CIP Society Trends Paper - Drones

Drones: The latest buzz for the insurance industry?

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It's hard to believe that Superman isn't even 80 yet (he debuted in June 1938) and already he's got more competition in the sky than just birds and planes! Yes – we're talking unmanned aerial vehicles (UAVs) – or drones, as they're commonly known. (Note: Transport Canada uses the term Unmanned Aerial Vehicles [UAVs] to refer to commercial drones and Model Aircraft to refer to drones used by hobbyists. The International Civil Aviation Organization uses the term Remotely Piloted Aircraft Systems [RPAS], and you'll see some references to Unmanned Aircraft Systems [UAS].)

Earlier this year, there was the occasional news story about non-military drones. Amazon, for example, made headlines when it announced it was looking into using drones to deliver packages.

Flash forward to this summer when it seems rarely a week goes by that there isn't a story about drones. Here is just a sampling of the news stories about drones that garnered some press this summer.

The first is from China's Henan province where the government employed surveillance drones to detect cheating on the college entrance exams. The government flew the drone over two testing centres to scan for wireless signals that students may have smuggled into the exam.

There were a number of news stories out of the U.S., but this one from mid-July raised a few eyebrows – even in the gun-embracing U.S. A short video posted on YouTube appears to "small-calibre gun" (referred to in the video as a semiautomatic handgun) mounted on a drone and

someone remotely firing off shots from the gun while the drone is in flight. When this story first broke, the main discussion was about verifying the authenticity of the video and then about finding out who posted it. (The general consensus seems to be that the video was real and that it was probably posted by a U.S. teen who has used drones himself in the past.)

And finally, there was a fire on the California interstate that was so fierce that it destroyed nearly 20 cars before it was brought under control. Turns out that firefighting aircraft trying to battle the fire were temporarily grounded because of private drones flying over the scene. And it isn't just U.S. firefighters that have been hampered by drones. B.C. Wildfire Services have reported that while fighting wildfires in West Kelowna in late July one of their helicopters were grounded because an unmanned aerial vehicle was flying close to the fire.

Commercial use of drones

The market for insurance is focused on commercial use of drones, and rightly so. The U.S. Federal Aviation Administration (FAA), for example, estimates that there may be as many as 7500 small commercial drones in use in the U.S. by 2018.

Here are some of the industries particularly suited to using drones:

• Agriculture – drones can be used to monitor crop growth, to monitor pests, monitor irrigation, track herds. There are estimates that drones are already doing 90% of aerial agricultural spraying in Japan.

• Commercial photography – things like real estate photos, weddings, graduations, sporting events, and so on.

• Insurance companies – drones can be used for underwriting, for example, to inspect things that are hard to inspect in person and to gather photos and data about a potential property or object. They can also be useful for claims processing, for example, after natural disasters.

• Natural resources and utilities – drones can be used to inspect things like pipelines and rights-of-way, to locate and track wildlife.

• Newsgathering organizations – for reporting on crowd activities, protests, events, and so on.

• Package delivery – though most people think of Amazon when they think package delivery using drones, emergency supplies of all sorts, including medicines, can be delivered to remote locations via drone.

• Public safety – drones can be used to help locate fires in the wild. They could also be deployed within a building that's on fire to detect hot zones, which can help firefighters assess the risk of collapse.

• Search and rescue – in the event of a natural disaster drones can be deployed over terrain that may be inaccessible by normal routes.

Richard Lemoine, corporate director of Brican Flight Systems, the only Canadian manufacturer of fixed-wing drones, explained some of the qualities that make drones the better choice for certain commercial applications. "Drones are particularly useful for carrying out surveying work, for example, pipeline inspecting, on things that are hard to access from land and more easily inspected by an airborne platform. Using drones to take photographs has advantages over using satellite images and images taken by traditional airplanes because drones can fly much lower and slower reducing the amount of atmosphere that the image had to be shot through and improved image stability, in other words, less bluring," he says.

Collecting information using an unmanned drone is especially useful in harsh or hazardous conditions, says Lemoine. Drones can be outfitted with cameras and sensors (for example, heat-detecting sensors), equipment to collect weather data, and so on. Drones also have a much smaller carbon footprint than traditional aerial methods of gathering information.

