



HOLDING OFFSET ENTRY

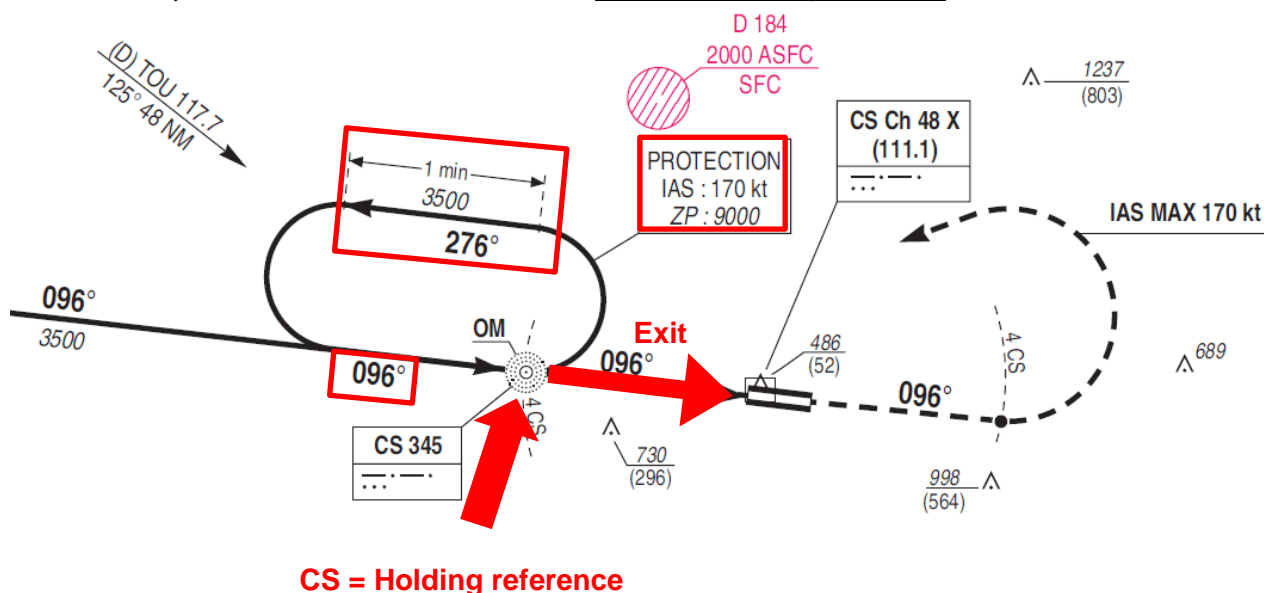
1. Introduction

This documentation will illustrate how to perform an **offset** entry into a holding. This entry is also named **teardrop** entry.

2. Preparatory work

2.1. Scenario and chart analysis

You will need to open the ILS Z RWY 10 charts of Carcassonne airport LFMK in France:



We will be flying the published hold over a NDB following the chart above:

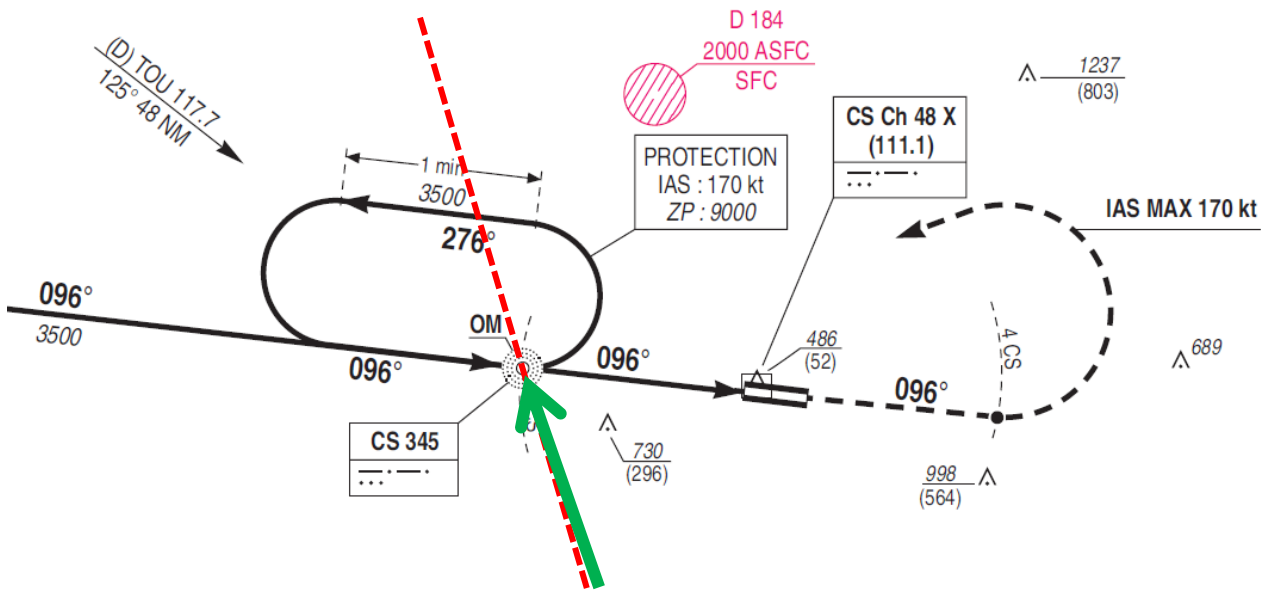
- Holding reference point is **CS NDB**
- inbound track is at heading **096° towards CS NDB** or 276° track inbound CS NDB
- altitude to maintain is **3500ft**
- outbound time is **1 minute** using heading of **276°**
- protection area impose to use maximum speed of **170KT** (maximum altitude 9000ft)
- Exit track is **96°** outbound of CS NDB

In this documentation, we will not take into account the effect of wind.

