



Unmanned Aviation Risk Management, Accident Prevention, and Insurance

by Chris Proudlove

Abstract

The topic of drones has gained much media attention and is surrounded by both controversy and uncertainty. Many are intrigued by the technology but wonder about its long-term merits, uses, and risks. In this article, the author describes recent developments in the drones industry and explores risk management and insurance options for those operating in and serving this commercial space.

Drones, also known as unmanned aircraft systems (UAS) or unmanned aerial vehicles (UAV), have become the subject of tremendous media interest, controversy, and misunderstanding. They are already making a significant impact through commercial applications in a wide range of industries and are touching the lives of more people every day.

Several industry sectors, including agriculture, energy, and construction, have identified unique applications for drones. This expanding commercial use, together with potential humanitarian benefits (such as third-world medicine delivery or search-and-rescue missions), will likely win over many of the naysayers.

The use of drones as a way to manage risk in many industrial and commercial settings is just beginning. Fitted with highly efficient and smart payloads, drones can be the ultimate business tool, combining performance with safety. By replacing people on high ladders or rooftops, or eliminating the need for workers to be high above

Continued on page 22

ground with electric cables or near smokestacks, they can perform tasks with a level of safety far beyond traditional methods.

Investment in drone businesses is flowing from venture capitalists, private investors, and numerous large companies. PricewaterhouseCoopers LLP, a consulting group, estimates that the global drone industry will be worth as much as \$127 billion by 2020.¹ Industry observers expect the gap in investment, technology, and functionality to close between large military-grade drones and small commercial ones over the next five years.

Privacy and safety, however, are emerging as the two chief concerns the drone industry needs to address with government officials and the public. While the diverse benefits from drone use are clear, managing and insuring against risk will be crucial to success for drones manufacturers and operators.

Regulation

On August 29, 2016, the Federal Aviation Administration (FAA) enacted Part 107 of the Federal Aviation Regulations, essentially regulating the commercial use of drones weighing less than fifty-five pounds in the United States.

Many in the industry welcome the proportionate approach the FAA has taken to enable the widespread use of drones in the U.S. However, those wishing to operate drones in excess of fifty-five pounds, beyond visual line of sight (BVLOS), or over 400 feet above ground level argue that the FAA has not gone far enough to enable the U.S. to lead the way in this rapidly developing global sector.

Some key regulation elements include:

- Operations to take place in daylight only
- Flights in airspace near major airports or other congested areas to require Air Traffic Services' approval

- All flights to take place within the visual sight of the operator
- No flights to take place over persons not directly involved in the operation
- Operators to hold specific qualifications to operate legally

As a provider of insurance, Global Aerospace welcomes regulation that will steer the UAS industry into an era of ever-safer operation. Clearly, there is a need for integrating all types of UAS into the National Airspace System (NAS). Meanwhile, for the small, unmanned systems addressed in Part 107, the path to widespread use has been paved.

A Green Light to Operate?

There is now a clear roadmap toward widespread use of small drones. The introduction of Part 107 seems to have been a pivotal moment for a number of corporations and entities that had previously adopted a wait-and-see approach. As a result, Global Aerospace, for one, has observed a significant increase in inquiries regarding insurance for commercial drone operations.

Many of our customers have been manufacturing military-grade drones for decades. However, the proliferation of the small commercial drone has presented a new set of challenges, not least of which is lack of available industry data. While commercial airliner and general aviation accidents are hard to predict using even the most sophisticated modeling tools, insurers at least have a good sense of the premium they need to charge to cover the likely loss activity in any given year. To a great extent, these predictions are based on historic accident information along with evolving trends in the aerospace industry.

But with commercial drones, there is little data upon which to make similar predictions. Manufacturers are unlikely to acknowledge how many units crashed during test flights. Additionally, most models have not existed long enough for insurers to

acquire an understanding of the particular features that could influence the likelihood of an accident or system failure.

Another hurdle to address is the wide range of experience that drone operators, or pilots, have when they start in the drones business. Some have strong commercial or military aviation backgrounds, but most do not.

While the stakes are high, some inexpensive and easily attainable risk management solutions are available to help smaller UAS users operate safely, such as training, safety management, and respect for privacy.

Training

One primary risk management tool is training. Without an understanding of the hazards involved, drones operators will never be able to operate safely. The FAA's regulations for commercial use of drones require operators to study for and pass a knowledge test—which includes aeronautical charts, meteorology, aerodynamics, and more—and, ultimately, to earn a Remote Pilot Airman Certificate.

Training that exceeds federal requirements is becoming widely available, from an online course for approximately \$200 offered by organizations such as the Unmanned Safety Institute, to custom training for a corporation's team of operators. Some insurers already require operators to undertake some type of formal training. As the industry becomes fully developed, expect training to become required for all but the smallest of systems.

A number of manufacturers provide training courses for their buyers. But unfortunately, many manufacturers seem more intent on selling products than supporting their customer base. Drone manufacturers, especially those manufacturing high-end systems, that take an integrated approach to both sales and safety will likely achieve the greatest long-term success.

Continued on page 24

Unmanned Aviation Risk Management, Accident Prevention, and Insurance

Continued from page 22

Safety Management

Safety documents such as preflight checklists, logbooks, and standard operating procedures (SOPs) are established components of manned aviation at all levels. These documents come under the general heading of a safety management system (SMS) and serve as important risk-mitigation tools. Of concern is that parallel SMS standards have not been integrated into many small drones operations.

Many companies, such as The Unmanned Safety Institute, offer an SOP manual that covers issues affecting drones operators, including:

- Interaction between the operator and observer
- Weather and environmental issues
- How to maintain a safe distance from the UAS
- How to ensure the airworthiness of a drone
- Preflight and postflight checks

Safety should be the top priority of any aviation enterprise, manned or unmanned. Developing an SOP for the crew and all those involved in drones operations is an excellent way to promote a strong safety culture. Global Aerospace, for example, offers a complimentary SOP, in addition to other safety documentation, to all clients.

Related to safety is maintenance—an additional factor for which there is currently no standard or widely accepted practice. Under the regulations, operators are required to conduct preflight checks to ensure that drones are in condition for safe flight. That said, maintenance should go a lot deeper, and some third-party software companies provide maintenance logs for even the least-expensive commercial drones.

Further related to safety, and serving as one of the greatest hazards in a drone

operation, is the ability to operate in close proximity to people. Part 107 establishes that drones should only operate over people who are directly involved in the operation. Common sense, together with a good safety culture as already discussed, should prevail on this point. Video footage taken by a drone soaring over a wedding party or a concert venue may produce good imagery, but the associated risks are simply too great. The failure rate of small drones is still too high to take chances when the risk of serious injury exists.

Many start-up technology companies are working on solutions for these drone-related risks. Geo-fencing, or the ability to build technology into the software to prevent a drone from flying in restricted airspace, will soon be available to the mass market. Some manufacturers are already integrating it into their products. This technology can prevent flights near airports, government facilities, and critical infrastructure, as well as in congested areas. While further development of the technology is needed, the intention to assimilate these risk mitigation features into drone products is gaining momentum.

Privacy Issues

The final key risk factor to consider regarding use of drones is people's privacy. Using drones in a responsible and ethical manner will ultimately lead to a lower risk profile as well as greater public acceptance of this controversial new technology.

Simple precautions can be taken to avoid breaching an individual's reasonable expectation of privacy. These include gaining the person's consent to being filmed and taking care not to publish any images or material captured without their consent.

The Insurance Market for Drones

While the regulatory situation continues to evolve and change, the subject of insurance

is increasingly important within the drone community. Owners and operators, as well as manufacturers and other service providers, are all interested in insurability and the cost of premiums.

Many in the drone industry are looking for insurers to be the driving force and ultimate arbiter of the various risk management initiatives currently in development. Adoption of smart technology, including geo-fencing, electronic logbooks, real-time data recorders (commonly referred to as black boxes), and other risk mitigation technology, may prove to be a critical piece of the safety assurance puzzle. Insurance providers have an important role to play in supporting the development of these technologies, but the market will decide which initiative ultimately prevails.