Risks associated with drone use

Commercial use of drones can involve a variety of risks, such as:

• Failure of power systems, software errors, and lost, delayed, or distorted operating signals – to the extent the drone is used to collect data, technical faults can result in lost or corrupted data.

• Susceptibility to hijacking and spoofing – there is a risk that some can hack into the drone and steal the data it has collected or they can take the drone over completely (so-called zombie drones).

• Midair collisions with another aircraft

• Damage to the drone and any payload on the drone – the payload could be expensive cameras and recording equipment, for example.

• Property damage – for example, damage caused if a drone crashes

• Bodily injury – if a drone crashes or veers into someone, there could be bodily injury to employees and 3rd parties

• Negligence in hiring and training operators

• Invasion of privacy risk – drone operators face legal attack under the Personal Information Protection and Electronic Documents Act (PIPEDA) if they take photos or videos of an individual in a private setting without consent. There can also be privacy concerns as a result of unintended capture of images.

• Trespass and nuisance claims

(Note: Drone manufacturers can face product liability issues, but those are beyond the scope of this paper.)

Regulating Drones

Given all the news stories about drones and the questionable behaviour some people have exhibited with drones, it might seem that there's no one regulating drone use. That's not the case: in Canada drones are regulated by Transport Canada and in the U.S. they're regulated by the Federal Aviation Administration (FAA).

U.S. regulation

Drones have been on the FAA's radar for quite some time, but they are moving a bit slower than Transport Canada in terms of allowing their use. Though there was some debate about whether the FAA had jurisdiction over drones, a recent National Traffic Safety Board ruling has made it clear that the definition of aircraft is broad enough to encompass unmanned aircraft. As a result, US aviation regulations apply to drones.

The FAA currently requires all commercial drone users to get permission to fly. In February 2015 the FAA published a draft framework of regulations and rules for non-recreational use of drones less than 55 pounds. Under the draft rules, drones are only to be operated in daylight and within visual sight. There are also height restrictions, operator certification requirements, and aircraft registration and marking limits. Since the February announcement the FAA has started test projects with private partners with a view toward extending commercial drone operation beyond visual line-of-sight limitations but wide-spread extension is a ways off.

Canadian Regulation

Transport Canada has been on the leading edge in terms of regulating drones. Canada has had safety regulations governing the use of drones since 1996 and has allowed commercial use of drones since 2007.

But, there are rules that commercial operators must adhere to. A commercial operator using drones that weigh 25 kilos or more must get a Special Flight Operation Certificate (SFOC) from Transport Canada. Because of the diverse types of drones and drone missions, SFOCs are decided on a case-by-case basis and they are subject to specific operating conditions. The other important rule commercial drone operators must comply with is the requirement to carry $100,000 of liability insurance.

As part of its regulatory authority, Transport Canada also has the power to levy fines on drone operators. If someone should have an SFOC but they operate a drone without one, the following fines can be levied:

- If operator is an individual – up to $5,000
- If operator is a company – up to $25,000

Operators who do not follow the requirements set out in their SFOC can be fined as follows:

If the operator is an individual – up to $3,000

- If the operator is a company – up to $15,000

And, if an operator flies too close to passenger jet or closer than 8 kms. to airports, operator (individual or company) can be subject to criminal charges and steep fines.

As well, there are a number of safety rules applicable to all drone operators in Canada, regardless of the size of the drone or the nature of the drone activity:
• They can only be flown during daylight and in good weather
• They must remain in the operator's sight
• They cannot fly within 9 kms. of an airport, heliport, or aerodrome
• They must give
• They cannot fly in populated areas near large groups (for example, beaches, concerts, sporting events)
• They cannot fly within restricted air space, for example, military bases, forest fires, prisons
• They cannot fly anywhere where they may interfere with first responders.
• They cannot fly near moving vehicles or anywhere they could endanger or distract drivers.

Insurance Issues

Commercial drone operators are potentially exposed to a number of liabilities, including:

• Personal injury to employees and third parties
• Liability to third parties for property damage a drone could cause – crashes are not the only way drones can cause property damage. Another example would be damage done by a crop-dusting drone applying pesticides to the wrong field or to a water source.
• Damage to the drone (and its payload) as a result of a malfunction or crash
• Business interruption costs, if a drone is unable to carry out missions
• Potential negligence claims
• Invasion of privacy claims

Because using a drone for commercial purposes is considered an aviation activity, damage or injury caused by drones would not be covered under standard commercial general insurance (CGI) policies because of the broad aviation exclusion normally found in such policies. Until recently, given that Transport Canada requires liability insurance, commercial aviation insurance, which is highly specialized and costly, was needed if a company wanted to use drones for commercial purposes.

