Danger, Will Robinson!

Is Insurance Ready for Unmanned Vehicles?

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1. Introduction

The Robot in *Lost in Space*, endowed with human characteristics and sometimes clairvoyance, often dramatically warned his young charge – “Danger, Will Robinson!” – of incoming dangers.1 However, in seeking to advance into deep space, even the Robot seems not to have envisioned the advance of unmanned vehicles – colloquially known as “drones.” It seems inevitable today, however, that drones will play an ever larger role in our lives in the coming years. In 2014, Amazon received patent rights to deliver its products to customers by drones, or unmanned aerial vehicles (UAVs).2 UPS is looking to the use of drones for delivery services as well.3 Even Domino’s hopes to deliver pizza by drone.4 And – perhaps the most exciting of all for those of us who grew up with the Robot, *Star Trek*, and the Jetsons – auto manufacturers are testing other unmanned vehicle systems (UVSs) – “driverless cars” – and the race to master those technologies span the globe. Earlier this year, for example, a Chinese firm debuted a prototype of a drone that can carry people.5

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1 Interestingly, set in 1997, 32 years in the future from its first airing in 1965, the series envisioned colonization of “deep space.” *E.g.*, Wikipedia on *Lost in Space*, www.en.wikipedia.org/wiki/Lost_in_Space (accessed Feb. 10, 2016). Although 1997 has come and gone without the battles over deep space depicted in the series, we now are on the verge of advances that perhaps even the Robot did not envision.


The drones are coming, and they may revolutionize many industries. The question is – can the insurance industry keep up?

2. The Changing Definition of “Drone”

What exactly is a drone? Simply put, a drone is an unmanned vehicle. However, the devil (or the drone) is in the details. The U.S. Federal Aviation Administration (FAA) in the FAQs on its drone-registration site avers that a “drone and a UAS [unmanned aerial system] are the same for registration purposes.” According to the FAA, all unmanned aircraft qualify as “aircraft” under the definitions found in its foundational statute and implementing regulations. UAVs and UASs run the gamut from “toys” created for personal use – like remote-controlled cars or airplanes – to military long-endurance reconnaissance vehicles and systems. Most of the recent attention has focused on UAV aircraft – operated remotely via a ground-control system that involves remote-control systems and data-link transmissions.

Today, companies also are racing to develop autonomous vehicles – “driverless cars.” Autonomous-driving technology promises to make the Jetson-style cars of the 1960s cartoon series a reality sooner rather than later. Google has predicted that its self-driving car will be on the market by 2020. Two years ago, at the 2014 Detroit Car Show, a number of major manufacturers displayed autonomous driving features in their new models.

3. The Rise of Drones

For a long time, drones largely fell on one of these ends of the spectrum – toys or military tools. That is no longer the case. By 2020, the FAA estimates that about 30,000 small unmanned aircraft will be in use in all types of businesses. Worldwide total spending for these systems is

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6 For example, many UAVs carry sophisticated cameras as payloads. Those cameras can produce real-time maps with a resolution 20 times more precise than that generally available today on the internet. An investment of less than $1,500 now can bring advances in software and other technologies within the reach of many small and other businesses, replacing the need to use helicopter or other flying or mapping services that cost upward of $600 per hour. See, e.g., Tom Karol, General Counsel of National Association of Mutual Insurance Companies (NAMIC), “Unmanned Aerial Systems/Drones – Regulation, Liability, Insurance Requirements” at 2 (Feb. 26, 2015), http://www.namic.org/newsreleases/150226fd01.asp.
7 All drones used in the United States for recreational or hobby purposes and weighing from .55 pounds (250 grams) to 55 pounds, including payload, now must be registered. The FAA does not currently sanction the use of drones for commercial use. See infra. See also the FAA registration site and accompanying information at http://federaldroneregistration.com.
8 http://federaldroneregistration.com/faq. Failure to register can lead to a $27,500 civil penalty; criminal penalties include fines up to $250,000 and up to three years’ imprisonment. Id.
9 49 U.S.C. § 40102(a)(6) and 14 C.F.R. § 1.1, respectively.
10 Drones: Coming Not-So-Soon to a Business Near You, supra n.2.
11 Drones: Coming Not-So-Soon to a Business Near You, supra n.2; Stone, supra n.3.
13 Id.
14 Id.
expected to exceed $89 billion in the next ten years.\(^\text{16}\) This estimate may not be far off at all. In July 2015, the first FAA-approved drone courier service delivered medical supplies to a remote clinic providing medical services in Appalachia.\(^\text{17}\) It is estimated that 700,000 drones were sold during the 2015 holiday season.\(^\text{18}\) Less than three weeks after the FAA launched its online registry, more than 181,000 drones were registered.\(^\text{19}\) These are neither the futuristic toys many of us remember from our youth nor large-scale military tools. They are a wholly different – and much more complicated – animal.

