



Version 2  
01.05.2021

## Authorisation request for the operation of UA swarms

Application for a permit to operate a UA (unmanned aircraft) swarm at night with UA up to 1.5 kg in a controlled ground area in accordance with Art. 18 para. 1 lit. b. of the Ordinance on Special Category Aircraft (OSCA) SR 748.941. **This request form is foreseen for operations in controlled ground area. In those areas, only people directly involved in the operation of the UA and who have accepted the related risks are present.**

### Applicant

Company name / Name:

Address:

Town / Postcode:

Country:

Telephone no.:

Email:

Name of operator:

Address of operator:

This UA swarm authorisation request contains two parts. Firstly, the applicant shall submit an Operation Manual (OM) containing the aspects mentioned in the OM UA swarms Document, which will undergo an evaluation by FOCA. This document will be used by the Accountable Manager and the Crew to prepare and conduct the operations.

The second part of the application consists of the following declaration of compliance by the applicant.

#### The applicant agrees to operate under the following limitations:

- The UA used in the swarm does not exceed 1.5kg.
- The UA swarm shall not be operated above a speed of 6 m/s.
- The operation takes place in line of sight of the pilot or with several visual observers who can monitor the swarm at all times and who are in direct radio communication with the pilot in command. If visual observers are monitoring the swarm, verification and communication latency between pilot and observers is less than 15 seconds.



- Operations in locations at less than 5 km from airports/airfields or heliports are coordinated with the airfield responsible and/or skyguide Special Flight Office.
- Operations take place at night<sup>1</sup>
- The operation takes place over a controlled ground area<sup>2</sup>. The flight geography (green area in Figure 1) for the UA swarm operation shall be defined by the applicant at a max. height of 120 metres AGL.
- The contingency volume (orange area in Figure 1) is an additional 15 metres to the flight geography in which the operation takes place. The contingency volume increases from 120 to 140 metres AGL.
- If a UA enters the contingency volume, the operator must initiate contingency procedures. The UA initiates a Return-to-Home or hovers when breaching the flight geography into the contingency area. In such a case, the pilot in command should bring the UA back into the flight geography or land safely. This procedure has been tested and is documented in the OM.
- A ground risk buffer<sup>3</sup> (red area in Figure 1) of 55 metres or equivalent to the operational altitude of the UA swarm (1:1, e.g. 50 metres above ground corresponds to 50m buffer) on each side of the contingency volume is defined.
- If a UA breaches the contingency volume, the emergency procedure must be triggered. The UA shall be geocaged in the operational volume and an immediate flight termination system (e.g. kill-engine) shall be initiated when the hard fence is breached. The hard fence is defined as a pre-programmed geographical fence around the contingency volume (between the contingency volume and the ground risk buffer). The flight termination system must be independent from the flight control unit. This procedure has been tested and is documented in the OM.
- The flights are automated. The UA trajectories are programmed before the flights.
- The system has redundant and independent commercially available command and control link modules. The Command and Control is operated on separately powered Ground Control Stations and allows the UA to be controlled individually and collectively. The pilot can take manual control of the drone swarm at any moment.

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<sup>1</sup> “Night” means the hours between the end of evening civil twilight and the beginning of morning civil twilight. Civil twilight ends in the evening when the centre of the sun’s disc is 6 degrees below the horizon and begins in the morning when the centre of the sun’s disc is 6 degrees below the horizon.

<sup>2</sup> The flight geography together with the contingency volume form the operational volume. In the operational volume and in the ground risk buffers only people directly involved with the operation of the UA are allowed to be present. Those people should be fully aware of the risks involved with the UA operation and have accepted these risks. They should furthermore be informed and able to follow relevant effective emergency procedures and contingency plans.

<sup>3</sup> The ground risk buffer is also a controlled ground area.

