

Luxembourg Air Safety Bulletin

Number 16-001 - April 2016

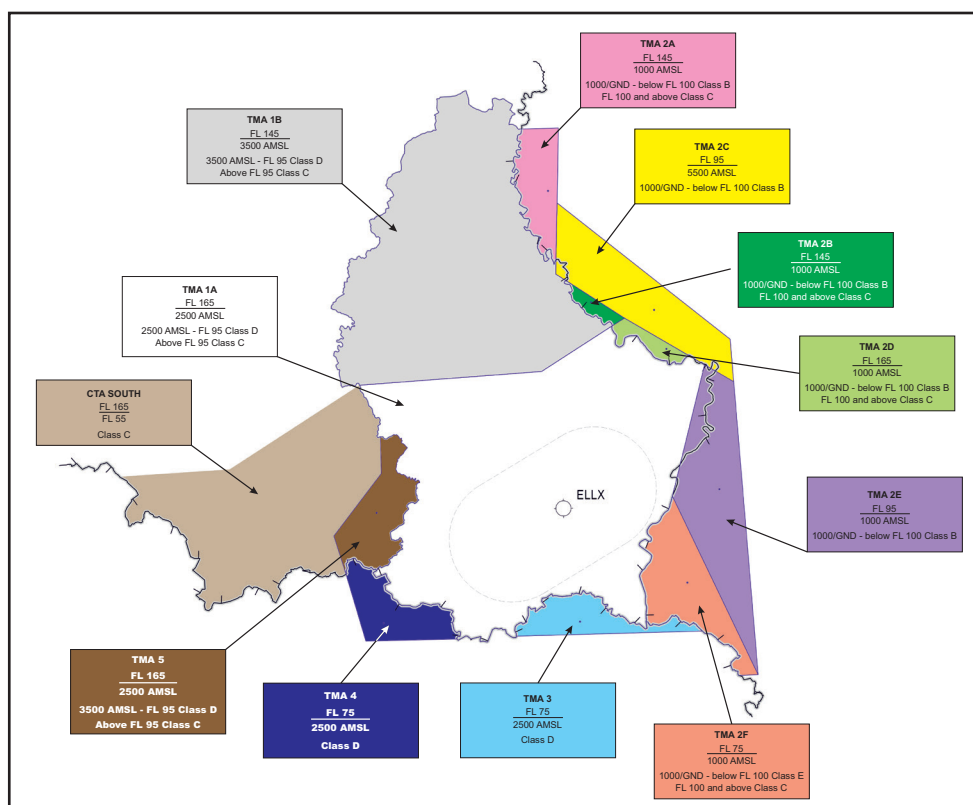
*This Air Safety Bulletin examines a number of hazards related to flying in and out, and in the vicinity of, Luxembourg Airport. As the Direction de l'Aviation Civile (DAC) has received a number of occurrence reports on **airspace infringements** and the dangers created by **wake turbulence**, these two topics are in particular highlighted in this bulletin. The final topic covers a **change to the visual circuit pattern** to be flown and the **visual reporting points** around Luxembourg Airport.*

AIRSPACE INFRINGEMENTS

Due to the proximity of other airspace structures, Luxembourg's lower airspace is considered complex. Therefore a careful pre-flight planning followed by accurate navigation and communication is necessary in order to avoid unauthorised entry into notified airspace.

Airspace infringements occur when an aircraft enters notified airspace without previously requesting and obtaining clearance from the controlling authority of that airspace, or enters the airspace under conditions that were not contained in the clearance. Recent months have seen an increasing number of airspace infringements of the Luxembourg Terminal Control Area (TMA) or the Control Zone (CTR), most of them involving light aircraft on VFR flights or gliders. The picture to the right shows the different parts of the Luxembourg TMA and CTR and their respective classes of airspace.

