/30/EC (as from 16/06/2016).

EC Directive 2002/49/EC, dated 25.06.2002 relating to the assessment and management of environmental noise.

EC Directive 2008/50/EC, dated 21.05.2008 on ambient air quality and cleaner air for Europe.

### Applicable ICAO Annexes and other references

ICAO Annex 16 - Volume I - Aircraft Noise

### Deployment Programme 2022

-

### Operating Environments

Airport

Terminal Airspace

## Expected Performance Benefits

<b>Safety</b>	-
<b>Capacity</b>	-
<b>Operational efficiency</b>	CDOs contribute to reducing airlines operating costs including a reduction in fuel consumption by the flying of optimised profiles (no vertical containment required). If the CDO is flown as part of a PBN procedure, the predictability of the vertical profile will be enhanced for ATC. CDOs are also a proxy for Vertical Flight Efficiency (VFE) and should be monitored according to harmonised definitions and parameters in order to measure efficiency.
<b>Cost efficiency</b>	-
<b>Environment</b>	Reduction of fuel burn (and consequently, atmospheric emissions) has been estimated to be 51kg per flight for those flying CDO over those flying non-CDO. In addition, studies have indicated that due to lower drag and thrust facilitated by CDO, over certain portions of the arrival profile, noise can be reduced by up to 5dB.
<b>Security</b>	-

## Stakeholder Lines of Action

Code	Title	From	By	Related Enablers
ASP01	Implement rules and procedures for the application of CDO techniques	01-07-2007	31-12-2023	
ASP02	Design and implement CDO procedures enabled by PBN	01-01-2018	31-12-2023	<b>EN</b>
ASP03	Train controllers in the application of CDO techniques whenever practicable	01-07-2007	31-12-2023	
ASP04	Monitor and measure the execution of CDO	23-03-2018	31-12-2023	
APO01	Monitor and measure the execution of CDO	01-01-2018	31-12-2023	
USE01	Include CDO techniques in the aircrew training manual and support its implementation wherever possible	01-07-2007	31-12-2023	

## Supporting Material

Title	Related SLOAs
EUROCONTROL - CCO / CDO Performance dashboard <a href="https://www.eurocontrol.int/dashboard/continuous-climb-and-descent-operations-performance-monitoring-dashboard">https://www.eurocontrol.int/dashboard/continuous-climb-and-descent-operations-performance-monitoring-dashboard</a>	APO01, ASP01, ASP03, ASP04, USE01
EUROCONTROL - CCO, CDO harmonised definitions, metrics and parameters <a href="https://youtu.be/PdeNroWY8Y0">https://youtu.be/PdeNroWY8Y0</a>	APO01, ASP04, USE01
EUROCONTROL - CDO refresher course for ATCs <a href="https://trainingzone.eurocontrol.int/ilp/pages/coursedescription.jsf?courseId=8117329&amp;catalogId=232380">https://trainingzone.eurocontrol.int/ilp/pages/coursedescription.jsf?courseId=8117329&amp;catalogId=232380</a>	APO01, ASP03, ASP04, USE01
EUROCONTROL - EUROCONTROL CDO/CCO Supporting Material <a href="https://www.eurocontrol.int/concept/continuous-climb-and-descent-operations">https://www.eurocontrol.int/concept/continuous-climb-and-descent-operations</a>	APO01, ASP01, ASP02, ASP03, ASP04, USE01
EUROCONTROL - European CCO/CDO Action Plan <a href="https://www.eurocontrol.int/publication/european-continuous-climb-and-descent-operations-action-plan">https://www.eurocontrol.int/publication/european-continuous-climb-and-descent-operations-action-plan</a>	APO01, ASP01, ASP02, ASP03, ASP04, USE01
EUROCONTROL - IANS-ENV-INTRO - Introduction to Environment -e-learning training course 12/2012 <a href="https://trainingzone.eurocontrol.int/">https://trainingzone.eurocontrol.int/</a>	ASP03, USE01
ICAO - Doc 4444 - Air Traffic Management - Edition 16 / 11/2016 <a href="https://store.icao.int/">https://store.icao.int/</a>	ASP01, ASP02
ICAO - Doc 9426 - Air Traffic Services Planning Manual - Edition 1 / 12/1992 <a href="http://www.icao.int/publications/Pages/catalogue.aspx">http://www.icao.int/publications/Pages/catalogue.aspx</a>	ASP01, ASP02
ICAO - Doc 9613 - Performance-based Navigation (PBN) Manual - Edition 4 / 03/2013 <a href="https://store.icao.int/en/performance-based-navigation-pbn-manual-doc-9613">https://store.icao.int/en/performance-based-navigation-pbn-manual-doc-9613</a>	ASP01, ASP02
ICAO - Doc 9931 - Continuous Descent Operations (CDO) Manual - Edition 1 / 12/2010 <a href="https://cfapp.icao.int/tools/ATMiKIT/story_content/external_files/102600063919931_en.pdf">https://cfapp.icao.int/tools/ATMiKIT/story_content/external_files/102600063919931_en.pdf</a>	ASP01, ASP02, ASP03, USE01

## Consultation & Approval

<b>Working Arrangement in charge</b>	Airport Operations Team (AOT)
<b>Outline description approved in</b>	-
<b>Latest objective review at expert level</b>	05/2018
<b>Commitment Decision Body</b>	Provisional Council (PC)
<b>Objective approved/endorsed in</b>	07/2003
<b>Latest change to objective approved/endorsed in</b>	07/2013