



# RECREATIONAL DRONE SAFETY

By Andre P. Meredith

In the coming months, *World Airnews* turns the spotlight on drones and their uses. Kicking off the first of three guest columns South African Air Force Senior Staff Officer Air Certification and author of the book 'The Drone Safety Handbook'

Andre P. Meredith takes a look at the critical area of safety in the recreational use of drones



**E**ver since the DJI Phantom 1 entered the consumer market in 2013, drones have entered the homes and lives of hobbyists, amateur photographers, adventure-seekers and gadget-lovers. On the other hand, professionals and businesses quickly saw the benefits drones could bring to improve productivity and create new business opportunities, leading to the establishment of Commercial drone operations. It is here where the pinnacle of regulatory oversight resides, as far as drones are concerned.

Recreational drones are, for the most part, unregulated – and probably for good reason, too. It would be an unimaginable task for any Aviation Regulator to come to terms with the thousands of 'park flyers' and hobbyist drones being operated everywhere. It is true that most aviation regulators do provide simplified regulatory models for recreational drones – often in the form of infographics or other visual aids – but nowhere near as complex or strict (or costly) as commercial drone regulations. It is usually only presented as guidance material, and many aviation regulators do not even require that recreational drone operators register their new gadgets once purchased.

In addition, control over adherence to such information is left largely to the drone operator.

It is here where things tend to fall apart. Even if simplistic guidance is being offered to recreational drone pilots (as is the case with South Africa's own CAR Part 101 and CATS 101), many operators (a) may not be aware of this, or (b) may not know where to find this information, or (c) may not even consider that such information is available, or (d) worst of all, may elect to ignore this guidance on purpose. It should be remembered that most recreational drone operators are members of the general public, and not aviators by heart.

The problem with this is that ignorance of the law (or any other form of guidance), or willful disregard thereof, is no excuse in the event of an incident. Operators of recreational drones need to be educated and cautioned regarding the use of their aircraft – specifically the potential for injury to third party persons.

This is not an easy task, but it must begin with a new mind-set: drones are aircraft in their own right, and the public, as well as drone operators, need to understand this. They operate in the national airspace, potentially amongst other manned aviation, and alongside their commercial counterparts. In fact, many recreational drone types are also being used in fulfillment of commercial tasks, by trained and licensed drone pilots. It would probably not be a stretch then to surmise that the same machine in the hands of an untrained hobbyist has the potential for greater damage or injury.

Operators of recreational drones also need to understand that their machines are often being flown close to uncontrolled persons (members of the public on the ground beneath the flight path), as well as national roads, public or government property, or even over protected



land. The conducting of recreational flight under such circumstances is usually prohibited and could lead to prosecution, if reported to the authorities – or could lead to serious injuries or property damage in the event of a critical system failure. The education of recreational drone pilots is therefore paramount towards eradication of such practices, and, at the same time, increased protection to the public.

As mentioned in the preamble, it would be unfair to expect aviation regulators to police the recreational drone sector: there are simply too many being operated for this to be effective. One option is to empower the national police service to be the eyes and ears of the aviation regulator – an ‘executive arm’, so to speak – and act on behalf of the regulator to curb illegal flight. This is already being done in other parts of the world.

A more positive approach could be to teach (there’s the ‘education’ factor again) recreational drone pilots the merits of performing a small self-assessment prior to each flight – to determine if the intended area is suitable for flight. The self-assessment could be in the form of a simplistic checklist – perhaps an electronic ‘form’, accessible on a smartphone or tablet. The pilot would – prior to motor start – perform all the pre-flight checks, and on completion of the flight, close out the session with a short set of after-flight checks. Such a check should not take more than 5 to 10 minutes to complete but could be invaluable towards eradication of unsafe or potentially illegal flight operations (from a recreational point of view). An example of such a checklist is available at [www.dronesafetyhandbook.com](http://www.dronesafetyhandbook.com).

