

Unmanned Aerial Vehicles (“UAV’s”): Usage, Potential Misusage and Coverage Gaps

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1. UAV History

Rarely has a technology such as unmanned aerial vehicles (“UAV’s”) or drones so quickly and completely inundated the public with such a breadth of possible applications and accompanying problems. The Israeli Army developed and used the first species of UAV’s for surveillance purposes in the 1980s during the start of the 1982 Lebanon War. In the 1990s the U.S. military broadened the usage of UAV’s beginning with the 1991 Gulf War and eventually segued from using UAV’s just for surveillance purposes to using them to carry arms. The military and intelligence usage has expanded greatly with much broader applications – such as predator drones to hunt suspected terrorists – and the debate over the misapplication and potential ethical issues in using UAV’s in such a fashion has deepened. However, the military use of UAV’s has not lessened particularly given their relative inexpensive cost in both lives and funds.

“Drones” is a generic word but UAV’s (or UAS’s – unmanned aircraft systems) is the term utilized by the FAA. Basically, a UAV is any type of unmanned aircraft. The UAV is just like a manned aircraft but without a body or bodies inside. The only genuine difference is that there has to be a way of pointing the UAV where you want them to go from somewhere else, which for a UAV requires an electronic datalink of some type. A UAV can be a fixed-wing airplane, helicopter, or hybrid. Since the UAV does not carry the weight of a person, they can be built smaller and less expensively. A "quadcopter" is a generic term for a rotary-wing aircraft with four main rotor systems and no tail rotor and it is encompassed within the term UAV. Of course, the military has used rather large UAV’s if they are designed to carry a heavy payload. Conversely, Aerius offers a UAV quadcopter that is 3cm x 3cm x 2cm (i.e. about the size of a quarter) for \$15.99.

2. UAV Usage

The potential uses of UAV’s is limited only by the imagination. The following is just a sample of the endeavors in which they can be or are being utilized:

- **Agriculture:** They can aerially survey crops and farmers can see if their irrigation systems are working, how their plants are growing, and even if any plants are sick by using infrared technology.
- **Real Estate:** Realtors can use UAV’s to provide an aerial view of the property – both land for sale and houses which may be appealing to see via an aerial view.
- **Law Enforcement:** There may be some Fourth Amendment concerns but UAV’s can be used for surveillance, investigation, and for apprehension of suspected criminals.
- **Fire Fighting:** UAV’s can be used to assess wildfires and, those equipped with heavy payloads, can deliver water or other extinguishing products to the fire. They can also assess building fires.
- **Border Patrol:** The U.S. has used UAV’s to patrol the U.S.-Mexico border for over five years now. There has been discussion of the border patrol using armed UAV’s although that has not materialized to date.

- **Delivering Goods:** Amazon is leading this charge but many other businesses, such as Domino's, are actively pursuing this possibility.
- **Hunting:** A hunter can help locate prey much easier through the use of a UAV (although it seems a lot less sporting).
- **Inspecting Remote Properties or Accident Sites:** Engineers, lawyers, certified fire investigators, insurance professionals etc... can and do use UAV's to investigate accident sites particularly construction accident sites.
- **Monitoring Wildlife:** UAV's are being used by the Audubon Society to assess raptor and eagle nests. They are also being used in Africa to find habitats and to find or at least discourage poachers.
- **Journalism:** UAV's can be used by journalists to investigate stories, view and photograph properties and alleged crime scenes, and to locate people (obviously there are concomitant privacy concerns).
- **Sports:** UAV's can be used by football and other coaches, as well as sports journalists particularly for those sports such as skiing, that are best viewed from the air.
- **Weather Forecasting:** UAV's can now fly into hurricanes and are used to view areas where flooding or other natural disasters have occurred.

Of course, just as UAV's can be used for wonderful purposes they can be misused as well. A criminal wishing to find a victim or case a property can use a UAV just like a law enforcement official can use a UAV to fight crime. A journalist can cross the line into paparazzi and stalk celebrities and their residences relatively easily. Even those who have no wrongful purpose can mistakenly use their recreational UAV's with very bad, unintended consequences. On September 14, 2015, USA Today reported that there have been 764 "close call incidents" between drones and other aircraft with passenger airplane pilots having to take evasive measures on at least 10 separate occasions. The FAA said this month that commercial pilots have reported 650 illegal drone sightings so far this year, compared with 238 sightings in all of 2014. In August 2015, the crew of a Shuttle America flight from Philadelphia to Raleigh-Durham International Airport spotted a drone 15 miles east of RDU, at an altitude of 8,000 feet.

Amazon now offers scores of drones for sales from multiple manufacturers. The information available to the potential purchaser is overwhelming and ever expanding. The laws and regulations associated with UAV's have certainly and understandably struggled to keep up.

3. North Carolina UAVs

The state-funded NextGen Air Transportation ("NCGAT") office at N.C. State University is applying for special FAA permission to start UAV experiments for the North Carolina Department of Transportation. NGAT expects to receive the aircraft it will use for the DOT experiments in 2015. The anticipated DOT jobs include investigating routes for new roads and inspecting bridges, construction sites and rock slides. The Division of Emergency Management anticipates using UAVs for evaluating damage in disasters and for search and rescue.

Raleigh-based PrecisionHawk, a major UAV producer, is seeking an FAA exemption so that it can begin commercial operations across the United States. PrecisionHawk is already doing business in Canada, Great Britain, Australia and Latin America. It's beginning to do more work on applications across a range of industries, including oil and gas, insurance, geology and mining and search and rescue, but its main focus has been agriculture. It sells its basic aircraft for about \$16,000, but it essentially considers itself a data company. The \$10m cash influx received in 2015 includes a group of investors led by Bob Young, co-founder of Red Hat. The UAV – which has a fuselage crafted from circuit boards rather than aerospace material – uploads the data it gathers to the cloud, where software developed by PrecisionHawk analyzes it and delivers the results to, say, a farmer's laptop. The PrecisionHawk website allows you to pick nine species of UAV features for your custom UAV and then provides you a purchase quote and delivery terms.

4. North Carolina criminal statutes

The following are North Carolina's criminal statutes pertaining to UAV's which became effective December 1, 2014:

§ 14-7.45. Crimes committed by use of unmanned aircraft systems

All crimes committed by use of an unmanned aircraft system, as defined in G.S. 15A-300.1, while in flight over this State shall be governed by the laws of this State, and the question of whether the conduct by an unmanned aircraft system while in flight over this State constitutes a crime by the owner of the unmanned aircraft system shall be determined by the laws of this State.

§ 14-280.3. Interference with manned aircraft by unmanned aircraft systems

(a) Any person who willfully damages, disrupts the operation of, or otherwise interferes with a manned aircraft through use of an unmanned aircraft system, while the manned aircraft is taking off, landing, in flight, or otherwise in motion, is guilty of a Class H felony.