In response to the rapid growth of the UAV industry, the FAA has allocated $63.4 billion to modernize the country’s air-traffic control systems and expand the National Airspace System (NAS) to accommodate the commercial use of UAVs.\(^\text{20}\) Given its mission to ensure the safety of aviation, the FAA has issued regulations for the use of personal UAVs; however, regulations for the commercial use of UAVs are not expected before 2017.\(^\text{21}\) The FAA began accepting petitions for commercial exemptions as directed by the FAA Modernization and Reform Act of 2012\(^\text{22}\) and, in the first year, 2014, issued 500 exemptions out of the 1,500 petitions received.\(^\text{23}\)

As improved technology makes the use of UAVs and driverless cars in our daily lives an increasing reality, a wide spectrum of industries is examining how drones can make their operations more efficient. From real estate to agriculture to filmmaking to law enforcement, industry leaders are preparing to introduce drone technology in their businesses and work places.\(^\text{24}\) On the forefront of this movement is news-reporting – a field where drones have already begun to assist in reporting news events and gathering images.\(^\text{25}\) We will also likely see UVSs put to use in border surveillance, pipe and power line surveillance, suspect tracking, traffic monitoring, disaster response and relief, mail and freight transport, flood mapping, mining,

\(^{16}\) Stone, supra n.3.


\(^{18}\) Id.

\(^{19}\) Reuters and Associated Press, FAA Says 181,000 Drones Have Been Registered Under New Rules, NBC NEWS (Jan. 6, 2016), http://www.nbcnews.com/tech/innovation/faa-says-181-000-drones-have-been-registered-under-new-n491661.

\(^{20}\) Stone, supra n.3.

\(^{21}\) Mahoney, supra n.17, at 35.

\(^{22}\) Pub. L. 112-95, 49 U.S.C. §§ 41010 et seq.

\(^{23}\) Section 333 of the FAA Modernization and Reform Act of 2012 authorized the agency to issue exemptions, allowing businesses to use UAVs commercially without an air worthiness certificate. See, e.g., website of the Association of Unmanned Vehicle Systems International (AUVSI), http://auvsi.org/home (accessed Feb. 4, 2016). The FAA currently issues exemptions on a case-by-case basis as commercial uses of UAVs technically remain prohibited in the United States. Id. The FAA has issued exemptions to businesses in 49 states, and estimates that it has issued as many as 94% of the exemptions to small businesses. Even so, these operations are estimated to have added already as many as 600,000 jobs to the U.S. economy. Id., AUVSI website, http://auvsi.org/advocacy/Section333.html (accessed Feb. 10, 2016). The FAA website reports that the agency has granted 3,314 Section 333 exemptions as of February 5, 2016, www.faa.gov/uas/legislative-programs/section333/ (accessed Feb. 10, 2016).

\(^{24}\) Drones: Coming Not-So-Soon to a Business Near You, supra n.2.

\(^{25}\) Id.; Nabiha Syed & Michael Berry, Journo-Drones: A Flight over the Legal Landscape, 30 COMMS. LAWYER, no. 3 (June 2014), http://www.americanbar.org/publications/communications_lawyer/2014/june/journodrones_flight_over_legal_landcape.html.
It seems likely that, in just a handful of years, there will be no part of our lives that is not touched by drones in some way.

