

JARUS

By Ron van de Leijgraaf



A Coordinated International Approach to Light UAS Rulemaking

In late 2007, CAA The Netherlands (NL) contacted a number of colleague national aviation authorities to start a harmonisation group relative to international regulations for light UAS rotorcraft. Earlier in that year, a Dutch applicant had filed a request for the (restricted) type certification of a rotorcraft UAS of 80 kg maximum take-off weight. Once it was decided that CAA NL would accept this certification request, it was also decided to work together with other civil aviation authorities to harmonise the regulations that need to be developed to support the type certification and subsequent operation.

The need to harmonise is partly due to the special situation in Europe regarding the responsibility for aviation safety. In 2003, the European Aviation Safety Agency (EASA) was established, and it is responsible for the airworthiness of aircraft within the European Union. The basic regulation with which EASA was established, dictated that for unmanned aircraft below 150 kg, the national aviation authorities will be responsible, while EASA would take responsibility for UAS over 150 kg. This means that for light UAS, each European country would have to handle a national request on their own.

In order to avoid duplication of the work of developing regulation and technical certification standards by each country, most countries recognised the benefit of a harmonised approach and were enthusiastic to join JARUS (Joint Authorities for Rulemaking on Unmanned Systems). Besides the European countries, other national authorities from across the globe were approached to participate in this harmonisation group. Furthermore, EASA and Eurocontrol were asked to join the group. EASA was contacted because the 150 kg limit, which divides the responsibility within Europe, is only a legal limit. Technically, there is no reason to treat a UAS of 140 kg differently from a 160 kg UAS. With this approach, the applicants would be assured that when they develop a UAS which would be the responsibility of EASA, but not much heavier than 150 kg, the requirements would be the same as when the responsibility was with a national aviation authority. Eurocontrol was invited to join to make sure the operational regulations would be harmonised with the Eurocontrol approach and the future developments of SESAR.

Participating Countries

At the moment, the following countries participate in JARUS: Australia, Austria, Belgium, Canada, Czech Republic, France, Germany, Italy, Malta, The Netherlands, South Africa, Spain, United Kingdom and the United States of America. Other countries have indicated that they have an interest in participating, or have been contacted with the request to join the group. This group consists of, amongst others: Brazil, Finland, Norway, Slovenia, Sweden and Switzerland.

Goals

The goal of JARUS is to draft technical and operational

requirements for the certification and airspace access of light UAS. These draft requirements will be provided to EUROCAE WG 73, RTCA SC 203 and NATO FINAS through various subgroups for consultation with industry and other stakeholders.

Due to the certification applications currently being processed at the NAAs, the group started with the adaptation of CS-VLR, resulting in draft certification requirements for light rotorcraft UAS. Since most of the tailoring work is equally applicable to light aeroplane UAS, the group will subsequently work on the adaptation of CS-VLA, resulting in draft certification requirements as well.

From the start of the work on these specifications, it was recognised that these adaptations cannot be performed without developing a view on operational requirements for the UAS. So JARUS is also developing draft operational requirements.

During the development of these draft requirements, the group will gain invaluable experience in tailoring a certification specification from manned aircraft to unmanned aircraft. If EASA wants to make use of this experience, the group might be available to assist them with tailoring CS-23/25/27/29. A decision on whether or not the group will assist on this task will need to be taken by EASA (the primary responsible authority in Europe for developing regulation for these aircraft).

During the development of the technical requirements special attention will be given to the requirements on system safety, since it is anticipated that most UAS will heavily depend on automated system for their operation. The JARUS group has established a dedicated subgroup which is looking into the requirements on system safety. The goal of this group is to draft similar (not equal) requirements for all categories of UAS, both fixed wing and rotary wing.

Interaction with Industry and other Stakeholders

It is common practise in aviation to open concept regulations for comments from industry and other stakeholders through an open consultation process. Of course, the JARUS group has no intention to break with this very valuable tradition. Therefore, the group decided that the draft proposals of this group will be put out for discussion and comments through the various international regulatory groups that are currently working on UAS; EUROCAE WG 73 and RTCA SC 203. Since the military authorities are adapting more and more to civil regulations and within the NATO FINAS have already developed regulation for fixed wing aircraft based on civil standards, the consultation will also include NATO FINAS.

Current Status

At the moment of writing this article, the status of the activities of the JARUS group is that a first concept for a certification specification for a light rotorcraft UAS has been drafted (based on EASA CS-VLR) and is being reviewed within the group. It is expected that the draft document could be presented to a

combined EUROCAE/RTCA meeting in the fall of 2009.

In parallel, the operational requirements group is defining draft proposals for requirements for UAS crew and operators. These requirements are expected to be available at the end of 2009. A suitable meeting with EUROCAE and/or RTCA needs to be identified for presenting the draft material.

The system safety group (the '1309' group) has agreed to try to suggest a common approach to the system safety requirement, based on the certification specification for large transport aircraft. The difference for various categories of aircraft might then be established through defining different safety target levels. The group has drafted definitions for hazard classification and presented them to EUROCAE WG 73 at the April 2009 meeting. It is expected that the full draft proposal will be available for the combined EUROCAE/RTCA meeting in the fall of 2009.

Once the draft material is presented for discussion, the JARUS group will focus on adapting the EASA CS-VLA (certification requirements for very light fixed wing aircraft) for use with UAS certification. There is no specific timeline established for this work yet, but it is expected that this work will progress much quicker, due to the experience gained in the current work on regulation for light rotorcraft UAS.

No decision has been taken yet whether or not the group will assist in proposing requirements for heavier aircraft. Since, within Europe, this is the responsibility of EASA, this needs to be decided by EASA.

Join JARUS

The JARUS group is open to participation from all civil aviation authorities. When the civil aviation authority of a country is interested in joining JARUS, either to actively participate in the development of regulation, or to monitor the developments of regulation, are regarding these developments, it is requested to get in contact with the chairman of JARUS: Ron van de Leijgraaf.

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