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## **MILITARY AERONAUTICAL INFORMATION CIRCULAR**

**N° 02/23 of MARCH 14, 2023**

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**SUBJECT** : Evolution of the aeronautical chart LFC-France at 1/500.000 on April 20, 2023

**EFFECTIVE DATE** : April 20, 2023

### 1) Context

The aeronautical chart LFC-France at 1: 500,000 is a chart used for low and very low level visual navigation flights by government users. The aeronautical information on the chart is limited to the higher of 5,000 ft AMSL or 2,000 ft ASFC.

In a general context of an increasing number of obstacles such as wind turbines (often grouped in farms), and in an effort to improve air safety, the DIRCAM (Military air traffic management directorate) has carried out a study in partnership with the IGN (National Institute of Geographic and forestry information - the organization responsible for producing civil and military aeronautical charts at 1: 500,000) a study on the surface representation of wind farms on the LFC-FRANCE-DEFENSE 500K charts in order to give crews a better understanding of their ground coverage and to reinforce their legibility on the chart.

The result of this study is the addition of a surface representation of the wind farms on the next edition of the LFC-France 1: 500,000 chart in 2023.

### 2) Reminder concerning the current representation of wind farms

Wind turbines are individually described in the french AIP (ENR 5.4-1 - LIST OF OBSTACLES TO AIR NAVIGATION). The french Aeronautical Information Service (SIA) calculates the barycentres of wind turbines from the same wind farm.

The symbol of doubled wind turbines, representing groups of wind turbines (or wind farms), is placed on this barycenter since the 2022 edition.

### 3) Changes on the LFC-France chart

In the 2023 edition, a surface representation of the wind farms footprint will be added. Thus, a buffer zone (circle of 1,000 m radius) around each wind turbine will be represented by a dark blue contour line with a light purple background. A geometric merging rule of nearby circles will be applied, creating a polygon (buffer).

This treatment (i.e. the addition of the buffer zone) will not affect isolated wind turbines.

Finally, the isolated artificial obstacles (OAI) that will appear in the polygons will be visible.

NB1: The calculation of the surface representation of wind turbines will not be performed on foreign countries due to very heterogeneous data.

NB2: For better readability, the symbol for groups of wind turbines (or wind farms) will be changed, it will be replaced by the single wind turbine symbol (the group information will be taken over by the area representation).

### 4) Representation and symbology

- Symbols: wind turbine, group of wind farms (in France, abroad) :



- Example of the representation of a polygon containing closely spaced marked and unmarked barycentres:

