

Insurance and the Rise of the Drones

CAS - Casualty Loss Reserve Seminar
Anthony Mormino, Senior Legal Counsel, September 20 2016



Table of Contents

- Drone Law and Regulation
- Drone Insurance Legal Issues
- Drone Insurance Coverage

DISCLAIMER

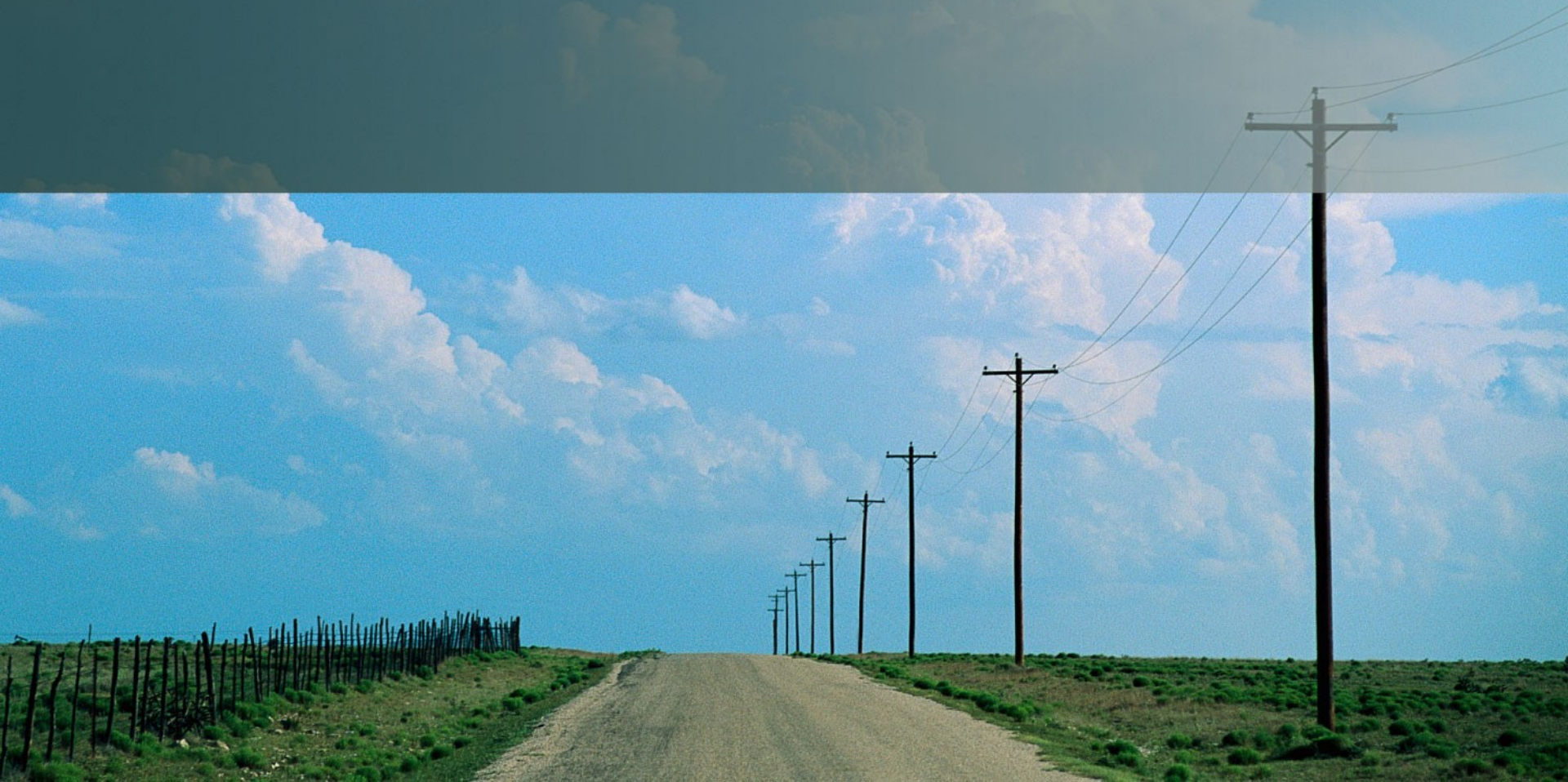
This product is meant for educational purposes only. Any resemblance to real persons, living or dead is purely coincidental. Void where prohibited. Some assembly required. List each check separately by bank number. Batteries not included. Contents may settle during shipment. Use only as directed. No other warranty expressed or implied. Do not use while operating a motor vehicle or heavy equipment. Postage will be paid by addressee. Subject to approval. This is not an offer to sell securities. Apply only to affected area. May be too intense for some viewers. Do not stamp. Use other side for additional listings. For recreational use only. Do not disturb. All models over 18 years of age. If condition persists, consult your physician. No user-serviceable parts inside. Freshest if eaten before date on carton. Subject to change without notice. Times approximate. Simulated picture. No postage necessary if mailed in the United States. Breaking seal constitutes acceptance of agreement. For off-road use only. As seen on TV. One size fits all. Many suitcases look alike. Contains a substantial amount of non-tobacco ingredients. Colors may, in time, fade. We have sent the forms which seem to be right for you. Slippery when wet. For office use only. Not affiliated with the American Red Cross. Drop in any mailbox. Edited for television. Keep cool; process promptly. Post office will not deliver without postage. List was current at time of printing. Return to sender, no forwarding order on file, unable to forward. Not responsible for direct, indirect, incidental or consequential damages resulting from any defect, error or failure to perform. At participating locations only. Not the Beatles. Penalty for private use. See label for sequence. Substantial penalty for early withdrawal. Do not write below this line. Falling rock. Lost ticket pays maximum rate. Your cancelled check is your receipt. Add toner. Place stamp here. Avoid contact with skin. Sanitized for your protection. Be sure each item is properly endorsed. Sign here without admitting guilt. Slightly higher west of the Mississippi. Employees and their families