

UAS FLYING AT FARNBOROUGH 2010

The management team at Farnborough have been considering how to positively respond to the considerable pressure to fly UAVs (more usually known now as Unmanned Aircraft Systems – UAS – to more properly reflect the over all “system” requirements. UAS will be used throughout the remainder of this note) at trade shows such as Farnborough.

In principle, we would like to be able to demonstrate UAS at FIA 2010 however, there are a number of regulatory, technical and risk based barriers to that need to be overcome to do this at public events.

Autonomous flights by UAS out of sight of the operator are not permitted in the United Kingdom outside danger areas, ranges or other types of restricted airspace.

This does not, however, prevent UAS being flown almost anywhere under the model aircraft requirements. These regulations restrict the UAS flights to within line of sight of the operator at all times (500 metres is quoted but this might be extended slightly) and only up to moderate heights of 400 feet (although it would be possible to get that lifted to 1500 feet). Models are also not permitted to fly over or near congested/populated areas.

The weight of the UAS also imposes limitations – the heavier the vehicle the more restrictive the regulations that apply. In outline terms these restrictions are as follows:

- Maximum vehicle weight in excess of 150 kilograms – A vehicle of this weight would fall under the European Aviation Safety Agency regulation and would require specific authorisation from EASA in respect of airworthiness requirements. It is felt highly unlikely that approval for this class of UAS could be achieved in time for FIA 2010. Furthermore, the operational and risk based aspects of flying this class of UAS in the Farnborough environment would suggest that we would be unlikely to get CAA permission to fly such a vehicle.
- Maximum weight below 150 kgs. but above 20 kgs. – Under current UK regulations this class of UAS would be considered as an aircraft (as opposed to a model) from the airworthiness aspect. As such, the CAA would need to be satisfied on the build standard and other airworthiness and operational aspects before permission would be granted to fly such a vehicle. An early application to the CAA will be required for clearance on these vehicles.
- Maximum weight below 20 kgs. but above 7 kgs. – Treated as a model aircraft from the regulatory point of view. Assurances will be required on build standard but an airworthiness statement, as part of a risk assessment or safety case, by the manufacturer could well suffice.
- Maximum weight below 7 kgs. – Little in the way of restrictions other than to ensure that persons are not endangered. A CAA permission may be required because of recent legislative changes covering aerial work by small UAS but this would not be onerous.

OUTDOOR UAS FLYING AT FIA 2010.

In addition to the points raised above, the CAA has outlined the other areas for consideration before they will issue the required approval for outdoor flying of UAS at FIA 2010 (Our comments are in parenthesis):

- Details of the pilot/operator's training, experience and qualifications. *(To be provided by the UAS operator and to be acceptable to the CAA)*
- Details of the control frequency to be in compliance with the OFCOM regulations regarding permitted frequency and radiated power. *(Approval of the frequency spectrum regulator, OFCOM, will be required before any UAS, indoor or outdoor, can fly at FIA 2010)*
- Details of the proposed flying area - restricted to "on airfield" and subject to 500m from the operator - not over congested areas or persons. *(The maximum distance*

might be extended to the airfield boundary but to remain north of the crowd line by at least the minimum separation distance – see below)

- Minimum crowd separation distance of 50 metres. *(We may impose a greater separation distance than this minimum)*
- Line of sight operations normally to 400 ft but may be increased to 1500ft if required.
- Airspace segregation - no other flying during UAS operations. *(Airspace segregation is already in place for the Airshow and would adequately cover the UAS requirements without any amendment)*
- Designated area for return following loss of C2C - should be within designated flying area away from crowd line. *(Possibly at the western end of the airfield just to the north of the runway)*
- Direct communications established between ATC/UAS pilot/FDD *(Escort in direct radio contact with ATC will be provided)*
- Day VFR only.
- CAA permission would be subject to further review of submitted documentation and safety case.

INDOOR FLYING

As outlined above, this will require a CAA Permission given that new regulations have recently come into place covering aerial work by small UAS that carry any form of surveillance equipment. However, given that the flights will be indoors within a netted area (for public safety requirements), obtaining this Permission should be quite straightforward. The only area of concern might be approval by OFCOM of the frequencies in use.

RISK ASSESSMENT AND SAFETY CASE

Given the nature of this activity, we will require any participating UAS operator to submit a risk assessment, and supporting safety case, relating to flying their vehicle at FIA 2010 particularly bearing in mind the position of Farnborough in relation to built-up areas, heavily used controlled airspace and the proximity of up to 75,000 people in the crowd.

We will also commission our own risk assessment, by an independent outside agency, to provide the FIA management team with appropriate assurances and to review the risk assessments from operators.

LIKELY FLYING PROFILE

At the moment consideration is being given to a dedicated UAS display period in the 30 minutes immediately prior to the start of the flying display. During this period, all routine movements at Farnborough will have ceased and sterilisation of the period for UAS flying only should be possible.

If demand warrants it, the start of the flying display may be further delayed to give an extended UAS flying period.

It is likely that more than one UAS will have to operate at any one time. Positive control of frequency separation will be critical as will allocation of operating areas and heights.

The pilots of all manned display aircraft are required to validate their displays to the Flying Control Committee prior to being permitted to display at FIA 2010. Operators of UAS flying outdoors will be required to similarly demonstrate compliance with the regulations and the safety aspects of the proposed demonstration. The validation period is from 12 July to 16 July 2010, inclusive.