(b) The following definitions apply to this section:

(1) Manned aircraft. -- As defined in G.S. 15A-300.1.

(2) Unmanned aircraft system. -- As defined in G.S. 15A-300.1.

§ 14-401.24. Unlawful possession and use of unmanned aircraft systems

(a) It shall be a Class E felony for any person to possess or use an unmanned aircraft or unmanned aircraft system that has a weapon attached.

(b) It shall be a Class 1 misdemeanor for any person to fish or to hunt using an unmanned aircraft system.

(c) The following definitions apply to this section:

(1) To fish. -- As defined in G.S. 113-130.

(2) To hunt. -- As defined in G.S. 113-130.

(3) Unmanned aircraft. -- As defined in G.S. 15A-300.1.

(4) Unmanned aircraft system. -- As defined in G.S. 15A-300.1.

(5) Weapon. -- Those weapons specified in G.S. 14-269, 14-269.2, 14-284.1, or 14-288.8 and any other object capable of inflicting serious bodily injury or death when used as a weapon.

(d) This section shall not prohibit possession or usage of an unmanned aircraft or unmanned aircraft system that is authorized by federal law or regulation.

§ 15A-300.1. Restrictions on use of unmanned aircraft systems

(a) Definitions. -- The following definitions apply to this Article:

(1) Manned aircraft. -- An aircraft, as defined in G.S. 63-1, that is operated with a person in or on the aircraft.

(2) Model aircraft. -- An aircraft, as defined in G.S. 63-1, that is mechanically driven or launched into flight and that meets all of the following requirements:

a. Is flown solely for hobby or recreational purposes.

b. Is not used for payment, consideration, gratuity, or benefit, directly or indirectly charged, demanded, received, or collected, by any person for the use of the aircraft or any photographic or video image produced by the aircraft.

(3) Unmanned aircraft. -- An aircraft, as defined in G.S. 63-1, that is operated without the possibility of human intervention from within or on the aircraft and that does not meet the definition of model aircraft.

(4) Unmanned aircraft system. -- An unmanned aircraft and associated elements, including communication links and components that control the unmanned aircraft that are required for the pilot in command to operate safely and efficiently in the national airspace system.

(b) General Prohibitions. -- Except as otherwise provided in this section, no person, entity, or State agency shall use an unmanned aircraft system to do any of the following:

(1) Conduct surveillance of:

a. A person or a dwelling occupied by a person and that dwelling's curtilage without the person's consent.

b. Private real property without the consent of the owner, easement holder, or lessee of the property.

(2) Photograph an individual, without the individual's consent, for the purpose of publishing or otherwise publicly disseminating the photograph. This subdivision shall not apply to newsgathering, newsworthy events, or events or places to which the general public is invited.

(c) Law Enforcement Exceptions. -- Notwithstanding the provisions of subsection (b) of this section, the use of unmanned aircraft systems by law enforcement agencies of the State or a political subdivision of the State is not prohibited in the following instances:

(1) To counter a high risk of a terrorist attack by a specific individual or organization if the United States Secretary of Homeland Security or the Secretary of the North Carolina Department of Public Safety determines that credible intelligence indicates that such a risk exists.

(2) To conduct surveillance in an area that is within a law enforcement officer's plain view when the officer is in a location the officer has a legal right to be.

(3) If the law enforcement agency first obtains a search warrant authorizing the use of an unmanned aircraft system.

(4) If the law enforcement agency possesses reasonable suspicion that, under particular circumstances, swift action is needed to prevent imminent danger to life or serious damage to property, to forestall the imminent escape of a suspect or the destruction of evidence, to conduct pursuit of an escapee or suspect, or to facilitate the search for a missing person.

(5) To photograph gatherings to which the general public is invited on public or private land.

(d) Limitations on Use of Special Imaging Technology. -- Commercial and private unmanned aircraft systems may be equipped with infrared or other thermal imaging technology subject to the provisions of this subsection. Infrared or other similar thermal imaging technology equipment shall be for the sole purpose of scientific investigation; scientific research; mapping and evaluating the earth's surface, including terrain and surface water bodies and other features; investigation or evaluation of crops, livestock, or farming operations; investigation of forests and forest management; and other similar investigations of vegetation or wildlife.

(e) Any person who is the subject of unwarranted surveillance, or whose photograph is taken in violation of the provisions of this section, shall have a civil cause of action against the person, entity, or State agency that conducts the surveillance or that uses an unmanned aircraft system to photograph for the purpose of publishing or otherwise disseminating the photograph. In lieu of actual damages, the person whose photograph is taken may elect to recover five thousand dollars (\$ 5,000) for each photograph or video that is published or otherwise disseminated, as well as reasonable costs and attorneys' fees and injunctive or other relief as determined by the court.

(f) Evidence obtained or collected in violation of this section is not admissible as evidence in a

criminal prosecution in any court of law in this State except when obtained or collected under the objectively reasonable, good-faith belief that the actions were lawful.

§ 15A-300.2. Regulation of launch and recovery sites

(a) No unmanned aircraft system may be launched or recovered from any State or private property without consent.

(b) A unit of local government may adopt an ordinance to regulate the use of the local government's property for the launch or recovery of unmanned aircraft systems.

5. North Carolina licensure/permitting statutes

The following North Carolina statutes pertaining to UAV's became effective on August 7, 2014:

§ 63-95. Training required for operation of unmanned aircraft systems

(a) As used in this Article, the term "Division" means the Division of Aviation of the Department of Transportation.

(b) The Division shall develop a knowledge and skills test for operating an unmanned aircraft system that complies with all applicable State and federal regulations and shall provide for administration of the test. The Division may permit a person, including an agency of this State, an agency of a political subdivision of this State, an employer, or a private training facility, to administer the test developed pursuant to this subsection, provided the test is the same as that administered by the Division and complies with all applicable State and federal regulations.

(c) No agent or agency of the State, or agent or agency of a political subdivision of the State, may operate an unmanned aircraft system within the State without completion of the test set forth in subsection (b) of this section.

§ 63-96. License required for commercial operation of unmanned aircraft systems

(a) No person shall operate an unmanned aircraft system, as defined in G.S. 15A-300.1, in this State for commercial purposes unless the person is in possession of a license issued by the Division valid for the unmanned aircraft system being operated. Application for such license shall be made in the manner provided by the Division. Unless suspended or revoked, the license shall be effective for a period to be established by the Division not exceeding eight years.

(b) No person shall be issued a license under this section unless all of the following apply:

(1) The person is at least 18 years of age.

(2) The person possesses a valid drivers license issued by any state or territory of the United States or the District of Columbia.