are not eligible. Beware of dog. Contestants have been briefed on some questions before the show. Limited time offer, call now to insure prompt delivery. You must be present to win. No passes accepted for this engagement. No purchase necessary. Processed at location stamped in code at top of carton. Shading within a garment may occur. Use only in well-ventilated area. Keep away from fire or flame. Replace with same type. Approved for veterans. Booths for two or more. Check here if tax deductible. Some equipment shown is optional. Price does not include taxes. No Canadian coins. Not recommended for children. Prerecorded for this time zone. Reproduction strictly prohibited. No solicitors. No alcohol, dogs, or horses. No anchovies unless otherwise specified. Restaurant package, not for resale. List at least two alternate dates. First pull up, then pull down. Call toll free before digging. Driver does not carry cash. Some of the trademarks mentioned in this product appear for identification purposes only. Record additional transactions on back of previous stub. Decision of judges is final. All rights reserved. No part of this document may be reproduced by any means without the written permission of your mom. No fur-bearing animals were harmed during the creation of this document. Allergy alert: may contain nutmeg, but we doubt it. Return for refund where applicable. Not recommended for persons with sugar-restricted diets. Batteries are included -- best of luck finding them. Proud sponsor of the 1934 penguin Olympic games at McMurdo Sound, Antarctica. May cause irritability, sleeplessness or warts after prolonged use. Contents under pressure. BHT added to preserve freshness. Caution: this product has caused some laboratory rats to rip through their cages, fly across the room and brutally murder hundreds of innocent people. Shake well before using. No vacuum tubes or other user-serviceable parts inside. Not to be combined with other radioisotopes except under the advice of a physician. Avoid prolonged exposure to ultraviolet light. The truth is out there. Use no hooks. Not intended for use by children or liberals under the age of five. Printed on unrecycled dead trees and we're proud of it. We hereby disclaim any responsibility for the currency or accuracy of the reported data and/ or the performance of the Investments in your portfolio, unless performance has exceeded your expectations.

