

WHITE PAPER:

Contracting With and Between UAS Operators

A guide for companies seeking professional drone services and drone companies looking to safely and legally transact business



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Introduction

The Unmanned Aircraft System (UAS) industry is evolving at a speed that is hard to keep up with, even for those intimately involved with it. It has been said that a “drone year” is the equivalent of one calendar month; such is the pace of change. New aircraft technology is influencing all areas of the UAS industry—from manufacturing techniques and materials to flight controllers and apps. Professional operators of drones face a vast array in choice of platform (aircraft) for their given role.

Additionally, payload technology is advancing (payload being the camera or other device attached to the aircraft that provides utility). Tasks that were hard to accomplish a year ago are possible now, with some of the biggest gains being seen in the agricultural industry.

This extraordinary revolution has taken place in an industry that, only a few years ago, had never been heard of or was dismissed as a fad. To a great extent, this growth has been fueled by the enthusiasm with which investors have supported drone start-up companies. An August 2015 report from the Teal Group estimates \$93 billion in worldwide Unmanned Aerial Vehicle production over the next 10 years¹.

In spite of this remarkable progress, we are also seeing signs of growing pains. Insurance carriers have seen insurance policies purchased a year ago not renew, for two primary reasons.

Firstly, the drone that promised so much last year is now redundant technology and resides on a shelf, never to be flown again. Similarly, some manufacturers have ceased research or production, having been too bullish with one application or operating platform. Secondly, many of the entry-grade units being purchased for as little as \$1,500 including camera, either failed to live up to their expected use or were damaged and are uneconomical or impossible to repair.

In this ever-changing environment, we are witnessing a growing number of enterprises choosing to outsource their drone operations. It is not only the pace of change that is influencing these decisions. Safety concerns and a lack of clear legislation are leading a large number to decide that the most effective way to use drones for their organization is to contract with professional operators.

In the first section of this paper we will provide a top 10 list to help companies currently assessing the use of a third-party drone service. Simply put, what are the essential items that should be considered when hiring an operator? Without apology, many of these items relate directly to operational safety.

Drone operators are overwhelmed with additional challenges such as the regulatory environment and the public’s pervasive perception of the dangers associated with the operation of drones. The second section of this paper will address the liabilities of drone manufacturers, operators and users to one another and to third parties. It

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will also address how they can protect themselves during this period of extraordinary development, especially when interacting with others in the industry.

Section 1 – How to choose the right operator

1. The best system for the job

The choice of systems available can be mind-boggling. It is estimated that there are 800-plus manufacturers of small UAS in the world today. Coupled with that, the variety of cameras, sensors and other payload items available makes picking a qualified operator a daunting task.

So how do you select the most appropriate drone operator to accomplish your particular requirements?

- (i) Define your mission: What data are you looking for and how do you need it presented?
- (ii) Age of equipment: Payload technology is developing at a breathtaking speed; ensure your provider has the latest and greatest.
- (iii) Number of drones and sensors / cameras: Not only does this give you comfort that a back-up system may be there if the primary fails; it also indicates the experience of the operator and their level of investment.
- (iv) Know what is included in the contract: Will the data collected by the drone be presented in the raw or after it has been processed into a pack of information that you can use immediately?
- (v) Secure references: A long track record may be hard to achieve, but the presence of prior satisfied customers would be advantageous.
- (vi) Quality costs: As with many things in life, the best option may be one of the most expensive. The added benefits in relation to the safety around the operation and reputational protection will require greater investment.
- (vii) Call in the experts: Many businesses offer consultancy services to help you find the best partner.

2. Legality and legislation

At the time of writing this paper, the Federal Aviation Administration (FAA) is still drafting the final rules that will govern the use of small commercial UAS (the sub 55lb units operated within visual line of sight (VLOS) that will make up the bulk of the market in the next five years). In the meantime, operators are required to seek specific approval from the FAA to operate under section 333 of the 2012 FAA Modernization and Reform Act.