(3) The person has passed the knowledge and skills test for operating an unmanned aircraft system as prescribed in G.S. 63-95(b).

(4) The person has satisfied all other applicable requirements of this Article or federal regulation.

(c) A license to operate an unmanned aircraft system for commercial purposes shall not be issued to a person while the person's license to operate an unmanned aircraft system is suspended, revoked, or cancelled in any state.

(d) The Division shall develop and administer a program to license operators of unmanned aircraft systems for commercial purposes. The program must include the following components:

(1) A system for classifying unmanned aircraft systems based on characteristics determined to be appropriate by the Division.

(2) A fee structure for licenses.

(3) A license application process.

(4) Technical guidance for complying with program requirements.

(5) Criteria under which the Division may suspend or revoke a license.

(6) Criteria under which the Division may waive licensure requirements for applicants currently holding a valid license to operate unmanned aircraft systems issued by another state or territory of the United States, the District of Columbia, or the United States.

(7) A designation of the geographic area within which a licensee shall be authorized to operate an unmanned aircraft system.

(8) Requirements pertaining to the collection, use, and retention of data by licensees obtained through the operation of unmanned aircraft systems, to be established in consultation with the State Chief Information Officer.

(9) Requirements for the marking of each unmanned aircraft system operated pursuant to a license issued under this section sufficient to permit identification of the owner of the system and the person licensed to operate it.

(10) A system for providing agencies that conduct other operations within regulated airspace with the identity and contact information of licensees and the geographic areas within which the licensee is permitted to operate an unmanned aircraft system.

(e) A person who operates an unmanned aircraft system for commercial purposes other than as permitted under this section shall be guilty of a Class 1 misdemeanor.

(f) The Division may issue rules and regulations to implement the provisions of this section.

6. North Carolina House Bill 446

On August 13, 2015, the Senate approved House Bill 446 which provides as follows:

PART II. UNMANNED AIRCRAFT SYSTEMS

SECTION 2.1. Section 7.16(e) of S.L. 2013-360, as amended by Section 7.11(a) of S.L. 2014-100, reads as rewritten:

"SECTION 7.16.(e) ~~Until December 31, 2015, no State or local governmental entity or officer may procure or operate an unmanned aircraft system or disclose personal information about any person acquired through the operation of an unmanned aircraft system unless the State CIO approves an exception specifically granting disclosure, use, or purchase. Any exceptions to the prohibition in this subsection shall be reported immediately the State CIO shall have the authority to approve or disapprove (i) the procurement or operation of an unmanned aircraft system by agents or agencies of the State or a political subdivision of the State and (ii) the disclosure of personal information about any person acquired through the operation of an unmanned aircraft system by agents or agencies of the State or a political subdivision of the State. When making a decision under this subsection, the State CIO may consult with the Division of Aviation of the Department of Transportation. The State CIO shall immediately report to the Joint Legislative Oversight Committee on Information Technology and the Fiscal Research Division. Division on all decisions made under this subsection. Notwithstanding G.S. 63-95(c), agents or agencies of the State or a political subdivision of the State that receive State CIO approval under this subsection may procure or operate an unmanned aircraft system prior to the implementation of the knowledge test required by G.S. 63-95. In addition to receiving approval from the State CIO under this subsection, agents or agencies of the State or a political subdivision of the State who submit a request on or after the date of implementation of the knowledge test required by G.S. 63-95 shall also be subject to the provisions of that section.~~ The following definitions apply in this section:

(1) "Unmanned aircraft" means an aircraft that is operated without the possibility of human intervention from within or on the aircraft.

(2) "Unmanned aircraft system" means an unmanned aircraft and associated elements, including communication links and components that control the unmanned aircraft that are required for the pilot in command to operate safely and efficiently in the national airspace system."

SECTION 2.2. Section 34.30(j) of S.L. 2014-100 reads as rewritten:

"SECTION 34.30.(j) ~~No~~ Except as authorized under Section 7.16(e) of S.L. 2013-360, as amended by Section 7.11(a) of S.L. 2014-100, no operation of unmanned aircraft systems by agents or agencies of the State, or agents or agencies of State or a political subdivision of the State, State shall be authorized in this State until the knowledge and skills test required by G.S. 63-95, as enacted in subsection (g) of this section, has been implemented.

~~No operation of unmanned aircraft systems for commercial purposes shall be authorized in this State until the FAA has authorized commercial operations and the licensing system required by G.S. 63-96, as enacted in subsection (g) of this section, has been implemented."~~

SECTION 2.3. G.S. 63-95(b) reads as rewritten:

"(b) The Division shall develop a knowledge and skills test for operating an unmanned aircraft system that complies with all applicable State and federal regulations and shall provide for administration of the test. The test shall ensure that the operator of an unmanned aircraft system is knowledgeable of the State statutes and regulations regarding the operation of unmanned aircraft systems. The Division may permit a person, including an agency of this State, an agency of a political subdivision of this State, an employer, or a private training facility, to administer the test developed pursuant to this subsection, provided the test is the same as that administered by the Division and complies with all applicable State and federal regulations."

SECTION 2.4. G.S. 63-96 reads as rewritten:

"§ 63-96. ~~License~~ Permit required for commercial operation of unmanned aircraft systems.

(a) No person shall operate an unmanned aircraft system, as defined in G.S. 15A-300.1, in this State for commercial purposes unless the person is in possession of a ~~license~~ permit issued by the Division valid for the unmanned aircraft system being operated. Application for ~~such license~~ the permit shall be made in the manner provided by the Division. Unless suspended or revoked, the license permit shall be effective for a period to be established by the Division not exceeding eight years.

(b) No person shall be issued a ~~license~~ permit under this section unless all of the following apply:

(1) The person is at least ~~18~~ 17 years of age.

(2) The person possesses a valid drivers license issued by any state or territory of the United States or the District of Columbia.

(3) The person has passed the knowledge ~~and skills~~ test for operating an unmanned aircraft system as prescribed in G.S. 63-95(b).

(4) The person has satisfied all other applicable requirements of this Article or federal regulation.

(c) A ~~license~~ permit to operate an unmanned aircraft system for commercial purposes shall not be issued to a person while the person's license or permit to operate an unmanned aircraft system is suspended, revoked, or cancelled in any state.

(d) The Division shall develop and administer a program that complies with all applicable federal regulations to license issue permits to operators of unmanned aircraft systems for commercial purposes. The program must include the following components:

(1) A system for classifying unmanned aircraft systems based on characteristics determined to be appropriate by the Division.

(2) A fee structure for ~~licenses~~ permits.

(3) A ~~license~~ permit application ~~process~~ process, which shall include a requirement that the Division provide notice to an applicant of the Division's decision on issuance of a permit no later than 10 days from the date the Division receives the applicant's application.