Must be 18 years of age or older to proceed further. Enter at your own risk. Do not enter. Speed limit - 28.8 or higher. Stop here on red. Hostess will seat you. Trucks over 4 tons excluded. Void where prohibited by law. Some assembly required. This is a test of the emergency broadcast system - this is ONLY A TEST! List each check separately by bank number. Batteries not included. Contents may settle during shipment. Any resemblance to persons living or dead is purely coincidental. Use only as directed. We make no other warranties, expressed or implied. Do not use while operating a motor vehicle or heavy equipment. Postage will be paid by addressee. Postal service will not deliver mail without postage. No postage necessary if mailed in the United States. Subject to CAB approval. This is not an offer to sell securities. May be too intense for some viewers. See other side for additional listings. This product is meant for educational purposes only. For recreational use only. For office use only. For entertainment purposes only. Only 1 winner per household. Do not disturb. All models are over 18 years of age. Apply only to infected areas. If condition persists, consult your physician. Take two of these and call me in the morning. An apple a day keeps the doctor away. Now with new plastic applicator. High altitude directions-increase cook time by 10 minutes. This is not an attorney advertisement or referral service. No user-serviceable parts inside. Freshest if eaten before date on carton. Times are approximate. Do not disturb. Simulated picture. Please remain seated until the ride comes to a complete stop. The call you have made requires a 20 cent deposit. Breaking seal constitutes acceptance of agreement. For off-road use only. Do not block intersection. No trespassing. No stopping or standing. No parking when road is snow covered. As seen on TV. One size fits all. Many suitcases look alike. Contains a substantial amount of non-Tobacco ingredients. Colors may fade. Insert this end first. We have sent the forms which seem right for you. This page made from 100% recycled electrons. Slippery when wet. No substitutions allowed. For a limited time only. Void where prohibited, taxed, or otherwise restricted. Caveat emptor. Provided "as-is" without warranty. Reader assumes full responsibility. We are an equal opportunity employer. No shoes, no shirt, no service. Quantities are limited while supplies last. If any defects are discovered, do not attempt to fix them yourself, but return to an authorized service center. Read at your own risk. Parental advisory - explicit lyrics. Text may contain explicit materials some readers may find objectionable, parental guidance is advised. Keep away from sunlight. Keep away from pets and small children. Limit one per family please. No money down. No purchase necessary. Not affiliated with the American Red Cross. Drop in any mailbox. Edited for television. Keep cool. Process promptly. Return to sender, no forwarding order on file, unable to forward. Not responsible for direct, indirect, incidental or consequential damages resulting from any defect, error or failure to perform. At participating locations only. Sold by weight, not by volume. Penalty for private use. See label for sequence. This web site rated 'R' for Mature audiences. Do not take with alcohol. Sealed for your protection - do not use if safety seal is broken. Substantial penalty for early withdrawal. Do not write below this line. Falling rock. Use seatbelts even with airbags. Do not stop on railroad tracks. Lost ticket pays maximum rate. Your canceled check is your receipt. Add toner. Place stamp here. Avoid contact with skin. Sanitized for your protection. Employees must wash hands before returning to work. Caution, coffee is served HOT. Be sure each item is properly endorsed. Sign here without admitting guilt. Slightly higher west of the Mississippi. Employees and their families are not eligible. Beware of dog. Contestants have been briefed on some questions before the show. Filmed in front of a live, studio audience. Call now to ensure prompt delivery. Leave off the last S for savings. Calls may be monitored for quality assurance or training purposes. Please make your selections from the following menu. All representatives are still busy assisting other callers. Please stay on the line and a representative will be with you when they feel the need. Please call back during our normal business hours. You must be present to win. Winners need not be present to win. No passes accepted for this engagement. Do not use this product with a petroleum based lubricant. No animals were harmed in the preparation of this web site. Shading within a garment may occur. Use only in a well-ventilated area. Keep away from fire or flames. No soliciting. Bridge freezes before road surface. Stop, get ticket. Right lane must turn right. Left lane must turn left. Middle lane must make up their damn minds. This site runs on unleaded fuel only. Objects in mirror may be closer than they appear. Buses and carpools with two or more people only. No hitchhiking. Components may be hot. Silica gel - do not eat. Not to be used in conjunction with any other offer. Details on reverse side. Shoplifters will be prosecuted to the fullest extent of the law. We reserve the right to check all bags, coats & personal belongings upon exiting this page. Recycle. Fragile - handle with care. This side up. No jumping or diving. No running by the pool. Register has less than \$50 after dark. Driver does not carry cash. No swimming unless lifeguard is present. Swim at your own risk! Please do not wade in fountain. Guaranteed low prices. Not transferable. Actual size not shown. Contents under pressure. Do not intentionally inhale vapors. Replace with same type. Approved for veterans. Please be kind, rewind. Booths for two or more. Check here if tax deductible. Action figures sold separately. No preservatives added. Some equipment shown is optional. Price does not include tax. Do not remove this tag under penalty of law. Hand wash only - tumble dry on low heat. No Canadian coins. Short circuit may cause fire. No more than 3 transactions per car. Not recommended for small children. Prerecorded for this time zone. Reproduction strictly prohibited. No alcohol, dogs or horses. Not for resale. List at least two alternate dates. First pull up, then pull down. Insert Tab A into Slot B. Call toll free number before digging. This space intentionally left blank. Some of the trademarks mentioned in this product appear for identification purposes only. Record additional transactions on back of previous stub. Unix is a registered trademark of AT&T. Do not fold, spindle or mutilate. No transfers issued until the bus comes to a complete stop. Doors do not rebound or bounce back. Your mileage may vary. This article does not reflect the thoughts or opinions of either myself, my company, my friends, or my cat. Don't quote me on that. Don't quote me on anything. All rights reserved. Patent pending. For external use only. Avoid extreme temperatures. Avoid contact with eyes and skin. Do not puncture, incinerate, or store above 120 degrees Fahrenheit. Do not place near a magnetic source. Smoking could be hazardous to your health. The best safeguard, second only to abstinence, is the use of a condom. No salt, MSG, artificial color or flavoring added. If ingested, induce vomiting. Offer valid only at participating locations. Slightly higher west of the Rockies. Allow four to six weeks for delivery. You may distribute this article freely, but may not make a profit from it. Illustrations are slightly enlarged to show detail. If something offends you, lighten up, get a life and move on. This list was current at the time of printing. Terms are subject to change without notice. All decisions are final! This supersedes all previous notices.