Ensuring that you follow the appropriate procedures, and in particular, obtaining a clearance before entering any airspace for which that is necessary, is essential for the safety of all airspace users. An



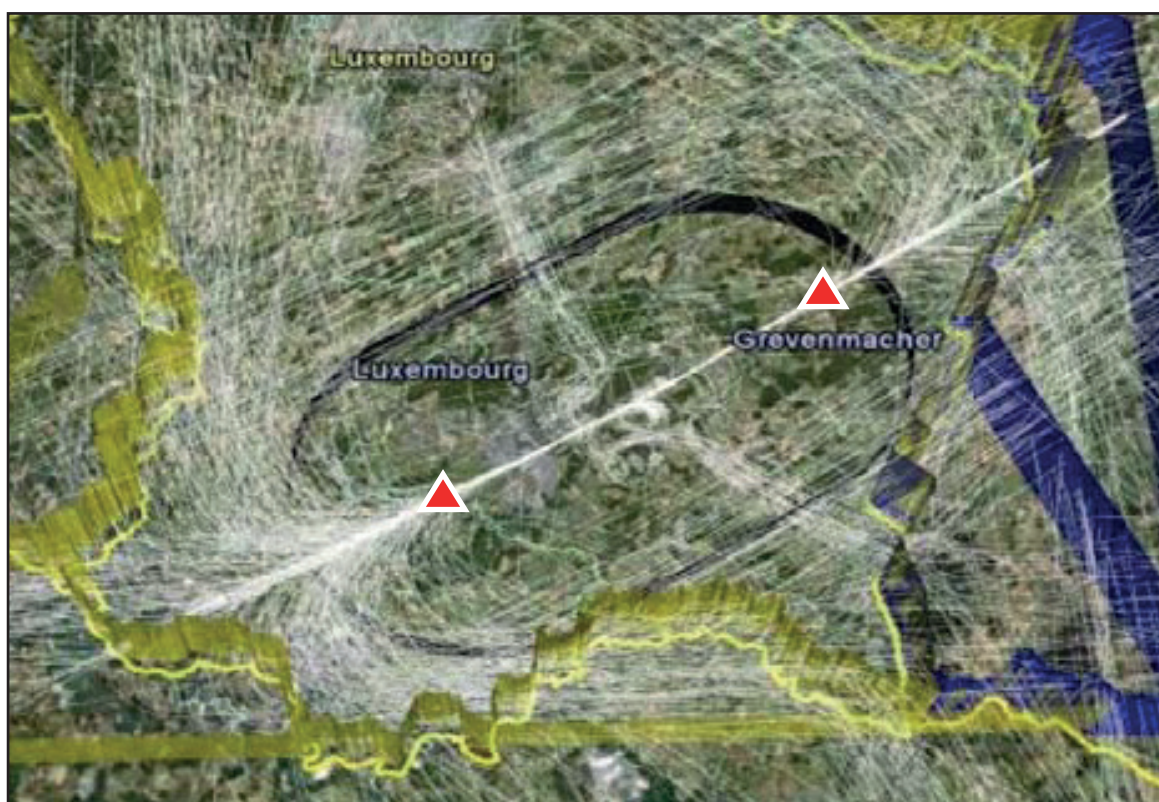
aircraft entering a portion of airspace without being known to the controller responsible for that airspace, can result in a mid-air collision, or aircraft proximity (AIRPROX) event. Airspace infringements can also cause significant increases the controllers' and pilots' workload.

WAKE TURBULENCE

Luxembourg Airport is used by a wide variety of aircraft, ranging from light aircraft and helicopters, to Boeing 747s. Heavier aircraft create wake turbulence behind them, which can then cause upsets and severe control difficulties for aircraft flying through such wake turbulence. Wake turbulence is generated primarily from aircraft wingtips and results in a pair of rotating cylindrical air masses (vortices) which can persist for some time. The DAC received a number of reports highlighting the risks associated with wake turbulence.

Lighter aircraft positioning visually to follow a heavy aircraft, for instance a B747 in the circuit (or taking off behind a B747), or to cross behind a heavier aircraft can encounter wake turbulence. The existence of wake turbulence, and the position of the vortices, cannot usually be identified visually and will be affected by the prevailing weather conditions. In still air, vortices generally descend slowly and away from the aircraft's flightpath. Pilots must ensure that they are at a suitable distance and/or altitude from a heavy aircraft before following or crossing behind it. The minimum distance determined by ICAO for a light aircraft to follow a B747 is 6 miles. However this does not mean that 6 miles will always be a sufficient distance to completely avoid wake turbulence!