Meanwhile, the existing regulations make no mention of insurance requirements. It could be argued that small drone operators may be less inclined to buy insurance and that a requirement for liability coverage as part of the certification process would be sensible. But regardless of mandated minimums, commercial UAV operators should assume that their customers and partners will eventually require them to certify that they are insured.

In any event, most professional drone operators will likely purchase insurance for legal liability and to protect their assets. In fact, those companies contracting with drone operators have already started applying pressure to drone operators in an effort to force them to purchase significant insurance limits.

Aviation insurance carriers in the U.S. that are active in the drone sector offer different solutions and levels of coverage. Some, such as Global Aerospace, have drone-specific policies and coverage.

In addition, some property-casualty insurers have adopted Insurance Services Office, Inc., write-back endorsements aimed at offering coverage for the use of small,

lightweight drones. With those insurers, limits are typically on the low end (about \$1 million), and coverage appears to be available only to existing corporate customers.

As the market develops, new products and services will emerge. In August 2016, a service called Verifly was launched as a way for drone users to purchase short-term liability policies through a smartphone app. In time, the insurance industry will no doubt continue to innovate and find ways to serve this growing industry.

Most, if not all, commercial drone operators are flowing to the aviation market. As aviation is a federally regulated industry, this is appropriate.

The insurability of an operation depends upon a number of factors, including choice of platform, experience of the operators, and intended use. Perhaps most of all, insurers assess the likelihood of an accident involving people, as that is where the possibility of expensive litigation and indemnity payments exists.

If liability limits higher than a few million dollars are required, the insurance marketplace is reduced to just a handful of available insurers. The higher the limit, the more questions about safety and operating procedures will be asked. An inexperienced wedding videographer, for example, will likely struggle to get more than \$1 million in limit.

Insurers routinely mandate higher safety standards than those set by the FAA for traditional aviation risks. It can thus be expected that merely meeting the safety requirements outlined in Part 107 may not be enough to satisfy some insurers.

What Does a UAS Insurance Policy Typically Cover?

Aviation insurance falls into two basic categories: legal liability and physical

“...companies contracting with drone operators have already started applying pressure to drone operators in an effort to force them to purchase significant insurance limits”

damage (otherwise known as hull) for the owner/operator and product liability for the manufacturer.

An operator should consider legal liability insurance as a minimum. This covers the cost of property repair or injury to persons. Additional coverage may include personal injury (invasion of privacy); nonowned liability (if you crash someone else's drone); medical expenses; premises liability; and war perils, such as damage sustained from a malicious act.

Additionally, coverage is available against physical damage to the UAS system itself. This covers the cost to repair equipment or to cover the total loss of the platform, payload, or ground equipment.

For the manufacturer or service provider (such as a training facility, consultant, dealer, or software designer), product liability is available to provide coverage in the event that the insured product is considered to have caused or contributed to an accident. (It would not cover claims that fall under a warranty scenario.) It is important to note that even if a drone operation is just getting started and not

yet commercially viable as a business, it risks exposure in the event of an incident and should have the appropriate insurance coverage.

Looking Ahead

Everyone involved in the drone industry and within the larger aviation community is a stakeholder in the safe, responsible, and sustained growth of drone operations. Technology exists to help support this growth, along with emerging regulations and a supportive insurance market.

Manufacturers and operators will ultimately play the biggest role in public acceptance of drones. Regulation will continue to evolve, as will increased confidence in and comfort with drones as everyday tools of commerce and industry.

A culture of responsible flying will be the key to ensuring the sustained development of drones in the U.S., resulting in a safer shared airspace while helping to reduce insurance costs. ■

Many thanks to the Excess/Surplus/Specialty Lines Interest Group for its contributions to this article.

Endnotes

1. PwC report released May 2016.



Chris Proudlove began his career in aviation insurance in 1990 and has been with Global Aerospace since 2005. In his current role as senior vice president, manager of the Northeast regional office and UAS risks, he serves as an expert on insurance initiatives and products for unmanned aviation. Proudlove is chairman of the UAS Insurance Association.