One of the most controversial features of the exemptions passed to date is the requirement for an FAA licensed pilot to operate the UAS at all times. The reason is clear—the FAA simply has no other congressional mandate for regulating our skies. This condition alone, however, makes the use of drones out of reach for most. With a final rule (anticipated by June 2016) that will most likely not contain as burdensome a requirement (if the February 2015 Notice of Proposed Rulemaking is accurate), it

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is hard to justify the significant expense of training yourself, or a workforce, to pilot a manned aircraft simply to operate a \$1,500 quadcopter. Notwithstanding the 10/2015 fine of \$1.9 million levied against a drone operator, it is likely that many professional operators may not choose to go through the difficult hurdles for approval in the current regulatory environment.

That said, if your chosen operator cannot produce a copy of their 333 exemption for commercial or business use, whether over private farmland or a remote building site, they are in breach of a Federal Aviation Regulation (FAR). Many companies advertise themselves as being FAA compliant and even declare the same on insurance applications. What some may not realize is that the FAA database is available for public viewing here: http://www.faa.gov/uas/legislative_programs/section_333/. Users can search this database for both exempted and pending or declined applicants.

Does an FAA approval mean the operator is good to go? Not necessarily.

Firstly, the approvals are specific to certain aircraft types and uses. Therefore, if an operator is approved for use of a DJI S1000 and turns up with a 3DR X8 in the trunk, any flight would be in direct violation of their approval. Likewise, an operator approved for real estate photography would not be able to legally scan your crops.

The approvals are very specific in terms of operational parameters as well. Requirements for safe distances to be maintained from airfields, people and urban areas are common. Check if the operation will violate any of those specifications.

Many industry observers and participants estimate that, as the FAA approves more and more operations, the number of operators pushing the scope of their approval will rise. Interpreting the approvals is not always straightforward. Be sure to check for a valid approval and that the content therein is being respected.

3. What type of system do you need and how safe is it?

A distinction needs to be drawn between the myriad of different operating systems. A farmer operating a 3lb foam wing, fully autonomous aircraft over private land represents a very different risk from a 25lb octocopter intended to be flown in close proximity to a crowd of people. While legislation may not distinguish between the two, the responsible operator should recognize the greater need for active risk mitigation for the latter. The inertia behind a 25lb unit falling from 200 feet could easily be enough to cause fatal injury.

Therefore, an assessment of the role to be performed and the relative risk to persons and property should be made.

4. Maintaining safe distance

The FAA exemptions largely require that "All flight operations must be conducted at least 500 feet from all nonparticipating persons, vessels, vehicles, and structures."

This is open to interpretation for two reasons.

First, you could assume that separation can be vertical as well as horizontal (although to the author this makes little sense—500 feet vertical merely means it has further to fall in the event of a malfunction). If the maximum 400 foot above ground level (AGL) rule is being respected, it follows that there must be at least some horizontal separation.

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Second, the word “nonparticipating” could be interpreted to mean many things. Is a ticket-holding audience member being filmed at a rock concert a nonparticipating person?

A further ambiguity to this area of the exemptions comes from the provision that “Flight operations may be conducted closer than 500 feet from participating persons consenting to be involved and necessary for the filming production.” The means by which operators have assumed consent are varied and wide-ranging. Again, could the same audience member have given consent by merely purchasing a ticket?

The reality is that existing technology, especially in the area of aerial photography, is likely to produce poor results from 500 feet. You can probably assume that anyone advertising their ability to fly at public events will be skirting the law in at least one area.

A complementary and more effective requirement to this rule may be a self-imposed 200-foot horizontal separation together with a need for everyone within that range to be fully briefed on the drone operation and, where possible, to have signed a disclaimer around the use of the drone.

5. The operator

Close attention should be paid to the experience and training of the operator (the pilot). While drone types differ enormously, some level of training is appropriate for all. Many manufacturers will not allow their products to leave the factory without the operators having completed their specific training. Of course, the majority of units are available either online or through a dealer. This issue, coupled with no regulatory requirement for specific UAS training, can lead to very low standards of operational proficiency.