(4) Technical guidance for complying with program requirements.

(5) Criteria under which the Division may suspend or revoke a license permit.

(6) Criteria under which the Division may waive ~~license~~ permitting requirements for applicants currently holding a valid license or permit to operate unmanned aircraft systems issued by another state or territory of the United States, the District of Columbia, or the United States.

(7) A designation of the geographic area within which a ~~licensee~~ permittee shall be authorized to operate an unmanned aircraft system. The rules adopted by the Division for designating a geographic area pursuant to this subdivision shall be no more restrictive than the rules or regulations adopted by the Federal Aviation Administration for designating a geographic area for the commercial operation of unmanned aircraft systems.

- (8) Requirements pertaining to the collection, use, and retention of data by ~~licensees~~ permittees obtained through the operation of unmanned aircraft systems, to be established in consultation with the State Chief Information Officer.
- (9) Requirements for the marking of each unmanned aircraft system operated pursuant to a ~~license-permit~~ issued under this section sufficient to ~~permit-allow~~ identification of the owner of the system and the person ~~licensed~~ issued a permit to operate it.
- (10) A system for providing agencies that conduct other operations within regulated airspace with the identity and contact information of ~~licensees~~ permittees and the geographic areas within which the ~~licensee~~ permittee is ~~permitted~~ authorized to operate an unmanned aircraft system.
- (e) A person who operates an unmanned aircraft system for commercial purposes other than as permitted authorized under this section shall be guilty of a Class 1 misdemeanor.
- (f) The Division may issue rules and regulations to implement the provisions of this section."

SECTION 2.5. Prior to the implementation of the knowledge test and permitting process required by G.S. 63-96, any person authorized by the FAA for commercial operation of an unmanned aircraft system in this State shall not be in violation of that statute, provided that the person makes application for a State permit for commercial operation within 60 days of the full implementation of the permitting process and is issued a State commercial operation permit in due course.

This bill relaxes a law that, except in limited cases, bars government agencies from flying UAV's and using them to gather information about people. It broadens the North Carolina chief information officer's authority to approve government use of UAV's for purposes that may include law enforcement, emergency management, environmental regulation and scientific research. Bobby Walston, the North Carolina DOT's Division of Aviation director, has indicated that he expects the FAA to begin licensing UAV operators in the next two years. One provision in the new legislation sheds a problem created in the 2014 law that made DOT responsible for issuing licenses to UAV pilots after evaluating their skills. That was more than state officials thought they could do, and it was outside their authority since the federal government regulates the nation's airspace. Instead, DOT will be ready to issue simpler permits to let state and local agencies and FAA-licensed UAV users operate in North Carolina. They'll be tested only on their knowledge of UAV laws and regulations. A knowledge test will be developed but there will be no test to assess the applicant and their ability to safely fly a UAV. House Bill 446 requires DOT to be ready to issue state permits for UAV operators within 60 days after the FAA starts issuing licenses.

7. **FAA regulations**

On February 15, 2015, the FAA announced a proposed rule governing the use of commercial small UAV's that would address many of concerns, including setting certification requirements for operators and requiring see-and-avoid capabilities. The rule affects UAV's weighing 55 pounds or less that are flown for non-recreational purposes. Under the notice of proposed rulemaking, small UAV's would be required to "see and avoid" other aircraft, giving right of way to manned aircraft. They also would be limited to daylight, line-of-sight operations with a least three statute miles visibility at speeds of less than 100 mph and altitudes below 500 feet. The UAV would not be allowed to operate over people, except those involved in the flight. They would be required to remain outside of Class A airspace and at least 500 feet below clouds and

2,000 feet from them horizontally. Operations in Class B, C, and D airspace, as well as within the lateral boundaries of the surface area of Class E airspace, can be allowed with prior permission from air traffic control. Alongside the proposal, the FAA has also provided a limited number of exemptions for companies prior to the rules being finalized, including an exemption for Amazon in mid-March, although Amazon noted in a April 2015 Wall Street Journal article that they had already moved on to a new UAV prototype.

The FAA Modernization and Reform Act of 2012 had set a deadline of September 30, 2015, for the agency to establish regulations to allow the use of commercial drones. That deadline will not be reached. It is expected that a comprehensive reauthorization will not be completed until the beginning of 2016, if not later, though a short-term reauthorization of the FAA is likely (there were 23 short-term extensions before the most recent FAA reauthorization was enacted). In the meantime, the FAA had claimed it illegal to operate commercial unmanned aerial vehicles but approved non-commercial flights under 400 feet if they follow Advisory Circular 91-57, Model Aircraft Operating Standards. However, the FAA's attempt to fine a commercial drone operator for a 2011 flight was thrown out in 2014 by NTSB Judge Patrick Geraghty, who found that the FAA had not followed the proper rulemaking procedures and therefore had no UAV regulations. The FAA appeal of this Judgment is pending. Commercial unmanned aerial system licenses have been granted on a case-by-case basis, subject to approval by the FAA. In 2014, the FAA approved at least ten applications from specific companies for commercial use of drones, including movie-makers and surveyors.

The FAA seems to make a special distinction between hobbyist and commercial UAV operations:

Hobby or Recreation	Not Hobby or Recreation
Flying a model aircraft at the local model aircraft club.	Receiving money for demonstrating aerobatics with a model aircraft.
Taking photographs with a model aircraft for personal use.	A realtor using a model aircraft to photograph a property that he is trying to sell and using the photos in the property's real estate listing. A person photographing a property or event and selling the photos to someone else.
Using a model aircraft to move a box from point to point without any kind of compensation.	Delivering packages to people for a fee. ⁶
Viewing a field to determine whether crops need water when they are grown for personal enjoyment.	Determining whether crops need to be watered that are grown as part of commercial farming operation.

The FAA seems to be more interested in the commercial use of UAVs than they are overall safety of hobbyist craft - which are the very issue of every reported incident or near-miss to date. Serious, commercial operators are presumably taking care and precautions to ensure their expensive multicopters and cameras don't come crashing down. With few exceptions, most commercial UAV pilots will get training and practice extensively to maintain control of their craft and line up the cameras through FPV monitors to get the shots they need instead of dangerously flying over people and property where there could be a potential for a mishap. Since this awareness of the increased number of UAV's across the country and several mishaps that have caught the media's attention, several local, regional and state agencies have issued no fly zones to protect the public and natural open space. It is also now illegal to take off and or land inside a National Park, and you can be cited by a park ranger with a \$5,000 fine and possibly six months jail time. However, since the National Park system does not control the airspace above the park, if you want to take the chance of taking off outside the park's boundaries and flying over, you may be okay.

