



Statement of UAV DACH e.V.¹

on the NPA 2020-07 “Unmanned aircraft system beyond visual line operations over populated areas or assemblies of people in the ‘specific’ category issued by EASA

Executive Summary

Regarding UAS, the European Parliament and the Council of the European Union commissioned the European Aviation Safety Agency (EASA) to make up “rules that are proportionate to the risk of the particular operation or types of operations”. With the present NPA 2020-07, EASA contradicts this principle of proportionality, and departs to a significant extent from the path of an operation-centric and risk-based approach. Should the NPA be implemented in its present form, then it will void prior investments, and stifle the industry rather than support it. None of the projections for the economical or societal benefits of unmanned aircraft will ever become manifest.

UAV DACH e.V. demands to withdraw the present NPA, especially the proposals on GRC and SAIL, the intention of option 2 and the impact assessment, and to align with the specific operations risk analysis methodology as developed by the Joint Authorities for Rulemaking on Unmanned Systems (JARUS).

1. Introduction

While considering the need for intended, systematic and comprehensive improvement of the regulations for the integration of unmanned aircraft systems into the European airspace, UAV DACH e.V. observes a significant speed of adaption.

We appreciate the effort of the European Commission to comprehensively integrate unmanned aircraft systems (UAS) into the European airspace and to promote unmanned aircraft as a significant technology providing new future-oriented capabilities for society. Therefore, it is essential to improve regulations and provisions as well as compliance criteria in the view of safety, and economic, societal, and environmental effects.

¹ UAV DACH e.V. – Association for Unmanned Aviation – with members in 6 EU/EASA Member States (Germany, Austria, Switzerland, Italy France and the Netherlands)

We want to point out that we share EASA's view that harmonised regulations and implementations for BVLOS operations over populated areas or assemblies of people are required to maintain the high levels of civil aviation safety and to ensure the same approach in all EASA Member States.

However, the proposed amendment requires careful analysis regarding the actions taken and the effects incurred. Hence, UAV DACH e.V. would like to share their outcome of detailed discussions and analysis on critical aspects regarding this NPA 2020-7.

2. Discussion and analysis

2.1 Proportionate and risk-based approach

The spirit of the „Basic Regulation on Civil Aviation“² is to implement a risk-based approach and the principle of proportionality for all UAS operations.

Regarding the EU regulations on UAS, EASA has proclaimed repeatedly that it would pursue a proportionate risk-based approach. The European Commission stated in 2015 in the Riga Declaration on Remotely Piloted aircraft that “Drones need to be treated as new types of aircraft with proportionate rules based on the risk of each operation.”³ One year later, in the Warsaw Declaration the European Commission again claimed “safety rules to be kept simple, proportionate to the risk of the operation, performance-based, future-proofed, and based on global standards.”⁴ Hence, the proposal at hand surprises as it presents a renunciation of this approach and contradicts the “Basic Regulation” and the European Commission's guidelines.

According to the NPA, all UAS heavier than 4 kg operated BVLOS over populated areas shall be treated alike: with the maximized associated safety targets for airworthiness, operation and training (Specific Assurance and Integrity Level (SAIL) VI), irrespective of their actual class, which would range from mundane 4 kg up to several tons of take-off mass. This contradicts the proportionate and risk-based approach to the point of absurdity. Effectively, the accident rate and resulting safety level to people on the ground of an unmanned aircraft classified as SAIL VI would have to be much higher than those of an authority approved manned microlight aircraft flying above the same environment⁵. Moreover, fixing the ground risk of operations over

² REGULATION (EU) 2018/1139 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2018

³ RIGA DECLARATION ON REMOTELY PILOTED AIRCRAFT (drones) "FRAMING THE FUTURE OF AVIATION" Riga - 6 March 2015

⁴ WARSAW DECLARATION "Drones as a leverage for jobs and new business opportunities", Warsaw - 24 November 2016

