Submission 101 – Michael Choularton

Response – Remote ID for Unmanned Aerial Systems

Summary

No evidence or argument has been made to warrant the further regulation of sub-1kg Unmanned Aerial Systems/Vehicles (UAS/UAV). The proposed changes to the regulation regarding the recreational operation of sub-1kg UAS will have an extraordinary and detrimental effect upon the model aviation, hobbyists, education and aviation innovation. This document discusses this highly important matter further.

Remote ID for Unmanned Aerial Systems/Vehicles (UAS/UAV) is currently being proposed for use in the Australian airspace. A need to develop and upgrade the existing air traffic control system is recognized by all users of the mentioned air space.

However, this proposal has the potential, if not implemented with due care, to severely damage the model aviation hobby. The breath and overreach being seen in its implementation overseas has left all recreational users feeling disenfranchised, disregarded and pushed aside. These are good members of their various local communities and have been enjoying the use of the airspace for many year without causing a hazard to other members of the aviation or greater communities.

Very little attention has been put into understanding the different types of recreational users, their needs and the specific risk profiles that they represent with regard to the differing operations that they regularly conduct. Little effort has been put into understanding the danger represented by model aviation craft under 1 kg and those studies done seem to be ignored by policy makers.

The same can be said in regards to the level of inclusion that hobbyist have been given in deciding the changes to the system with in which they operate. At the same time that safety and security is touted as the need for more regulation, of what are in effect toys, areas of aviation such as ultralights, hand-gliding and parasailing, which do regularly have fatalities (some in the double digits per annum), are left unregulated, and indeed in some cases unlicensed or monitored. Like these other recreational air space users, and of significantly less risk than them, model aviation recreational hobby pilots should be allowed to partake equally. If one takes a mental step back to appraise the overall situation, this focus upon the model aviation hobby seems unfairly discriminatory, especially given the fact that this is a recreational outlet for many whom are less able to otherwise enjoy the great out doors.

The inclusion within the current and proposed rules of craft of 251 gram being grouped in with those weighing almost an order of magnitude greater, clearly demonstrates an approach lacking in the required nuance or an appreciation of the actual situation on the ground. This is a totally

arbitrary limit and is not reflective of the types of UAVs being used by the model aviation community which are largely under 1kg and over 250g. It also disregards the different types of operations that various users regularly conduct or the findings of what little UAV – manned aircraft collision testing has been done in the sub-1kg weight class.

Whilst it has been made obvious though empirical testing that UAVs of medium and large size commonly used in commercial operations can pose a significant risk to manned aircraft. There are marked differences in the dangers posed by different size classes of UAV. In reality it is hard to find comprehensive data about the sub-1kg class commonly used by the recreational community. In addition it is difficult to access that which exists without incurring undue costs as a public consultation respondent. However, there is no evidence to support 250 grams as the cut off or danger point that poses a risk to aircraft. CASA has been previously made aware of studies showing that the force and impact of something as large as a 2kg drone has less impact that a similar sized bird. - https://www.dji.com/au/newsroom/news/dji-demands-withdrawalof-misleading-drone-collision-video.

Further more, it is indicative that the sub-1kg class of UAV is considered to be of minimal to no risk due to the omission of data in published results of research reviews that are freely available. An example of this can be seen in the findings from studies conducted at the Crashworthiness for Aerospace Structures and Hybrids (CRASH) Lab at Virginia Tech by Javid Bayandor, PhD, Director; Walter, O'Brien, PhD; Yangkun Song; and Kevin Schroeder.

"Based on mass and size of hobbyist's drones, they can exert different degrees of damage on impact to an airplane. Professional multi-copter drones that are commercially available (4-5 kilograms) can cause irreversible damage on the primary structures of the airplane (including the flight deck windshield pillars), or potential catastrophic failure on non-primary (secondary) structural components (such as control surfaces, radome, flaps, slats, etc.). Large and medium sized hobby drones (1-3 kilograms) can potentially cause critical damage. The impulse at impact for this type of drones can be large enough to damage non-primary structures."