In addition to FAA certification, the regulation of usage of UAV systems by government authorities in the United States for law enforcement purposes is determined at a state level. As of September 2015, 26 U.S. states have enacted legislation addressing the use of UAV's and the handling of data collected by them. Nearly all enacted laws require a probable cause warrant to be issued before the use of a UAV's for surveillance purposes is authorized. Six other states have adopted resolutions pertaining to UAV usage.

A review of state laws and bills in place show that states are largely concerned with the same UAV themes:

Arkansas [HB 1349](#) prohibits the use of UAS to commit voyeurism. [HB 1770](#) prohibits the use of UAV's to collect information about or photographically or electronically record information about critical infrastructure without consent.

Florida [SB 766](#) prohibits the use of a drone to capture an image of privately owned property or the owner, tenant, or occupant of such property without consent if a reasonable expectation of privacy exists.

Hawaii [SB 661](#) creates a chief operating officer position for the Hawaii unmanned aerial systems test site. It also establishes an unmanned aerial systems test site advisory board to plan and oversee test site development and appropriates funds to establish the test site.

Illinois [SB 44](#) creates a UAS Oversight Task Force which is tasked with considering commercial and private use of UAS, landowner and privacy rights and general rules and regulations for the safe operation of UAS. The task force will prepare recommendations for the use of UAS in the state.

Louisiana [SB 183](#) regulates the use of UAS in agricultural commercial operations.

Maine [LD 25](#) requires law enforcement agencies receive approval before acquiring UAS. The bill also specifies that the use of UAS by law enforcement comply with all FAA requirements and guidelines. Requires a warrant to use UAS for criminal investigations except in certain circumstances and sets out standards for the operation of UAS by law enforcement.

Maryland [SB 370](#) specifies that only the state can enact laws to prohibit, restrict, or regulate the testing or operation of unmanned aircraft systems. This preempts county and municipal authority. The bill also requires a study on specified benefits.

Michigan [SB 54](#) prohibits using UAS to interfere with or harass an individual who is hunting. [SB 55](#) prohibits using UAS to take game.

Mississippi [SB 2022](#) specifies that using a drone to commit "peeping tom" activities is a felony.

Nevada [AB 239](#) includes UAS in the definition of aircraft and regulates the operators of UAS. It also prohibits the weaponization of UAS and prohibits the use of UAS within a certain distance of critical facilities and airports without permission. The bill specifies certain restrictions on the use of UAS by law enforcement and public agencies and requires the creation of a registry of all UAS operated by public agencies in the state.

New Hampshire [SB 222](#) prohibits the use of UAS for hunting, fishing, or trapping.

North Carolina [SB 446](#) expands the authority of the state's Chief Information Officer to approve the purchase and operation of UAS by the state and modifies the state regulation of UAS to conform to FAA guidelines.

North Dakota HB 1328 provides limitations for the use of UAS for surveillance.

Oregon HB 2534 requires the development of rules prohibiting the use of UAS for angling, hunting, trapping, or interfering with a person who is lawfully angling, trapping, or hunting. HB 2354 changes the term "drone" to "unmanned aircraft system" in statute.

Tennessee HB 153 prohibits using a drone to capture an image over certain open-air events and fireworks displays. It also prohibits the use of UAS over the grounds of a correctional facility.

Texas HB 3628 permits the creation of rules governing the use of UAS in the Capitol Complex and provides that a violation of those rules is a Class B misdemeanor. HB 2167 permits individuals in certain professions to capture images used in those professions using UAS as long as no individual is identifiable in the image. HB 1481 makes it a Class B misdemeanor to operate UAS over a critical infrastructure facility if the UAS is not more than 400 feet off the ground.

Utah HB 296 allows a law enforcement agency to use an unmanned aircraft system to collect data at a testing site and to locate a lost or missing person in an area in which a person has no reasonable expectation of privacy. It also institutes testing requirements for a law enforcement agency's use of an unmanned aircraft system.

Virginia HB 2125 and SB 1301 require that a law enforcement agency obtain a warrant before using a drone for any purpose, except in limited circumstances. Virginia's governor also issued an executive order establishing a commission on unmanned systems.

West Virginia HB 2515 prohibits hunting with UAS.

8. Insurance and other issues.

Some specialty UAV insurance products have been and are being developed. Some, like AIG Aerospace appear to be providing a product akin to a manuscript policy tailored to the needs of a special commercial insured.

The standard North Carolina homeowners' insurance policy will exclude liability coverage for "aircraft liability" or "hovercraft liability." Those terms are defined as follows:

1. "Aircraft Liability", "Hovercraft Liability", "Motor Vehicle Liability" and "Watercraft Liability", subject to the provisions in **b.** below, mean the following: **a.** Liability for "bodily injury" or "property damage" arising out of the:

- (1) Ownership of such vehicle or craft by an "insured";
- (2) Maintenance, occupancy, operation, use, loading or unloading of such vehicle or craft by any person;
- (3) Entrustment of such vehicle or craft by an "insured" to any person;
- (4) Failure to supervise or negligent supervision of any person involving such vehicle or craft by an "insured"; or
- (5) Vicarious liability, whether or not imposed by law, for the actions of a child or minor involving such vehicle or craft.

b. For the purpose of this definition:

(1) Aircraft means any contrivance used or designed for flight except model or hobby aircraft not used or designed to carry people or cargo;

(2) Hovercraft means a self-propelled motorized ground effect vehicle and includes, but is not limited to, flarecraft and air cushion vehicles;

(Emphasis added). Chances are better than not that coverage would be provided to the extent the UAV is deemed a model or hobby aircraft not designed to carry people or cargo.

However, the inquiry does not stop there. The standard homeowners' policy will exclude liability coverage for business activities and coverage will likely be excluded for damages associated with commercial use of UAV's. The line between recreational and business uses may not always be crystal clear, but insureds who receive compensation for their UAV's will probably jeopardize their homeowners' coverage.

Another major concern is privacy and if a UAV is alleged to have been used in a manner to invade someone's privacy. Coverage may be available if the policy includes liability for "personal injury," normally defined as injuries due to false arrest, detention, malicious prosecution, libel, slander and invasion of privacy. Even if initial coverage is triggered, however, an insurer must look to see if any exclusions apply, most notably the intentional act exclusion. An insurer might argue that the alleged invasion of privacy with a UAV was an intentional act by the insured, as opposed to a negligent act, and thus, there is no coverage. This argument's success depends, in large part, on the insured's specific conduct, the language of the "personal injury" coverage grant, the intentional acts exclusion, and the elements necessary to sustain an invasion of privacy claim.