⁵ accident rates for microlight aircraft estimate based on UK CAA CAP 780 (Aviation Safety Review 2008), also mentioned in JARUS AMC RPAS.1309 scoping paper; safety targets for SORA SAIL VI (Operational Safety Objective OSO #5 are referenced to AMC RPAS.1309

populated areas or assemblies of people as high, irrespective of any mitigation measures is also contradicting Article 5 (2) of Regulation (EU) 2019/947: operators shall conduct a risk assessment in accordance with Article 12. Only if the competent authority comes to the conclusion that "the risk of the operation cannot be adequately mitigated without the certification of the UAS" (Article 40 (1d) of Regulation (EU) 2019/945) the "design, production and maintenance of UAS shall be certified" (Article 40 (1) of Regulation (EU) 2019/945). With the proposed changes of the NPA, the mitigation of ground risks no longer provides any safety credit, as all BVLOS > 4kg above populated area default to SAIL VI, making the mitigation mentioned in the rule impossible. Even though it has been acknowledged by EASA through the published AMC to Article 11 (EASA SORA from Oct 2019), that mitigation measures can actually reduce risk to people on the ground above sparsely populated areas, the same mitigations are now invalid in the case above higher population densities.

In addition, the NPA deviates from the JARUS SORA v2.0 methodology insinuating that it is insufficient to provide measures for safe UAS operations over populated areas and assemblies of people. This implication denies that the operational safety objectives (OSO) levels of robustness and assurance are designed to be proportionate to the risk of operation. In JARUS SORA only if the risk of operation remains high after considering the mitigations and operational environment then a high level of robustness and assurance is required for the OSO's and an (R)TC will become mandatory (SAIL V and VI).

2.2 The Matternet incident

Despite the high level of civil (manned) aviation safety, serious incidents occur occasionally. It is important for the prevention of accidents and serious incidents to communicate immediately all relevant information from the investigation, including safety recommendations. It is a common policy, that only a greater number of incidents occurring due to lack of provisions may lead to an amendment of regulations. The safety recommendations resulting from the Matternet incident did not require any change of provisions and none of the conclusions questioned the JARUS SORA.

In contrast, one single event like the mentioned Matternet incident, without fatalities or even injuries, prompts EASA to deviate from JARUS SORA, even though the methodology has never been fully exploited. According to our knowledge, there has not been a single JARUS SORA based approval above SAIL II in Europe. A UAS with a MTOM of more than 4 kg (dimension more than 1 m), that could qualify to fly above populated areas without route restrictions would however most likely require a minimum SAIL of III, if it shows an EASA approved impact energy mitigation system. In other words, an RPAS operation above 1 m size above a populated area using the

JARUS risk assessment methodology has never been approved by a European national aviation authority (NAA) yet, hence this deviation from JARUS SORA is premature and the Matternet incident cannot qualify for justifying the amendments proposed in the NPA 2020-07 at hand.

The Matternet operation can be likely classified as SAIL II (13.2 kg take-off mass) since it uses route restrictions to reduce the number of people at risk to mitigate (shown in SUST report on SUI-9909 from 2019) , and thus most probably does not meet all safety criteria to fly anywhere over a populated area. If the operation would have been conducted with a UAS in SAIL III, this incident might not even have occurred due to higher robustness requirements for airworthiness, operator, and training objectives.

An appropriate response to this incident would be to provide technical recommendations concerning e.g. the quality of the parachute ropes. In manned aviation, a single incident does not call for an amendment of the regulations or Means of Compliance. As far as we know, no BVLOS operations under SAIL III on a regular base have been conducted so far. So, there is no indication that the operational safety requirements as suggested by JARUS are not appropriate.

2.3 Procedure

It is not comprehensible why EASA chooses to deviate from the SORA developed by JARUS - an approach that has been worked out under international contribution officially recognised by EASA. The JARUS SORA is going to be adapted in many countries all over the world which supports a global harmonisation. Hence, European manufacturers and operators would have the opportunity to offer their products and services on non-European markets as well without having to demonstrate different levels of robustness.

But by deviating from the JARUS approach, EASA would isolate the European market from the rest of the world, and thus reduce economic growth as well as compromise the proportionality of rules as intended by the European Commission and required in the Riga and Warsaw declaration.

Moreover, it is currently not foreseeable that SAIL VI criteria can even be met for small to medium size drones. As a result, there would be no BVLOS operations over populated areas with UAS heavier than 4 kg, hence no transport services, hence no market. For years UAS manufacturers have been keeping track of JARUS' work preparing to comply with the requirements of the "specific" category. None of the manufacturers – especially those in the "specific" category – were prepared to have their products certified at a much higher target level of safety. This sudden change is not necessary and will most certainly throw back the developments for several years.