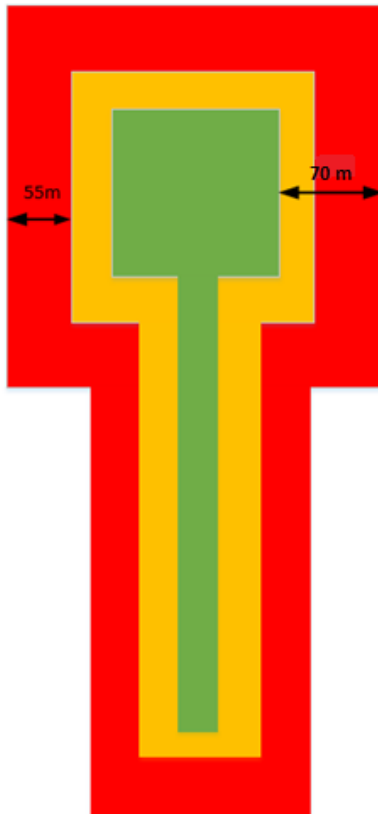


Figure 1: View from the top. In green, the flight geography, in orange, the contingency volume and in red the ground risk buffer.

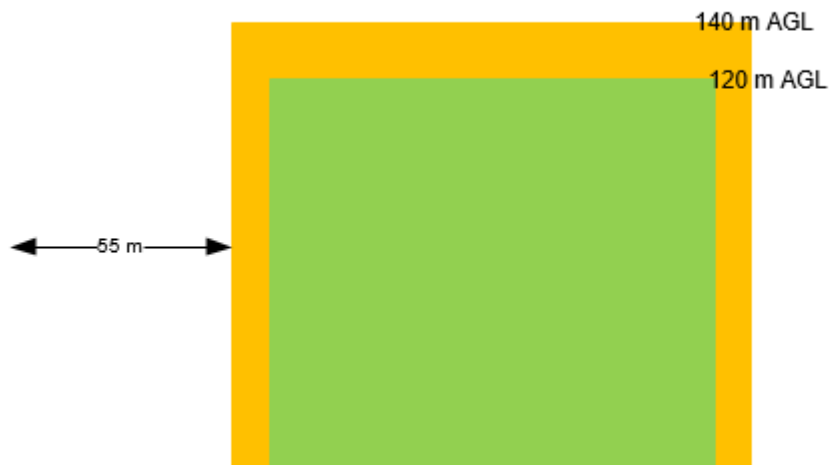


Figure 2: View from the side. In green, the flight geography and in orange the contingency volume.

- UA operators/pilots need to report accidents and serious incidents immediately via the REGA alarm centre (Tel. 1414, from abroad +41 333 333 333) to the aviation department of the Swiss Transportation Safety Board (STSB). In addition, all UAS operators/pilots must report all safety-related incidents with serious or fatal injuries to persons or involving manned aircrafts within 72 hours to the Federal Office of Civil Aviation (FOCA) via [www.aviationreporting.eu](http://www.aviationreporting.eu)
- A log book must be kept of the information listed below. The following minimum details must be recorded for each flight:
  - i) Date of the flight(s)
  - ii) Number of UA used during the operation
  - iii) Name of the pilot(s) and the additional ground crew
  - iv) Location and time of take-off
  - v) Location and time of landing
  - vi) Any unusual technical or operational occurrences

### Operational amendments

The authorisation holder must assess any changes to operations. Changes must be reported to the FOCA and classified as follows:

- a) Deviations: all changes having an effect on the requirements of the procedure laid down in the application form are classified as deviations;
- b) Changes: changes affecting procedures, operating conditions and/or technical systems with no effect on the requirements listed in the application form must be classified as “changes to a current standard scenario”.

Changes and deviations must be authorised by the FOCA using a ‘Notice of Modification’. The authorisation holder shall assess any change to the safety of the operation and notify FOCA thereof.

### Third party liability insurance

Third party liability claims made by third parties on the ground must be covered by the operator in a third party liability insurance policy with guaranteed cover of at least CHF 1 million (Art. 20 of the Ordinance on Special Category Aircraft [OSCA], SR 748.941).

Is the operator insured accordingly? yes    no

I, the undersigned, hereby declare that the UA operation will comply with:

- any applicable national rules related to privacy, data protection, liability, insurance, security and environmental protection;
- the limitations listed in this document and the operation as described in my OM;
- the limitations and conditions defined in the authorization provided by the competent authority

**Location**

**Date**

**Signature**

Please send this form to: [rpas@bazl.admin.ch](mailto:rpas@bazl.admin.ch)