4. A Fast-Changing Regulatory Landscape

Just why are today’s drones different than the remote-control airplanes and cars of our childhoods? Today’s drones are becoming increasingly sophisticated, rapidly growing the list of uses to which they can be put. Rotors now allow drones to hover rather than simply to fly; fuel cells provide power rather than the traditional gas motors and allow for quieter voyages, and today’s drones are equipped with GPS technology. Together, these improvements allow drones to travel further and higher than the models of the past. However, with these improvements also may come perceived threats to public safety – and the perceived need for increased government regulation.

With respect to unmanned aircraft, it is already possible to see the complex regulatory structure that may ultimately develop in order to manage the risks, real or perceived, posed by an increasing number of drones in U.S. airspace. The FAA – which is responsible for U.S. airspace – first authorized the use of drones for public-interest uses – including disaster relief, search and rescue, and law enforcement – in the 1990s. Over the years since, other uses have arisen including emergency and disaster-management programs, national weather-service tracking, border and port surveillance, scientific research, traffic-management programs, and environmental monitoring by the National Aeronautics and Space Administration (NASA). Since that time, and as UAV technology has continued to develop, the FAA has continued to reexamine its position on the use of drones in the NAS. In 2007, the FAA banned commercial drones, but permitted aircraft modelers to fly drones within strict guidelines. Initially, the FAA distinguished between hobby craft and UASs used for commercial purposes. Section 40102(a)(6) of the U.S. Code defines an aircraft as “any contrivance invented, used, or designed to navigate or fly in the air,” and FAA regulations define an aircraft as “a device that is used or intended to be used for flight in the air.” In June 2014, the FAA issued its interpretation that “any operation not conducted strictly for hobby or recreation purposes could not be operated under the special rule for model aircraft. Clearly, commercial operations would not be hobby or recreation flights.” However, the FAA Modernization and Reform Act of 2012 authorized the FAA to grant “Section 333 exemptions” allowing commercial use. Therefore, perhaps signaling its acceptance that drone technology is here to stay, the FAA proposed the Section 333

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26 Important Facts about the Unmanned Aircraft Industry, supra n.15.
27 Leefeldt, supra n.4.
28 Id.
29 Drones: Coming Not-So-Soon to a Business Near You, supra n.2.
30 Id.
31 E.g., id. The FAA defines “hobby” use of drones as a “pursuit outside one’s regular occupation engaged in especially for relaxation” and recreation as “refreshment of strength and spirits after work; a means of refreshment or diversion.” 14 C.F.R. § 1.1. The FAA considers use of UAVs in furtherance of or even incidental to a business use as a commercial, not a “hobby,” use. Id.
33 14 C.F.R. § 1.1.
34 14 C.F.R. Part 19.
exemption-approval process for operators of small commercial drones weighing between .55 and 55 pounds.\textsuperscript{35}

The Act gives the FAA the authority to determine whether:

1. A UAV system poses a hazard to users of the NAS or to the public or poses a threat to national security\textsuperscript{36}; and
2. A waiver or certificate of airworthiness is required.

The FAA has established a two-step process for determining whether to grant a “Section 333 exemption”:

- First, that the UAV can be operated safely, without creating risks for the public, national security, or those operating in the NAS.
- Second, that the drone can be operated safely without an airworthiness certificate.

In November 2015, the FAA issued its Small UAS Notice of Proposed Rulemaking (NPRM).\textsuperscript{37} Its proposed regulations have faced much scrutiny, as they will play a significant role in determining whether or how industry leaders move forward to incorporate drone technology into their businesses.