Most specialist aviation insurers require some level of training and experience to be demonstrated prior to providing insurance. Users of drone services should require this training as well. The majority of drones, especially rotor wing models, require significant hands-on operator control. While the level of autonomy will increase significantly in the future with new technology, current users should ensure the operators are proficient. Qualified operators should understand the systems and be trained to control them safely. Mere compliance with FAA requirements alone does not achieve those goals.

There is no excuse for a lack of training. In addition to the offerings of manufacturers, training schools are popping up around the US and internationally that offer training. Many offer online courses or full classroom and practical training, even at the site of the customer’s choosing.

The current 333 exemptions routinely require a visual observer (VO). So, if your UAS crew turns up single-handed, they are operating in breach of their exemption. The VO performs tasks such as looking out for other air traffic and helping the operator maintain the safe distances required.

6. Risk management

Risk management is an all-encompassing term and many of the strategies for effective risk management are touched upon throughout this paper. In the context of this section, risk management refers to the use of active technologies and other mitigating techniques to assist operators to fly safely.

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Geo-fencing is one such technology. Parameters are set that prevent the drone from breaching certain predetermined physical boundaries. This could be in relation to local airports, densely populated areas or high-risk buildings, such as schools, hospitals and government buildings. The off-site risk manager has peace of mind knowing that no matter what the operator does, whether intentionally or accidentally, the drone will not go outside the established boundaries.

This technology will be especially useful to help prevent claims of invasion of privacy. So long as the drone is prevented from leaving the confines of a cell tower, for instance, the probability of an unintended over-flight of a residential neighborhood is greatly diminished.

Of similar use are electronic logbooks. With real-time telemetry flowing from the system (commonly referred to as a black box in airliner parlance) it is possible to know with pinpoint accuracy where a drone is at any given time.

Automated logbooks also help those contracting with drone operators to know exactly how many flight hours have been flown and precisely where the drone was at any point. This can help when evaluating data as well as value from the drone service. Even if a drone isn't fitted with this technology, ensure that the operator is keeping a log of every flight. This is considered good practice and will indicate the overall professionalism of the drone service provider.

Another customary measure in manned aviation is the use of a Standard Operating Procedure (SOP). This manual can either be in the form of an electronic or paper document that is followed for every flight. Covering aspects of a pre-flight inspection such as meteorology, environmental hazard spotting and crew health, an SOP can help prevent operators from flying in unsafe conditions. Similarly, establishing safe take-off and landing procedures and incorporating all elements of an FAA exemption can help ensure that all flights are conducted with safety assurance at their core.

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One of the most exciting features of the UAS industry is the promise of what is to come. It is easy to see a situation in the near future where drones will be fully autonomous. With autonomy will likely come added safety assurance.

7. Maintenance

Routine maintenance is not mandated by the regulator. While the 333 approvals state that "the operator is responsible for maintaining and inspecting the UAS to ensure that it is in a condition for safe operation" and that "the PIC must conduct a pre-flight inspection and determine the UAS is in a condition for safe flight," this does not go as far as the required periodic inspections of manned aircraft. If you intend to truly evaluate a number of UAS operators, it is appropriate to ask about their maintenance regime.

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8. Indoor use

Indoor use is a rarely mentioned peril of the small UAS world. Indoor flights fall outside of FAA jurisdiction and, therefore, there is no legislation or guidance around how to operate safely in an enclosed setting.

Many professional UAS operators simply won't fly indoors for numerous reasons. Some issues linked to indoor use are: the signals between drone and ground station can fail, GPS location services are often impossible to obtain (upon which a great number of the fail-safe systems rely), safe landing areas can be hard to identify and flying in close proximity to persons is hard to prevent.