The picture below shows (in white lines) the trajectories of generally heavier aircraft taking off and landing at Luxembourg airport, and the red triangles represent the locations with the greatest risk of wake turbulence for lighter aircraft.



All aircraft, including relatively small ones, generate wake turbulence and sometimes strong vortices. In 2009 in Germany, wake turbulence from an AN-2 aircraft caused the upset and crash of a Robin DR400 which took off behind it. Likewise, also an aircraft which might not be considered at great risk of an upset, can encounter severe turbulence. In 2014, at Luxembourg Airport, a C525 on final approach

6.5 NM, behind a B744, had to make a go-around due to encountered wake turbulence during which the Cessna aircraft banked more than 60°!

TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM RESOLUTION ADVISORIES

Larger aircraft are now equipped with a Traffic Alert and Collision Avoidance System (TCAS). This equipment provides pilots with alerts of other aircraft flying close by as well as with Resolution Advisories (RA), if according to this system there is a risk of collision within the next 30 seconds in case both aircraft continue to follow their respective trajectories. TCAS uses signals from transponders in other aircraft and does not take into account the airspace in which the aircraft is flying.

Consequently, even when flying 'in accordance with the rules', the proximity and trajectories of two aircraft may generate a RA, for instance, when one aircraft is flying under VFR in uncontrolled airspace but close to the boundary with controlled airspace (CAS) and the other aircraft is flying under IFR within CAS and close to the boundary with uncontrolled airspace. This can occur in the vicinity of Luxembourg Airport when an aircraft crosses the runway extended centreline close to the CTR boundary just below 2500 feet AMSL whilst an IFR aircraft is in the same area while approaching or departing Luxembourg.

Although no rules have been broken, if a RA is generated, the crew will follow the TCAS directions. This can result in unnecessary manoeuvring and a greater risk for all aircraft in the area. It is recommended, therefore, that pilots of aircraft flying under VFR in the vicinity of Luxembourg airspace maintain a good look out and manoeuvre to avoid the risks of triggering a TCAS RA or a wake turbulence encounter.

*Even when flying in
accordance with the
rules, a TCAS RA may be
generated*

REVISED VISUAL TRAFFIC PATTERN AND VISUAL REPORTING POINTS

Following a recent review of visual flight procedures within the Luxembourg control zone, a number of minor changes have been introduced.

The visual traffic pattern for runway 24 now follows a path to the south and west of prohibited area ELP01 in the turn from crosswind to downwind legs. This change has been introduced in order to reduce the noise nuisance caused to the airport's neighbours. (The visual traffic pattern for runway 06 is unchanged).