The widespread interest in drones is not only of interest to the FAA. The past several years have seen the proliferation of proposed state laws – or the amendment of existing state laws – in response to this rapidly changing aspect of our society.\textsuperscript{38} Companies operating in more than one country must consider other national regulatory schemes.\textsuperscript{39} Those using drones for either personal or commercial use will find themselves not only having to sort out the interplay between federal and state laws and regulations, but having to keep up with what will likely be – at least for some time – constantly changing legal and regulatory landscapes as we come to learn more about the risks presented by drones and as the technology used in their development becomes ever more sophisticated. Widespread use of drones like that envisioned by Amazon (for general package delivery); Google, DHL and other couriers (for remote package delivery);

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\textsuperscript{35} See, e.g., FAA website FAQs, www.faa2.gov/uas/#qn1.
\textsuperscript{36} The analysis of risk or threat discussed in paragraph 1 of the text above includes consideration of the drone’s size, weight, speed, and operational capabilities, as well as whether it will be operated within visual line of sight (VLOS) and in populated areas or close to airports. Pub. L. 112-95, 49 U.S.C. § 40101 \textit{et seq.}; 14 C.F.R. § 1.1. Such certificates are authorized by statute, 49 U.S.C. § 44704. See FAA website, www.faa.gov/uas.
and Domino’s (for those midnight pizzas) also may run into limitations posed by popular
opinion. In December 2014, only 21% of more than 1,000 Americans surveyed approved use of
commercial UAVs for such purposes. More than 90% of respondents expressed concern that
private operators of UAVs could lead to violations of people’s reasonable expectations of
privacy. Education may be in order.

In addition to these risks, there also comes the increased potential for civil fines and penalties
should a user violate federal or state laws and regulations addressing this emerging technology.
As with most regulated areas of our world, there is likely to be much confusion and debate over
the interplay of state and federal, and in some instances international, laws and regulations, along
with issues surrounding the interpretation of individual laws or regulations. Until what is likely
to be confusing territory initially can be clarified, those using drones may need to navigate a very
complicated legal and regulatory environment.

5. Liability Risks

The outcome is obvious – the expanded use of drones likely will raise significant liability risks.
Homeowners might claim that drones were trespassing on their property. Spying, stalking, and
harassment claims could result from the use of drones to gather photographs or videos. Invasion
of privacy claims potentially loom large. Even criminal charges could be brought in connection
with some of these claims. What about issues of airspace ownership? Significant cybersecurity
risks come with the use of drones and related video, wifi, and data-gathering equipment, to
access data. Viruses could prevent a drone from functioning properly and hacking could permit
someone other than the intended person to control the drone and its mission. The liability
exposures even include the most basic of low-tech risks – a drone could simply cause bodily
injury or property damage by crashing into a person or object. The list could go on.

Perhaps the most well-known case involving some of these risks is the matter of Raphael
“Trappy” Pirker – a drone enthusiast who was hired to take aerial photos and videos of the
University of Virginia campus using drone technology. The FAA levied civil penalties against
Trappy in the amount of $10,000, alleging that he had flown his drone “at extremely low
altitudes, through tunnels with moving cars below, and in close proximity to railway tracks and
individuals . . .”. Those actions violated FAA regulations prohibiting the operation of an
aircraft “in a careless or reckless manner so as to endanger the life or property of another.”
While this situation led to a number of appeals and associated lawsuits questioning the FAA’s
authority, it nonetheless highlights one of the major scenarios that those using drones risk
encountering as the regulatory landscape surrounding drones continues to shift and change in
coming years.

Even more frightening is the realization that some of the risks contemplated by experts are very
real. In March 2014, a near mid-air collision was reported over Tallahassee, Florida, between a

40 Reported in NAMIC Report, supra n.6, at 4.
41 Stone, supra n.3; Schwartz, supra n.12.
42 Syed, supra n.26.
43 Id.
44 Id.
drone flying 2,300 feet above the ground and a commercial airliner. While the two objects narrowly missed each other, “[i]f the unmanned aircraft had crashed into the jet or had been ingested by one of its turbine engines, the result could have been catastrophic.”