Please note the non-inclusion of drones of under 1kg in their findings and the noncommittal tone of the final two sentences. The writer suspects this is because bird strikes of a similar weight category have always been common place in manned aviation and are indeed a know risk. It is common for airports to have dedicated staff for deterring loitering bird life. Modern aircraft are designed to be subject to these incidents without critical or catastrophic failure, this is discussed in the aforementioned CRASH Lab report.

The majority of recreational hobbyist fly craft under 1kg. Those that do not, tend to be either; conducting BVLOS operations, at a hobby airfield flying large scale or acrobatic craft or operating a DJI (or similar) camera drone. The imposition of a proposed Remote ID system on craft under 1 kg is overreach and unduly punishes the vast majority of model aviation enthusiasts whom have been doing the same thing for years and never been a problem. There needs to be a distinction between photography, self piloting drones like DJI phantoms and recreational hobby model aviation. Perhaps weight limits should be different depending on the core function of the drone.

Further highlighting the lack of nuance taken in the proposed Remote ID and in Civil Aviation Safety Authority The RPAS and AAM Strategic Regulatory Roadmap is the way in which different users are grouped. The inclusion of all of the various types of recreational users under the designation hobbyist discounts the large differences in the ways that these users enjoy the world of flight. The aviation hobby attracts a broad range of individuals whom are attracted to different aspects of it. For example a short non-inclusive list of various recreational users would be;

- Camera drone operators,
- Park flyers,
- Children flying toys,
- Club members,
- First person view (FPV) racers,
- FPV freestylers,
- Fixedwing FPV cruisers,
- And long range enthusiasts.

Please note one could have made the above list longer to increase its accuracy but even at this obtuse level of delineation there are eight categories all with very different wants and needs.

Only two groups listed above would benefit from remote ID, these are the camera drone operators and the long range enthusiasts, everyone else will be unfairly disadvantaged.

What is more, of all of the mentioned groups above, only one has been know to be a source of air space conflicts and that is the group refereed to as camera drone operators. This is the least cautious, trained or aware type of UAV operator and also the type of drone that requires very little aviation skill or knowledge to fly. Given the over the counter purchasing and highly automated nature of DJI and similar camera drones it should be easy to have this category regulated separately.

The restricting of operating non-remote ID equipped craft to designated flight fields is highly flawed and will result in loss of access to the hobby for the disabled and infirm. These inddividuals may not be able to access their given field and thus loose quality of life at a time when it might be so precious. Flight fields are not free to attend and will impose yet another cost on to hobbyists.

The pricing of the equipment required to implement remote id has not been properly considered. Members of my discord community have reported pricing in excess of $200 AUD for the cheapest option delivered to your door. The expectation that recreational users should bare this absolutely is unreasonable. This is more than a lot of hobby craft cost to build and operate for their entire life.

Concerns abound in the hobby community about the very future of the aviation hobby. Users are worried that the recent growth and interest will be stifled and with it the impressive rate of innovation and development of these systems will drastically slow.

Without easy and readily available access to the aviation hobby what will inspire the next generation of engineers. STEM education programs will find an exciting and successful avenue of study cut off. More than one UAV flight control system has been designed and developed by hobbyists that have enabled commercial UAV operations in numerous industries, surveying and agricultural just to name a couple.

Little to no effort has been made by regulatory bodies to educate the public on UAV operations and the relating regulations. It has been the aviation enthusiasts, both model and manned, whom have taken this challenge on with little to no help from the regulators. Public education and inclusion is the most effective way to have a safer air space. More effort should be put into this by regulators and coordinated with the content creation side of the whole aviation community.

All things considered a Remote ID mandate should not be developed. Failing that, any mandate and subsequent regulation should not require RID for recreational craft under 1kg and should consider RID for all commercial users over 1kg, self flying camera drones bought from retail outlets in a ready to fly configuration and beyond visual line of site operations.