North Carolina has done a good job is trying to be proactive legislatively on the UAV front. However, a cursory scrutiny of the law reveals that many issues can easily arise which have no definitive answer such as:

- The term "surveillance" is not defined.
- What activities are considered "newsgathering" and what events are "newsworthy." What about bloggers/citizen-journalists?
- Documenting private property by UAV is prohibited. What about Google? Does it violate the seclusion tort that one who "intentionally intrudes, physically or otherwise, upon the solitude or seclusion of another or his private affairs or concerns, is subject to the other for invasion of privacy, if the intrusion would be highly offensive to a reasonable person." Restricting surveillance of private property in public view?

One thing is for sure. If you have concerns about UAV issues you should, like with the weather, just wait as things are constantly changing. There are UAV stories every day and they are no doubt soon heading to a courtroom in your area. Good luck.

UNMANNED AERIAL VEHICLES ("UAV'S"): USAGE, POTENTIAL MISUSAGE & COVERAGE GAPS

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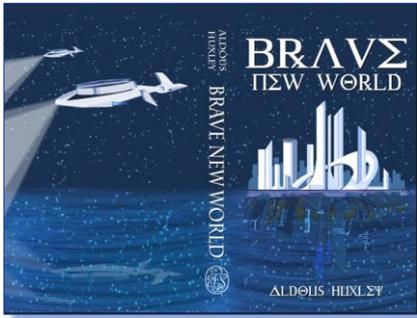
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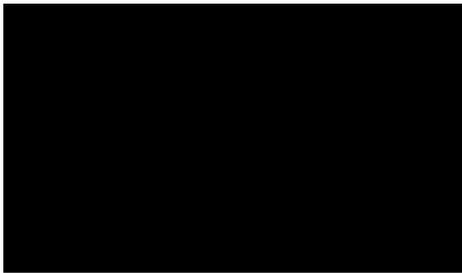


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4

Is this what Mr. Huxley had in mind?



5

Food and drink — delivered by drones.



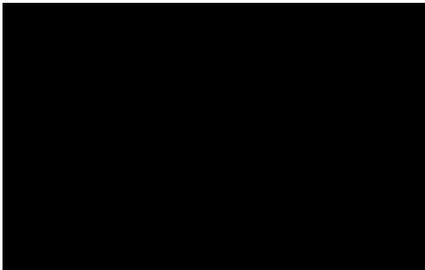
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7



9



FAA LAGS BEHIND THE STATES:

- FAA HAD COMMITTED TO INTEGRATING UAV INTO THE NATION’S AIRSPACE BY SEPTEMBER 2015 BUT HAS REPEATEDLY MISSED TARGET DEADLINES.
- NOW INDICATED THAT FINAL RULES WILL NOT BE IN PLACE UNTIL AT LEAST 2017.

10

On February 15, 2015, the FAA announced a [proposed rule governing the use of commercial small unmanned aerial systems \(UAS\)](#) that would address many of concerns, including setting certification requirements for operators and requiring see-and-avoid capabilities. The rule affects UAS weighing 55 pounds or less that are flown for non-recreational purposes. Under the notice of proposed rulemaking, small UAS would be required to “see and avoid” other aircraft, giving right of way to manned aircraft. They also would be limited to daylight, line-of-sight operations with a least 3 statute miles visibility at speeds of less than 100 mph and altitudes below 500 feet. The UAS would not be allowed to operate over people, except those involved in the flight. They would be required to remain outside of Class A airspace and at least 500 feet below clouds and 2,000 feet from them horizontally. Operations in Class B, C, and D airspace, as well as within the lateral boundaries of the surface area of Class E airspace, can be allowed with prior permission from air traffic control.

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The state-funded NextGen Air Transportation (“NGAT”) office at N.C. State University is applying for special FAA permission to start drone experiments for the North Carolina Department of Transportation. NGAT expects to receive the aircraft it will use for the DOT experiments this spring. The anticipated DOT jobs include investigating routes for new roads and inspecting bridges, construction sites and rock slides. The Division of Emergency Management anticipates using drones for evaluating damage in disasters and for search and rescue.

Raleigh-based PrecisionHawk, a major UAV producer, is seeking an FAA exemption so that it can begin commercial operations across the United States. PrecisionHawk is already doing business in Canada, Great Britain, Australia and Latin America. It’s beginning to do more work on applications across a range of industries, including oil and gas, insurance, geology and mining and search and rescue, but its main focus has been agriculture. It sells its basic aircraft for about \$16,000, but it essentially considers itself a data company. The \$10m cash influx received this year includes a group of investors led by Bob Young, co-founder of Red Hat. The drone – which has a fuselage crafted from circuit boards rather than aerospace material – uploads the data it gathers to the cloud, where software developed by PrecisionHawk analyzes it and delivers the results to, say, a farmer’s laptop.

12

NORTH CAROLINA'S UNMANNED AIRCRAFT SYSTEM STATUTORY SCHEME BECAME EFFECTIVE ON DECEMBER 1, 2014.

13

**Crimes by Unmanned Aircraft Systems.
§ 14-7.45. Crimes committed by use of unmanned aircraft systems.**

All crimes committed by use of an unmanned aircraft system, as defined in G.S. 15A-300.1, while in flight over this State shall be governed by the laws of this State, and the question of whether the conduct by an unmanned aircraft system while in flight over this State constitutes a crime by the owner of the unmanned aircraft system shall be determined by the laws of this State. (2014-100, s. 34.30(b).)

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DEFINITIONS:

15A-300.1. Restrictions on use of unmanned aircraft systems.

- (a) Definitions. - The following definitions apply to this Article:
 - (1) **Manned aircraft.** - An aircraft, as defined in G.S. 63-1, that is operated with a person in or on the aircraft.
 - (2) **Model aircraft.** - An aircraft, as defined in G.S. 63-1, that is mechanically driven or launched into flight and that meets all of the following requirements:
 - a. Is flown solely for hobby or recreational purposes.
 - b. Is not used for payment, consideration, gratuity, or benefit, directly or indirectly charged, demanded, received, or collected, by any person for the use of the aircraft or any photographic or video image produced by the aircraft.
 - (3) **Unmanned aircraft.** - An aircraft, as defined in G.S. 63-1, that is operated without the possibility of human intervention from within or on the aircraft and that does not meet the definition of model aircraft.
 - (4) **Unmanned aircraft system.** - An unmanned aircraft and associated elements, including communication links and components that control the unmanned aircraft that are required for the pilot in command to operate safely and efficiently in the national airspace system.