In April 2015, Zurich Canada launched a drone insurance product. "Drones had been an emerging risk we had been watching for a long time," said Urs Uhlmann, CEO Global Corporate, Zurich Canada. "We saw all the different types of companies potentially using drones and realized how unaware our customers were of the fact that drone activities are not covered under standard commercial insurance. Couple that with Canada's sophisticated regulatory environment governing drones and we came up with a unique insurance solution," Uhlmann said.

Lisa Willenegger, CFA, liability underwriting specialist at Zurich Canada, also said another

reason they introduced drone insurance is that Zurich supports innovations – like drones – that can be used to help businesses manage their own risks. "If our commercial client is a utility, for example, and they need to inspect their utility poles, sending up a drone instead of a person helps them manage their risks better. There are all sorts of workplace scenarios where using drones would be a better choice from a risk management perspective," she said.

Zurich Canada's package, which was developed in partnership with UK-headquarted Global Aerospace Underwriting Managers Ltd., provides:

• First-party property coverage – this covers theft of, or damage to, the drone, to ground equipment used to operate the drone, and the payload carried on the drone.
• Third-party liability coverage – this covers property damage and bodily injury (including medical expenses) that may be caused by a drone.
• Additional extensions – additional coverage is available for things like malicious damage, system hacking, and personal injury.

In addition to Zurich Canada's coverage, Vancouver-based Avro Insurance Managers offers coverage for commercial and personal drone use. Karen McGee, Vice President of Avro Insurance Managers, Ltd., says that through Lloyd's they offer coverage for accidental loss or damage to drones and third party liability caused by a drone or any object falling from a drone. They also provide coverage for launch equipment, control box, and ancillary equipment that can be attached to the drone. Theft of the drone or ancillary equipment is not covered, unless approved by the underwriter. The coverage also includes transportation (other than by air) of the drone. There are various restrictions, including a provision that says only one insured drone can be operated at a time, and that hull coverage is restricted while the drone is on the ground until it has amassed 50 flying hours with the same operator.

McGee says that from an underwriting perspective, the main considerations are what the drones are being used for, the operators' experience and training, and where the drone will be used. In terms of any wording or coverage differences, she says they are the same regardless of how the drone might be used, but she notes there are "slightly different ratings depending on the use and the operators' experience". Avro offers liability policies with a $1 million limit and a $1,000 deductible.

One of the challenges from an underwriting perspective is the fact that insurers have little historical data about commercial drone operations. As a result, some commentators have suggested that insurance companies will likely want quite a lot of detail about planned drone activities. Zurich Canada's Willenegger explained that they consider a number of factors. "In our application we get information about the type of drone, the weight, what the drone will be used for, what payload it will carry, who will use it and what training the drone operator has," she said.

As noted, Transport Canada requires drone operators to carry liability insurance of $100,000. As with all questions of how much insurance is sufficient, that will really depend on the insured's activities. A European Commission study on third-party liability and insurance requirements for drones has suggested insurers determine the amount of insurance by determining the extent of

surface damage a drone could cause. Various factors would be considered in making this determination, such as: the drone's weight, its velocity, the areas it will fly over, the nature of the mission, the operator's training, the existence of safety devices, the payload it carries, the operator's compliance with certifications and permissions that may be required, and so on. Zurich Canada's Willenegger said that their typical policy limit is $5 million for liability and $500,000 for property, with a deductible of 5% of the value for physical damage. The minimum premium is $500, with the typical premium for business with light commercial use is $1,500.

Conclusion

Insurance industry estimates show that global spending on drones is expected to be more than U.S. $100 billion over the next decade. Indeed, as mentioned, the FAA estimates there could be as many as 7500 small commercial drones in use in the U.S. by 2018. In Canada, the use of commercial drones is clearly on the rise: in 2013 Transport Canada issued 945 SFOCs – that's up from 155 issued in 2011. Given those kinds of numbers, it's clear that commercial use of drones represents a market that's ripe for insurance solutions.