If more operators of recreational drones begin taking self-responsibility for their actions and start to do a quick (albeit proper) pre-flight assessment, it will eventually catch on and become the norm, even without regulatory intervention. Such actions will lead to safer recreational drone flight, and this will go a long way to instill greater trust with the public. →

UAS Recreational Flight Checklist (RFCL)			
Date:	Select date	Time:	Enter time
UAV Pilot:	Click here to enter name.		
<b>Your Surroundings</b>			
I declare that I have taken note of the following and that none of these elements, whether natural or man-made, introduce uncontrollable or unacceptable risks to the flight:			
Element	Checked		
Terrain (ground elevation, incline, consistency)	<input type="checkbox"/>		
Natural Features (mountains, cliffs, hills, valleys, rocky outcrops)	<input type="checkbox"/>		
Natural Growth (trees, shrubs, hedges, grasses)	<input type="checkbox"/>		
Other Natural Obstacles: <input type="text" value="Specify..."/>	<input type="checkbox"/>		
Residential Property (houses, flats, estates, townships)	<input type="checkbox"/>		
Commercial Property (factories, businesses, shops, offices, malls)	<input type="checkbox"/>		
Government Facilities (military, police, legal, political, key infrastructure)	<input type="checkbox"/>		
General Obstacles (towers, masts, poles, pylons)	<input type="checkbox"/>		
Transportation (roads, railways, bridges, pathways, parking zones)	<input type="checkbox"/>		
Large Crowds (stadiums, rallies, sporting events, concerts)	<input type="checkbox"/>		
Other Man-Made Obstacles: <input type="text" value="Specify..."/>	<input type="checkbox"/>		
Sources of EME (cell towers, radio masts, power stations and masts, fences)	<input type="checkbox"/>		
<b>Proximity to 3<sup>rd</sup> Parties</b>			
I declare that I have taken note of 3 <sup>rd</sup> Party Persons, 3 <sup>rd</sup> Party Property and the Natural Environment in close proximity to the intended flight path/area, and that the flight will not in any way endanger or pose any risk to the aforementioned:			
Element	Checked		
3 <sup>rd</sup> Party Persons (general public, people, crowds, groups)	<input type="checkbox"/>		
3 <sup>rd</sup> Party Property (property, structures, vehicles, key infrastructure)	<input type="checkbox"/>		
The Natural Environment (sensitive or protected areas, dry regions, parks)	<input type="checkbox"/>		
<b>The Weather</b>			
I declare that I have taken note of the weather and other climatic conditions and that none of these elements introduce uncontrollable or unacceptable risks to the flight:			
Element	Checked		
Wind (maximum wind speed)	<input type="checkbox"/>		
Ambient Air Temperature (upper and lower)	<input type="checkbox"/>		
Dust and Sand (damage to equipment, visibility)	<input type="checkbox"/>		
Precipitation (damage to equipment, visibility)	<input type="checkbox"/>		
Air Pressure (related to flight altitude)	<input type="checkbox"/>		
<b>Airspace</b>			
I declare that I have taken note of the following regarding the Airspace within which flight will take place:			
Element	Checked		
Proximity to Aerodromes (airports, airfields, airstrips, helipads)	<input type="checkbox"/>		
Proximity to No-Fly Zones	<input type="checkbox"/>		
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**Above is the first page of the recreational drone checklist**



### WHO IS ANDRE P. MEREDITH?

Andre Meredith matriculated in 1989 and, following attestation in the South African Air Force, completed his Bachelor of Mechanical Engineering degree at the University of Stellenbosch in 1994. He then embarked on a long and diversified career in the SAAF which included aspects of design engineering, engineering management, project engineering, system engineering and finally certification of military air systems.

It was during his tenure as Chief System Engineer that he became interested in UAVs, and embarked on a process which eventually culminated in the completion of a Master of Science in Engineering degree at the University of Stellenbosch with research into the feasibility of utilising large UAS for long range maritime search and rescue.

During his tenure as Chief Certification Officer he provided oversight and guidance to Defence Industry on safety, regulation and testing of various military UAS. This included the Type Certification of the Dynamics Seeker 400 UAS, which at the time was only the second Type Certified UAS in the world. He also wrote the policy for the regulation of military UAS operations in the South African Department of Defence, and served as the military UAS advisor on the Aerospace, Maritime and Defence Industries Association of South Africa (AMD) UAV Forum.

In addition to his military duties he also spent some time as an Air Certification Consultant to operators of commercial UAVs, enabling them to apply for technical clearance certificates. It was during this time where the need for structured safety guidance to commercial and recreational UAV operators was identified, which led to the development and publication of his first book entitled “The Drone Safety Handbook”.

Operators of Commercial and Recreational “drones” need to understand the importance of safety and also need to understand the potential risks to third parties – and how to identify, eliminate or at least manage these risks. Andre has opted to share his certification and technical risk management experience accumulated over the course of more than ten years, towards the eradication of unsafe drone operations and the improvement of safety towards the general public.