If there was any question that courts would confront disputes involving drones, that question was resolved earlier this year by the filing in the United States District Court for the Western District of Kentucky, Louisville Division, of the complaint in John David Boggs v. William H. Merideth. On July 26, 2015, Mr. Boggs was operating an unmanned aircraft by wireless controller, equipped with a camera, at an altitude of about 200 feet above ground. Mr. Boggs was using the camera to take video footage. Approximately two minutes into the flight, Mr. Merideth – now known beyond his immediate environs as the “drone slayer” – shot down Mr. Boggs’ drone using a shotgun. He alleged that the drone had been taking photographs of his daughter and that he was protecting his right to privacy and preventing further trespass over his property. As a result, Mr. Merideth was charged with felony wanton endangerment and criminal mischief. A state criminal court judge dismissed those criminal charges, finding that Mr. Merideth “had a right to shoot the aircraft.” The civil lawsuit followed.

In his complaint, Mr. Boggs seeks a declaration that:

- An “unmanned aircraft is an ‘aircraft’ under federal law”;
- An unmanned aircraft operating in Class G airspace “is operating in ‘navigable airspace’ within the exclusive jurisdiction of the United States”;
- He was operating his drone “within the navigable airspace within the exclusive jurisdiction of the United States and not within” Mr. Merideth’s property;
- Operating an unmanned aircraft as Mr. Boggs was doing did not violate Mr. Merideth’s reasonable expectation of privacy; and
- A “property owner cannot shoot at an unmanned aircraft operating in navigable airspace within the exclusive jurisdiction of the United States when that aircraft is operating” as Mr. Boggs was operating his drone.

Mr. Boggs also seeks monetary compensation for trespass to chattels. Although the amount at issue – $1,500 for the drone and payload – is not large, the stakes raised by the lawsuit are

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45 Id.
46 Id.
48 Id. at ¶ 8.
49 Id. at ¶ 10.
50 Id. at ¶¶ 13, 15. T-shirts pictured in the Complaint (¶ 15) were at the time of this writing available on e-Bay.
51 Id. at ¶ 11.
52 Id. at ¶ 12.
53 Id. at ¶ 12.
54 Id. at ¶ 25.
55 Id. at ¶¶ 26-29.
potentially huge, raising conflicts between common-law concepts on the rights of property ownership and the FAA’s asserted statutory right to regulate airspace down to the ground. As the complaint states,

This turn of events has set the stage for a conflict between state-based claims of trespass to property, invasion of privacy, and trespass to chattles [sic] and long standing exclusive federal jurisdiction over the national airspace and the protection of air safety. The tension between private property rights and right to traverse safely the national airspace was resolved during the formative days of manned aviation. The issue is now arising in the context of unmanned aircraft, also known as “drones.”

This case may likely serve as a barometer for what other courts do when faced with these unresolved jurisdictional and ownership issues, and with claims for damages caused by drones. It also seems likely that Boggs will not be the only drone-related lawsuit filed in 2016.

6. First-Party Property Insurance Risks

The value of drones may be exceeded by their payload – the camera or video equipment or any hardware or software aboard enabling communications or data-transfer functions. For small systems, insurance may not be cost-effective. Large systems, however, may merit “full insurance.” In such cases, the coverage may apply on an as-agreed value or other basis. Surely, insurers and policyholders alike will consider other issues when insuring the value of UVSs.

7. General Considerations for Insurance

Insurability concerns include the platform used, the experience and training of the operators, the drone’s intended use, and the likelihood of accidents (proximity of populated areas or valuable equipment), and standard operating procedures. As in other types of insurance (boiler and machinery, cyber risk insurance as two examples), insurance underwriting, with its focus on safety considerations and minimizing risk, may play an important role in managing risks and “regulating” operator conduct.

If unmanned aircraft bring significant liability risks to the table, self-driving vehicles are certain to up the ante even further. Widespread adoption of “autonomous vehicles” or self-driving cars could in some cases change the very nature of insurance itself. Some analysts look to autonomous vehicles (and perhaps other kinds of drones) to remove what many see as the biggest risk factor in many endeavors – human error. If use of driverless cabs and cars replaces humans as “pilots,” the use of these technologies then could reshape the evaluation of risk – and the nature and structure of at least certain types of insurance. For example, in a future where

56 Id. at Introduction, p.1.
57 One could say that a driverless car is autonomous but not “unmanned.” The very purpose of such a product is to transport people (and other cargo). A UAV is unmanned but perhaps not “autonomous” because a human is piloting it. (At least that is true today, Will Robinson).
autonomous cars are the norm, the frequency of accidents could decline; in such a world, failures then might be due to software or other non-driver error. In that world, while the frequency of loss from operation of automobiles might decline, the severity could skyrocket, and the assignment of fault could revolutionize automobile insurance.