2.4 Sparsely populated vs. populated areas

The interactive map by DEGRUBA does not provide useful information for UAS operations planning with regard to ground risk assessment, as the map does not accurately model actual population density. For a meaningful ground risk assessment, the actual probability to hit or miss one or more individuals needs to be considered. It requires field work to establish where people live, but also where people work (as in agriculture) or re-create (including sports, fishing and yoga).

As stated in the NPA, the limited resolution of the map may result in situations where rural areas are classified as “populated areas”, whereas green areas could be densely populated.

It might be advisable to delete the link to the DEGRUBA map entirely or provide a better map which is more suitable for the task.

3. Effects/Impact assessment

EASA systematically underestimates the financial impact of certifying UAS. The certification process in aviation is labour-intensive and time-consuming. Manufacturers need highly qualified staff to prepare and establish the required means for their products. These certification processes usually take years. Years in which no or less products could be sold on the European market because of the absence of a certification. EASA points out in its NPA that “costs for EASA certification would be incurred by UAS manufacturers, which would be passed on to UAS operators”⁶. EASA assumes that UAS manufacturers are capable to finance the certification process in advance, and that UAS operators have the means to buy these expensive unmanned aircraft. But there seems to be a general misconception of the nature of UAS manufacturers and operators. In contrast to the industry of conventional aircraft manufacturers, UAS manufacturers are most likely start-ups and many UAS operators are individuals and small and medium-sized enterprises which are far from being industry. It is very unlikely that those companies would be able to pay e.g. annual license fees of 150k € for toolchains which are necessary to develop software according to the software standard RTCA DO-278.

In a nutshell, high costs regarding EASA certification will result in expensive products, and thus in expensive services. This is not a calculation of investments and returns. But the problem is that UAS compete with other vehicles e.g. transporting medical goods with a UAS vs. a car or inspecting pipelines with UAS vs. helicopters. The vital reason why UAS are so attractive is that they are in general by orders of magnitude

⁶ see chapter 4.4.4, option 2, NPA 2020-07, p.28

less expensive than operating helicopters while providing equivalent levels of service. So, by forcing operators to use certified UAS the costs for their services would increase disproportionately, and thus would not be competitive: no assignments, no market growth.

It can be concluded that option 2 and 3 would have an enormous negative economic impact on manufacturers and/or operators. EASA has to take into account not only the extremely high costs for certifying the products but also that due to these additional costs European manufacturers and operators would experience a structural disadvantage on non-European markets because their products would be much more expensive compared to their non-European competitors. Not to mention that the theoretical gain of safety through such a certification process is not proportionate to the effort and cost as intended by a risk-based approach.

4. Conclusion

“The European Commission wants to contribute to the development of a drone ecosystem supporting the emergence of this promising sector.”⁷ This is a statement regarding unmanned aircraft systems which can be found on the website of the European Commission.

In the UAV DACH’s opinion this goal will not be achieved by the proposal at hand. On the contrary: BVLOS operations will be limited to rural areas. This will have a negative impact on a variety of UAS services, such as transporting e.g. medical health care related goods to support health care, linear infrastructure inspections, or life-saving services. Thus, the European people will not be able to benefit from this new technology.

Promising UAS manufacturers will migrate to non-European countries and take the jobs and the revenue they are creating with them. As a result, there will be no development of a drone ecosystem. Europe will most likely be left behind.

Therefore, UAV DACH e.V. strongly recommends following the JARUS SORA v2.0 methodology which intends to grant UAS operators the opportunity to mitigate their ground risk class as stipulated in Article 5 (2) of Regulation (EU) 2019/947. EASA should not alter the internationally agreed and validated concept. So, it is suggested to remove the addition in table 1 and 2.

Moreover, we suggest reconsidering the outcome of the comparison of options (table 5). As it is assumed that the societal impact and safety impact are linked with each other, and at the same time the impact on societal acceptance is highly speculative

⁷ https://ec.europa.eu/growth/sectors/aeronautics/rpas_en

due to a lack of scientific proof, it should be disregarded. In the end, all means undertaken to generate safety and the costs to obtain this goal have to be in balance.

Finally, the arguments mentioned here should also be taken into account by the work of RMT.0230, and should be adjusted accordingly.

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