15

15A-300.1 (b) General Prohibitions. - Except as otherwise provided in this section, no person, entity, or State agency shall use an unmanned aircraft system to do any of the following:

- (1) **Conduct surveillance of:**
 - a. A person or a dwelling occupied by a person and that dwelling's curtilage without the person's consent.
 - b. Private real property without the consent of the owner, easement holder, or lessee of the property.
- (2) Photograph an individual, without the individual's consent, for the purpose of publishing or otherwise publicly disseminating the photograph. This subdivision shall not apply to newsgathering, newsworthy events, or events or places to which the general public is invited.
- (c) **Law Enforcement Exceptions.** - Notwithstanding the provisions of subsection (b) of this section, the use of unmanned aircraft systems by law enforcement agencies of the State or a political subdivision of the State is not prohibited in the following instances:
 - (1) To counter a high risk of a terrorist attack by a specific individual or organization if the United States Secretary of Homeland Security or the Secretary of the North Carolina Department of Public Safety determines that credible intelligence indicates that such a risk exists.
 - (2) To conduct surveillance in an area that is within a law enforcement officer's plain view when the officer is in a location the officer has a legal right to be.
 - (3) If the law enforcement agency first obtains a search warrant authorizing the use of an unmanned aircraft system.
 - (4) If the law enforcement agency possesses reasonable suspicion that, under particular circumstances, swift action is needed to prevent imminent danger to life or serious damage to property, to forestall the imminent escape of a suspect or the destruction of evidence, to conduct pursuit of an escape or suspect, or to facilitate the search for a missing person.
 - (5) To photograph gatherings to which the general public is invited on public or private land.

15A-300.2. Regulation of launch and recovery sites.

- (a) No unmanned aircraft system may be launched or recovered from any State or private property without consent.
- (b) A unit of local government may adopt an ordinance to regulate the use of the local government's property for the launch or recovery of unmanned aircraft systems. (2014-100, s. 34.30(a).)

CRIMINAL LAW:

§ 14-7.45. Crimes committed by use of unmanned aircraft systems.

All crimes committed by use of an unmanned aircraft system, as defined in G.S. 15A-300.1, while in flight over this State shall be governed by the laws of this State, and the question of whether the conduct by an unmanned aircraft system while in flight over this State constitutes a crime by the owner of the unmanned aircraft system shall be determined by the laws of this State. (2014-100, s. 34.30(b).)

§ 14-280.3. Interference with manned aircraft by unmanned aircraft systems.

(a) Any person who willfully damages, disrupts the operation of, or otherwise **interferes with a manned aircraft through use of an unmanned aircraft system**, while the manned aircraft is taking off, landing, in flight, or otherwise in motion, is guilty of a **Class H felony**.

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§ 14-401.24. Unlawful possession and use of unmanned aircraft systems.

(a) It shall be a Class E felony for any person to possess or use an unmanned aircraft or unmanned aircraft system that has a weapon attached.

(b) It shall be a Class 1 misdemeanor for any person to fish or to hunt using an unmanned aircraft system.

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TRAINING AND LICENSING:

§ 63-95. Training required for operation of unmanned aircraft systems.

(a) As used in this Article, the term "Division" means the Division of Aviation of the Department of Transportation.

(b) The Division shall develop a knowledge and skills test for operating an unmanned aircraft system that complies with all applicable State and federal regulations and shall provide for administration of the test. The Division may permit a person, including an agency of this State, an agency of a political subdivision of this State, an employer, or a private training facility, to administer the test developed pursuant to this subsection, provided the test is the same as that administered by the Division and complies with all applicable State and federal regulations.

(c) No agent or agency of the State, or agent or agency of a political subdivision of the State, may operate an unmanned aircraft system within the State without completion of the test set forth in subsection (b) of this section. (2014-100, s. 34.30(g).)

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§ 63-96. License required for commercial operation of unmanned aircraft systems.

- (a) No person shall operate an unmanned aircraft system, as defined in G.S. 15A-300.1, in this State for commercial purposes unless the person is in possession of a license issued by the Division valid for the unmanned aircraft system being operated. Application for such license shall be made in the manner provided by the Division. Unless suspended or revoked, the license shall be effective for a period to be established by the Division not exceeding eight years.
- (b) No person shall be issued a license under this section unless all of the following apply:
 - (1) The person is at least 18 years of age.
 - (2) The person possesses a valid drivers license issued by any state or territory of the United States or the District of Columbia.
 - (3) The person has passed the knowledge and skills test for operating an unmanned aircraft system as prescribed in G.S. 63-95(b).
 - (4) The person has satisfied all other applicable requirements of this Article or federal regulation.
- (c) A license to operate an unmanned aircraft system for commercial purposes shall not be issued to a person while the person's license to operate an unmanned aircraft system is suspended, revoked, or cancelled in any state.

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- 63-96 (d) The Division shall develop and administer a program to license operators of unmanned aircraft systems for commercial purposes. The program must include the following components:
 - (1) A system for classifying unmanned aircraft systems based on characteristics determined to be appropriate by the Division.
 - (2) A fee structure for licenses.
 - (3) A license application process.
 - (4) Technical guidance for complying with program requirements.
 - (5) Criteria under which the Division may suspend or revoke a license.
 - (6) Criteria under which the Division may waive licensure requirements for applicants currently holding a valid license to operate unmanned aircraft systems issued by another state or territory of the United States, the District of Columbia, or the United States.
 - (7) A designation of the geographic area within which a licensee shall be authorized to operate an unmanned aircraft system.
 - (8) Requirements pertaining to the collection, use, and retention of data by licensees obtained through the operation of unmanned aircraft systems, to be established in consultation with the State Chief Information Officer.
 - (9) Requirements for the marking of each unmanned aircraft system operated pursuant to a license issued under this section sufficient to permit identification of the owner of the system and the person licensed to operate it.
 - (10) A system for providing agencies that conduct other operations within regulated airspace with the identity and contact information of licensees and the geographic areas within which the licensee is permitted to operate an unmanned aircraft system.
- (e) A person who operates an unmanned aircraft system for commercial purposes other than as permitted under this section shall be guilty of a Class 1 misdemeanor.
- (f) The Division may issue rules and regulations to implement the provisions of this section. (2014-100, s. 34.30(g).)

23

CIVIL LIABILITY:

(e) Any person who is the subject of unwarranted surveillance, or whose photograph is taken in violation of the provisions of this section, shall have a civil cause of action against the person, entity, or State agency that conducts the surveillance or that uses an unmanned aircraft system to photograph for the purpose of publishing or otherwise disseminating the photograph. In lieu of actual damages, the person whose photograph is taken may elect to recover five thousand dollars (\$5,000) for each photograph or video that is published or otherwise disseminated, as well as reasonable costs and attorneys' fees and injunctive or other relief as determined by the court.

24

SOME NORTH CAROLINA UAV STATUTORY ISSUES:

- The term “surveillance” is not defined.
- What activities are considered “newsgathering” and what events are “newsworthy?” What about bloggers/citizen-journalists?
- Documenting private property by UAV is prohibited but what about Google? Does it violate the seclusion tort that one who “intentionally intrudes, physically or otherwise, upon the solitude or seclusion of another or his private affairs or concerns, is subject to the other for invasion of privacy, if the intrusion would be highly offensive to a reasonable person.” Restricting surveillance of private property in public view?