If your company is considering the use of a drone for an indoor event, ensure that physical barriers, such as netting, are in place to keep the drone and bystanders separated. Some in the industry insist that indoor operations are safe. However, the majority assert that the technology is simply too immature for reliable, safe operations.

9. Contractual language and appropriate insurance

Any industry in its infancy will tend to be focused on production and revenue and not the minutiae of contract language. This topic will be covered in greater depth in the second section of this paper. Ensuring that drone operators are held accountable for their actions should be part of any negotiation.

Those hiring UAS services should ensure that the drone operator accepts responsibility for accidental loss of the equipment as well as damage to any third-party property and physical injury. Insurance for the operator is available at a cost effective premium (considering the risk) for both equipment (aircraft and payload items) as well as the potential liability arising from loss of control and crash landing.

Typical liability limits purchased by operators are between \$1 million and \$5 million per occurrence with much higher limits being available to those who have demonstrated the appropriate risk mitigation strategies to insurers. If a drone operator cannot buy more than a few million dollars in limit, it may indicate the insurance market's misgivings about their operational standards.

10. Non-owned insurance

The final piece of advice for a company looking to hire a drone operator is to carry their own insurance protection, via a non-owned policy.

Non-owned insurance would provide coverage in the event the drone caused third-party damage and the hiring company was unable to recover the financial loss from the operator. Furthermore, a non-owned policy could afford financial protection in excess of the operator's limit, should that be exhausted.

This insurance can be purchased and, while it relies upon active risk management on behalf of the hiring company, it will act as the backstop in case of significant pecuniary loss.

Contact your insurance broker to learn more.

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Section 2 – How those in the drone industry can protect themselves

1. Shifting and limiting liabilities through contract

Legal liabilities, whether you're the manufacturer, operator or user of a drone is an area which requires increasing focus as this burgeoning industry continues to grow exponentially. Remember, drones/UAS are aircraft operating in the federally controlled National Airspace System (NAS). This means that just like the manufacturer or pilot of a manned aircraft, the same potential liabilities exist for drone manufacturers/operators.

There will ultimately be a new section of the Federal Aviation Regulations applicable to drones, i.e. Part 107. However, the same basic regulatory and legal obligations will exist as already exist for all other aircraft. This includes not only the obligation to operate safely, but, when there is an incident or accident involving a drone, that it be reported to the National Transportation Safety Board, which has the statutory responsibility to investigate all accidents involving aircraft.

Before turning to what an operator should do if they have an accident, we will focus on a subject mentioned in Section 1(9) dealing with contractual language and risk management. Assume you're either the provider of inspection services using a drone or the purchaser of such services. If you're an operator, you have your exemption from the FAA under Section 333. In addition, you have secured insurance covering not only damage to or loss of your drone, but liability coverage affording protection to persons/companies for whom you are providing drone inspection services.

Alternatively, maybe you own a company and want to hire a drone operator to conduct certain aerial inspection services.

In either case, whether you're the purchaser of drone services or the provider of them, insurance is the first issue to address. However, of equal importance is the contract or agreement pursuant to which the drone services will be bought or sold. Just as you would have a written contract from any other provider of contract services, such an agreement is necessary to insure that indemnity, hold harmless, and other risk mitigation terms, conditions and requirements are properly addressed.

The first line of defense is to define the contractual relationship between the parties and properly allocate the risks and responsibilities. The ultimate safety net is having appropriate insurance.

It is important to understand the nature of the insurance that you should consider. Furthermore, it is helpful to understand the different types of legal liabilities that a drone manufacturer, drone operator or user/purchaser of drone services may incur, not only to one another, but to third parties as well.

With this in mind, let's examine the potential legal liabilities of a drone manufacturer, a drone operator and the user/purchaser of drone services.