The exemption for under 1kg craft would allow for the continued enjoyment of the hobby and continue the positive effects model aviation has upon the community at large and future innovation in the field. It will also leave open the door to future generations.

Just let us fly our toys in the yard and we will be the best observers a regulator could ask for. We look up when we hear a craft. We want a safe sky. We will report unsafe users. Please do not excluded us from something we love.

The following section contains further feedback relating to the document titled ‘Remote Identification (Remote ID) Discussion Paper for Public Consultation’ dated June 2023.

Section 2 – Background.

“Remote ID technology is an essential step towards this. It will support security and rule compliance, and will be a critical element of future air traffic management systems (including the uncrewed traffic management (UTM) system) that will integrate crewed and uncrewed aircraft in Australian airspace. “

Comment:

The assumption that Remote ID is essential is flawed and ignores the successful utilization of ADSB in manned aviation. It will also unnecessarily confiscate the situational awareness of all pilots due to it being yet another system to monitor when attempting to appraise the situation. The modern cockpit needs simplification not ossification.

ADSB currently fulfills all objectives of Remote ID (baring encryption and broadcast method) and would be a better choice for the integration of UAVs in to the air space management system. The question of why ADSB is not encrypted when there is an apparent need for Remote ID to be comes to mind.

Compliance is already enforced for commercial and official

“as well as protecting the rights of hobbyists to operate alongside commercial operators. “

Comment:

This is not being done and with the current lack of a nuanced and considered approach how can it be done. Claiming to do so is simply unjust. Where are these supposed protections? All this proposal and the roadmap do is show how little the recreational user has been considered. These documents promise fees and imposition with less access and reduced personal freedoms. No examples of protections are provided in either document so it is only possible to conclude that this is a fauls statement.

Section 3 - What is Remote ID?

“Remote ID refers to a system that communicates flight and identifying information about a drone to other parties. Details may include: • a unique identifier (such as a registration, serial number, or a government issued registration label) • flight characteristics (location, altitude, speed, direction and timestamp) • ground control station information (location and elevation) • the type of drone and its status • details of the owner or operator of the drone. “

Comment:

Details such as craft altitude and speed are not being included in overseas Remote ID programs. This will mean that if such details were to be included in Australian Remote ID by Casa, special versions of any RID devices would be required and oversea commercial operators would not be able to work in Australian air space with out modification to their craft. It will increase the costs to Australians to have a special version of the RID devices. This will put Australian Commercial UAV operators at a commercial disadvantage overseas as well.

Making the location of the UAV operator public presents safety concerns and complications to compliance. Putting yourself knowingly in danger of robbery and physical attack is counter to compliance with WHS policy for commercial entities and counter to self preservation for recreational.

Making the details of the operator of a UAV publicly available is tantamount to doxing. This is not how road license plates work and should not be implemented in any licensing system anywhere. A code number is enough for the authorities to search whom the pilot is.

ADSB and the current aircraft registration system fulfill all the above criteria and implementing Remote ID is wasting funds better spent updating and implementing ADSB for UAV over 1kg.

Section 4 - How does Remote ID work?

Types of Remote ID There are broadly two types of Remote ID:

• Network-Based Remote Identification (NRID), or ‘standard’

• Broadcast Only Remote Identification (BRID), or ‘limited/direct’.

Comment:

NRID has already been shown not to be feasible in the US and is would be a fools errand to think we can do better.

BRID has a number of issues when considered from a technical point of view. These include but are not limited to;

- poor range and reliability of bluetooth connection over real world operational distances.

- WiFi has better range but packet loss a real problem due to transmission protocol used coupled with one way transmission of information with this system. In addition Wifi systems can suffer from high latency.

Section 5 – Uses and Benefits

“It is anticipated that Remote ID will only be used for drone-to-drone separation as it is not compatible with the equipage requirements of crewed aircraft. “

Comment:

Seems to defeat the main reasoning for the implementation of RID. Why bother to spend the resources implementing something that is known to not achieve its stated goal and will need to be replaced asap. Again ADSB and avoidance protocols is far more suitable.