25

Policy lags behind events.

“It’s often that technology gets ahead of policy, particularly in this country, and this is an instance where that essentially has happened”;
 “Some of the technology—the capability, anyway—has gotten ahead of what the current air traffic system is able to accommodate directly.”



Director, University of Colorado Research and Engineering Center for Unmanned Vehicles, 2014 (after being forced to submit 60 separate applications for authorization to conduct storm research in the Great Plains of the U.S. – ultimately granted by the F.A.A., but limited to small grids of about 1000 km in northeast Colorado, northwest Kansas and southwest Nebraska)



26

What are the insurance industry’s concerns surrounding UAS use?

- 1) Privacy
- 2) Liability
 - A) Negligent Operation
 - B) Product Liability
- 3) Regulatory Violations
 - A) Federal
 - B) State
 - C) Local
- 4) Use in Claims Handling



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Privacy Concerns



- 1) Public Use of UAS
 - A) Police
 - B) Military
- 2) Commercial Use
 - A) Media
 - B) Retail
 - C) Agriculture

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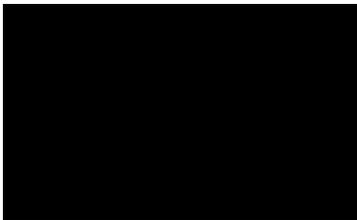
Privacy Concerns



- California Senator Diane Feinstein calls privacy concerns with drones "very, very major", warranting Federal Government regulation of "size and type for private use", with "some certification of the person that's going to operate it" and "some specific regulation of the kinds of uses it can be put to"
- State regulation outpaces Federal legislation at this point – Florida Freedom from Unwarranted Surveillance Act, Fla. Stat. §934.50; Illinois Freedom from Drone Surveillance Act, 725 Ill. Comp. Stat. §167/1-167/35; Idaho Code §21-213(2)(a); Texas Govt. Code §423.003, .004; Oregon Rev. Stat. §837.380
- Local governments are getting in on the fun as well – Charlottesville, VA, has adopted a Resolution banning the use of UAS, except in recognized law enforcement situations

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Liability Concerns



30

Regulatory Violations

- A) Federal
 - 1) Constitution
 - 2) Legislation
 - 3) Regulatory
- B) State
 - 1) Texas
 - 2) Florida
- C) Local
 - 1) Charlottesville, Virginia



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Use of UAS in Claims Handling: Recent Tornado Events in South-Central US



32

General Liability Policy

■ The typical CG 00 01 policy form, Coverage A, provides:

- Insuring Agreement: We will pay those sums that the insured becomes legally obligated to pay as damages because of "bodily injury" or "property damage" to which this insurance applies.



- Exclusions: This insurance does not apply to:...
- G. Aircraft, Auto or Watercraft:
 - "Bodily injury" or "property damage" arising out of the ownership, maintenance, use or entrustment to others of any aircraft, "auto" or watercraft owned or operated by or rented or loaned to any insured.

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Are UAS "aircraft"?

- 49 U.S.C. §40102(a)(6) defines "aircraft" to be "any contrivance invented, used, or designed to navigate or fly in the air."
- 14 C.F.R. Part 1, Section 1.1, defines "aircraft" as a "device that is used or intended to be used for flight in the air."
- **Huerta v. Pirker**, Docket CP-217, National Transportation Safety Board, decided March 6, 2014: FAA's definitions of "aircraft" arguably would include "a paper aircraft" or a "toy balsa wood glider" – clearly so overly broad and unreasonable in scope that the Administrative Judge referred to it as *reductio ad absurdum*. The FAA's \$10,000 fine assessed to Mr. Pirker for operating his UAS over the University of Virginia's campus for commercial photography was vacated and set aside; the ruling has been appealed by the FAA to the full NTSB, and the request has been made to stay this ruling, pending that appeal.

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CG 00 01 — Coverage B

- "Personal and advertising injury" is defined to mean "injury, including consequential "bodily injury," arising out of one or more of the following offenses...
 - C. The wrongful eviction from, wrongful entry into, or invasion of the right of private occupancy of a room, dwelling or premises that a person occupies, committed by or on behalf of its owner, landlord or lessor."

Exclusions: This insurance does not apply to...

A. Knowing Violation of Rights of Another: "Personal and advertising injury" caused by or at the direction of the insured with the knowledge that the act would violate the rights of another and would inflict "personal and advertising injury..."

D. Criminal Acts: "Personal and advertising injury" arising out of a criminal act committed by or at the direction of the insured....



35

FAA Modernization and Reform Act of 2012 (FMRA)



- Congressional mandate to the FAA to integrate Unmanned Aerial Systems (UAS) into the National Airspace System (NAS) by September 2015
- Requires the FAA to create a comprehensive plan and undertake rulemaking to address the integration of UAS into the NAS, and to create test sites for UAS development
- FAA published the First Edition of its "Integration of Civil Unmanned Aircraft Systems (UAS) in the National Airspace System (NAS) Roadmap" on November 7, 2013
- FAA designated six test sites around the US to conduct research into the certification and operational requirements for integrating drones safely into the national airspace in December 2013
- FAA's Notice of Proposed Rulemaking suggests regulations applicable to UAS, specifically addressing commercial applications, are expected imminently in 2014

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Potential Applications of UAS

Inspections:

- Oil and Gas Pipelines
- Solar Panels
- Agriculture (crop monitoring and management)
- Wildlife Census
- Critical Infrastructure
- Thermal Isolation Analysis
- Power Line/Cable
- Cooling Tower
- Algae Proliferation Detection
- Aerial Terrain Mapping (urban and non-urban environments)
- Gas burn-off stack tip
- Wind Turbine Blade
- Bridges
- Forestry Management and Research
- Historical Monitoring
- Aerial Terrain Mapping (industrial sites)
- Railway track bed
- Salt Water Infiltration
- Radiation Measurement & Monitoring



- Search and Rescue
- Real Estate Photography
- Surveillance
- Disaster Site Monitoring
- Volcanic Ash Cloud analysis
- Climate Monitoring
- Invasive species identification
- Volcano Monitoring



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Underwriting and Insuring Risk Appropriately



- The liability risks posed by Unmanned Aerial Systems were the stuff of science fiction only a few years ago – now they are very real and must be addressed proactively
- Coverage forms presently in use do not adequately address the variety of risks posed by UAS
- 60 Minutes piece "Drones Over America" on March 16, 2014, said the "genie's out of the bottle" – it's our job now to adequately assess and insure the risks posed as a result

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Questions?

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