8. **Insuring Drones – Are Insurers Ready?**

Given these increased – and very real – risks and disruptors, it should come as no surprise that, as drone sales increase, insurance companies are bracing, at the very least, for the impact of the claims that they anticipate may follow in their wake. Each of the risks discussed above – from the chance of property damage claims for damages caused by a wayward drone to significant privacy claims made as a result of photographic or video footage gathered by a drone – brings with it the likelihood of a claim for insurance coverage. But will drone operators find coverage under their traditional policies? And are insurers ready to provide coverage to those who seek proactively to ensure that such coverage is part of their insurance programs?

Numerous insurers are developing specialized “Unmanned Aerial Vehicle Insurance” or “Unmanned Aircraft Insurance.” Aviation insurers, with their familiarity with aviation risks, have been the first to embrace the burgeoning market for insuring UAVs.\(^\text{59}\) Coverages relevant to UAVs include hull coverage, liability coverage, and transit coverage among others.\(^\text{60}\) These policies are marketed as containing “policy language drafted specifically to respond to the exposures of unmanned aircraft.”\(^\text{61}\) They also take into consideration such unique attributes of drone scenarios; as examples, underwriting likely will include information about those on the ground controlling the drone and considerations about whether the drone could potentially be hacked or otherwise taken over by someone without permission to do so.\(^\text{62}\)

Some insurers in the traditional liability insurance markets are offering endorsements designed to add limited coverage for drones to the commercial general liability (CGL) insurance policies their policyholders already carry. This is important because traditional CGL policies exclude coverage for “aircraft” risks, including exposures posed by commercial drone operators, manufacturers, dealers, and providers of “drone services.”\(^\text{63}\) For example, Lexington Insurance Company, an AIG insurer, has developed an Unmanned Aircraft Liability Endorsement intended to provide public entities with express liability coverage for their uses of unmanned aircraft.\(^\text{64}\)


\(^\text{61}\) *Right on Time: Introducing Unmanned Aircraft Insurance*, supra n. 60.

\(^\text{62}\) Id.

\(^\text{63}\) E.g., id. at 6. The exclusions often do not reach purely hobby or model aircraft uses, but even incidental commercial use could lead to denial of coverage.

\(^\text{64}\) Id.
Lexington anticipates offering this endorsement for many other risks including “farming, infrastructure maintenance, construction, and oil and gas exploration.”

In addition, in June 2015, the Insurance Services Office, Inc. (ISO), issued endorsements for CGL insurance. For example, insurers in traditional CGL markets can use ISO form CG 24 50 06 15 – entitled “Limited Coverage for Designated Unmanned Aircraft” – to write coverage for scheduled drones being used in scheduled products or operations as an amendment to the CGL coverage otherwise provided. The aim of other such standard-form provisions that ISO approved last year is largely to exclude coverage for UAV or drone risks off traditional CGL insurance.

While the increased use of drones in our world is a certainty, the ways in which drones will change the world of insurance and liability and first-party risks certainly are not. As the market and uses of UAVs and other UVSs evolve, policyholders, and their counsel, should review insurance policies carefully to ensure that they will provide the protection desired. As with past revolutions in technology, insurance can be part of the engine of innovation – as long as the insurance in question evolves appropriately to address the new and evolving exposures. In coming years, we anticipate significant coverage litigation as the insurance world scrambles to keep up with this new type of risk – and the multitude of new types of claims it may bring.

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65 Id.
66 See also Limited Coverage for Designated Unmanned Aircraft (Coverage B only) (ISO Forms CG 24 51 06 15 and CG 24 52 06 15).
67 E.g., Exclusion – Unmanned Aircraft ISO Form CG 21 09 06 15); Exclusion – Unmanned Aircraft (Coverage B only) (ISO Form CG 21 11 06 15).