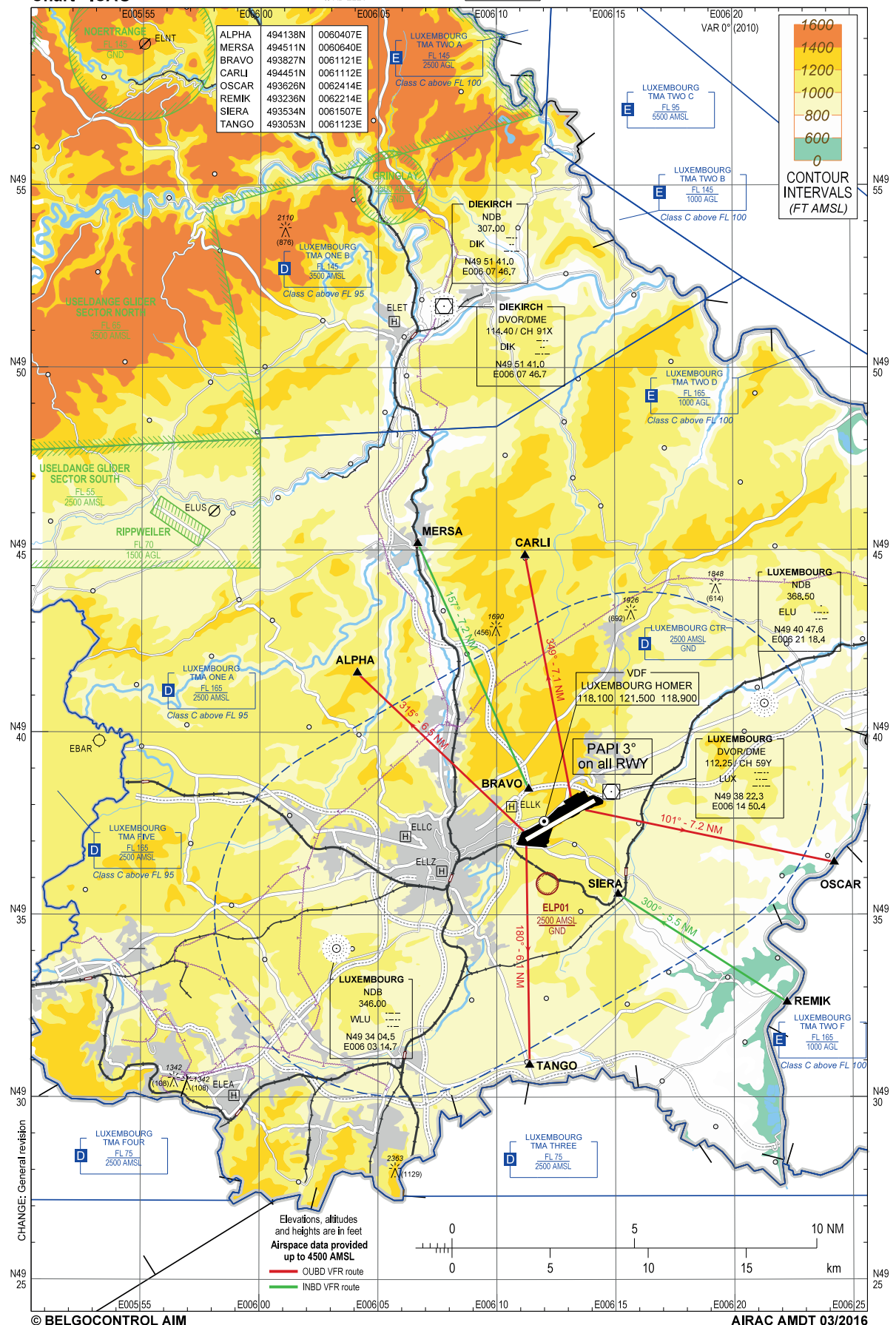
The international standard for naming Visual Reporting Points (VRP) states that names should be composed of five characters. For this reason, some of the VRP in the vicinity of Luxembourg airport have been renamed. The names and location of VRP are shown in the table below:

Name	Associated landmark	Relative position	Position
ALPHA	Church of Keispelt	R-295 LUX / 7.7 DME	494138N 0060407E
MERSA	Silo installation at Mersch	R-322 LUX / 8.6 DME	494511N 0060640E
BRAVO	Motorway crossing A1/A7	R-272 LUX / 2.3 DME	493827N 0061121E
CARLI	Castle of Fischbach	R-340 LUX / 6.9 DME	494451N 0061112E
OSCAR	Bridge of Wormeldange	R-108 LUX / 6.4 DME	493626N 0062414E
REMIK	Bridge of Remich	R-140 LUX / 7.5 DME	493236N 0062214E
SIERA	Railway crossing at Moutfort	R-176 LUX / 2.8 DME	493534N 0061507E
TANGO	Water tower at Frisange	R-197 LUX / 7.8 DME	493053N 0061123E

Aeronautical Information Publication (AIP) charts showing the revised procedures are reproduced on the following pages.

Both changes were introduced on 31 March 2016.

LUXEMBOURG / Luxembourg (ELLX)



Visual Approach Chart - ICAO
Appendix 1: Aerodrome Traffic CircuitAD ELEV 1234 ft
Heights related
to AD ELEVAPP 118.900
TWR 118.100
ATIS 134.750**LUXEMBOURG / Luxembourg (ELLX)**

E006 15

VAR 0° (2010)

Elevations, altitudes
and heights are in feet
Airspace data provided
up to 4500 AMSL