2. Liability of drone manufacturer

It is well established that the manufacturer of a product owes certain duties to the user of the product. For example, a drone manufacturer owes certain duties to the drone service provider. These obligations can be generally stated as manufacturing and selling a product free of design or manufacturing defects. There exists the

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Since most purchases of drones are not done pursuant to a formal written contract, the legal obligation of the manufacturers and the purchaser are defined by the general principles of the law applicable to the sale and purchase.

continuing obligation on the part of all drone manufacturers to provide notice of defects it becomes aware of after selling its product. Thus, just like the auto manufacturer that owes a duty to manufacture a car free of defects, the drone manufacturer has a similar duty. Moreover, just like the car manufacturer that has an obligation to provide notice to purchasers regarding car defects, including possibly recalling them, drone manufacturers have similar obligations.

In addition, if a defect in a drone injures a third party, the manufacturer will have potential liability to them. Since most purchases of drones are not done pursuant to a formal written contract, the legal obligation of the manufacturers and the purchaser are defined by the general principles of the law applicable to the sale and purchase.

3. Liability of drone operator

Think of a drone operator like an airline that purchases an aircraft and provides air transportation services to people who buy a ticket. Drone operators buy unmanned aircraft systems/drones from manufacturers and provide data collection or other services to contracted customers. This latter group might include those who want to inspect industrial facilities, manage fields or crops, film movies or inspect railroad tracks or cell towers.

Drone operators, i.e., providers of drone services, owe the legal obligation to their customers to use due care and not act in a negligent manner.

Most transactions between the manufacturers of a drone and the purchaser will not involve a written contract. However, there should always be a contract between the provider of drone services and the purchaser of them. This is particularly true relative to those purchasers who are contracting for drone services where, while the risk of loss may be low, the consequences of a loss could be very serious. For example, take a chemical facility owner that hires a drone service to conduct inspections of its property, or a production company that hires a drone operator to provide aerial filming.

In the former case, a drone failure could result in the vehicle and its sensor package crashing into the facility, potentially rupturing a pipeline and causing a fire or explosion. In the latter example, even in a closed set scenario, the crashing of the drone with the camera could injure someone, damage property or shut down production.

These are exactly the type of risks for which insurance is required. These risks cry out for a written contract which, among other things, specifies the services being provided, the duties and obligations of the operator and, from the risk perspective, the obligation and responsibilities of both the provider of drone services, as well as the purchaser of those services. In addition, one of the factors an insurer will look for in providing drone insurance to an operator is whether or not there is a written contract between the provider/operator and the customer.

4. Liability of purchasers of drone services

While not many people may realize it, an airline ticket is in fact a contract between the operator (i.e., airline) and the purchaser of the services (i.e., passenger).

The airline contracts to provide air transportation services and the passenger, essentially a passive participant in the transaction, agrees to pay for them. In many ways the purchaser of drone services is in the same position. Absent doing something

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that interferes with the operation, the obligation of the purchaser is to pay the drone services provider. However, unlike the airline/passenger relationship where the airline's obligation is specified by tariffs, extensive federal regulation and intercontinental agreements, the relationship between drone operators and drone service providers is an area still in its early stages of development. When the small UAS regulations in Part 107 are ultimately enacted in 2016 or 2017, there will be some regulatory framework. However, even then, and certainly for the foreseeable future, the nature of the responsibility of the operator versus the purchaser will be defined by the existence and nature of the written contract between them.

The following section presents a sample contract which, subject to appropriate/desirable modifications, can be used by either a drone operator or the purchaser of drone services.

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Mark Dombroff concentrates his practice on the aviation and transportation industry, including litigation, regulatory, FAA and DOT administrative and enforcement matters, security, National Transportation Safety Board (NTSB) investigations and employee related issues. Mark started his legal career as a Trial Attorney with the Office of the General Counsel of the FAA. He then moved to the Aviation Unit of the United States DOJ. Over his 15 year career with the DOJ, he represented the FAA, all of the military services, the National Weather Service, the Coast Guard, NASA and all other government related aviation activities. Since entering private practice, he has represented all aspects of the aviation industry including airlines, general/corporate aviation, manufacturers, MROS, airports, security companies and others.



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