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2.2. Starting situation

In this example, we will enter in the holding using offset or teardrop entry procedure.



1. Our aircraft will have a heading equal to 340° and direct to the NDB CS
2. We are currently at 170Kt (the maximum allowed speed to ensure holding protection)
3. We are at 3500ft
4. Do not forget to reset your time counter to 0.

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2.3. Over holding reference point : CS

Our aircraft is over the holding reference point: CS NDB.

1. RMI indicator is turning, we are over NDB.
2. We start a turn towards a 30° track to the end of outbound leg at heading 306° (teardrop track)
3. When the turn at 306° heading is initiated start the timer and wait 1 minute.



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2.4. End of teardrop track (end of outbound)

The timer is reaching 1 minute. We should turn now toward the holding fix via the inbound heading 096°

1. As we can undershoot the inbound track, we stop the turn 30° before the final heading : 126°
2. When we are near the final track , we will turn to the wanted heading : 96° (anticipation angle is about 5° - turning at $96+5 = 101^\circ$)



We can now notice that we are on the wanted track!



2.5. End of inbound leg at the holding fix

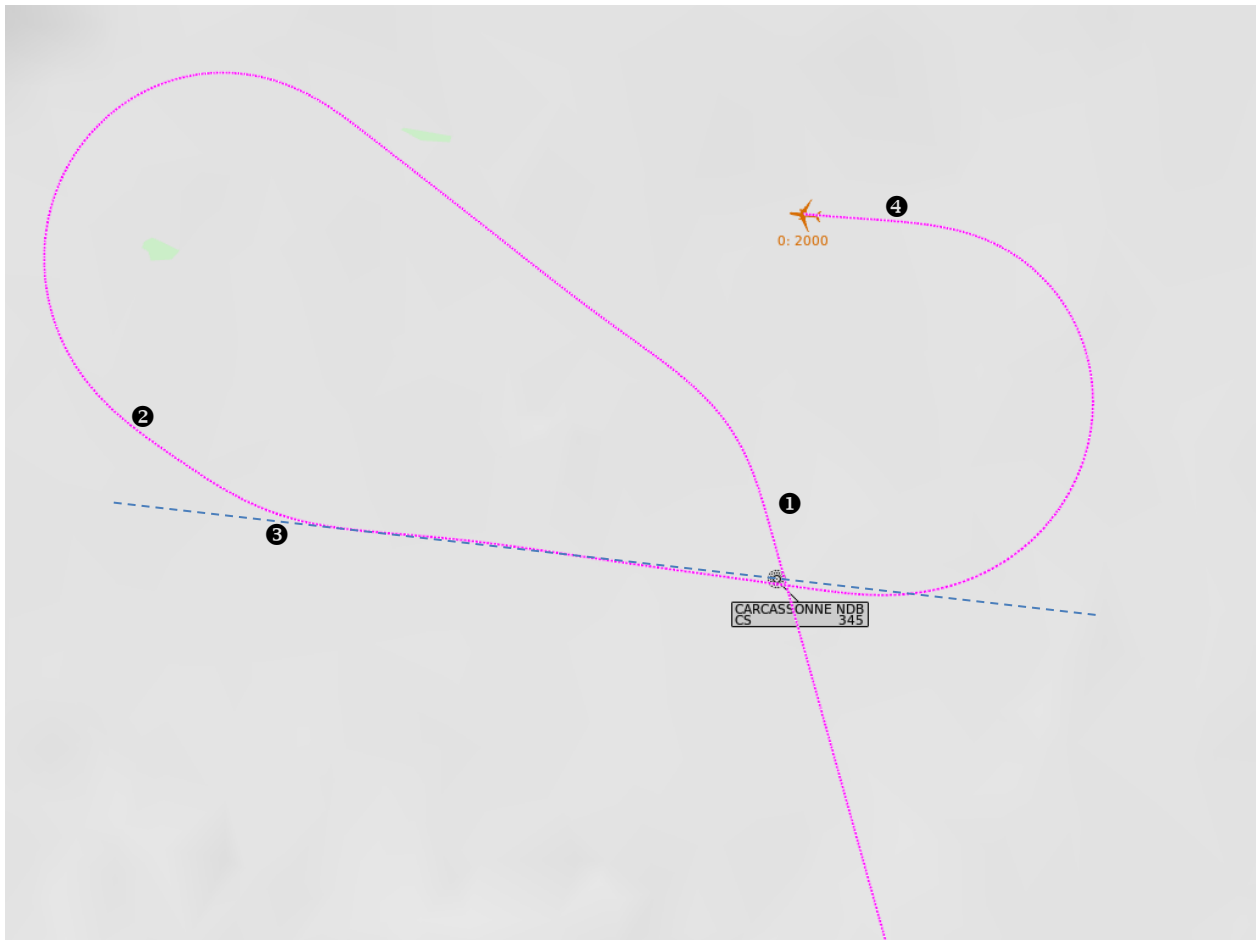
We overfly now the holding fix for the end of the holding pattern.

1. If we receive the approach clearance, or other exit clearance from ATC, we should follow the instructions.
2. If we want to continue the holding, or we do not receive any other clearance from ATC, we should perform now a direct entry holding.



3. Final plotting of the track

This is the final plotting of the performed track.



Analysis:

1. Before turning at the teardrop heading, we took some time to react (few seconds) and also for the aircraft to turn to the track in comparison to the ideal one. But it is normal as NDB receivers are not accurate.
2. We undershot the inbound leg and the 30° interception manoeuvre was performed.
3. We intercepted the 276° track inbound NDB CS at heading 096°
4. We continued the first half turn for a new holding pattern (direct entry).

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