Disclaimer does not cover misuse, accident, lightning, flood, tornado, tsunami, volcanic eruption, earthquake, hurricanes, or other acts of God, neglect, damage from improper use, incorrect line voltage, unauthorized use, unauthorized repair, improper installation, typos, broken antenna or marred cabinet, missing or altered serial numbers, electromagnetic radiation from nuclear blasts, sonic boom vibrations, customer adjustments that are not covered in this list, and incidents owing to an airplane crash, ship sinking or taking on water, motor vehicle crashing, dropping the item, falling rocks, leaky roof, broken glass, disk failure, accidental file deletions, mud slides, forest fire, hitting of a deer, milk coming out of your nose due to laughing while drinking, or projectiles, which can include, but are not limited to, arrows, bullet shots, BBs, shrapnel, lasers, napalm, torpedoes, emissions of X-rays, Alpha, Beta and Gamma rays, knives, stones, etc.

This notice supersedes all previous notices.

Drone Law & Regulation



Everything is new!

- Modern drones are new, operators are new, the law is new
- Most countries' aviation laws didn't originally contemplate public use of drones
- Law is catching up to technology
- Until recently US regulation of drones in state of flux
 - US drone regulations were complicated, some legal issues open or unclear
 - Change: FAA published final drone rules to become effective August 29, 2016



Drones are a federal affair

- US Supreme Court – US v. Causby - 1946
 - Airspace above US land is in the public domain
 - Flights over private land regulated by FAA
 - Flights over private land not a “taking” by the feds
- US federal government
 - Primary regulator of national airspace
 - All government, military and civilian purposes
 - **Federal Aviation Administration (FAA) 1958 – CAA, 1926**
 - “[t]here are no shades of gray in FAA regulations. Anyone who wants to fly an aircraft—manned or unmanned—in U.S. airspace needs some level of FAA approval”



FAA Enforcement: Details hundreds of reckless drone sightings

- Jan. 26, 2015 (3am) – Small drone *crashes* into tree on **White House lawn**
 - operator admits to Secret Service he lost control
 - Enter restricted airspace = violation of federal law
- Dec. 2015: **World Cup slalom race in Italy**, drone crashes inches from skier!
- March 18, 2016: Lufthansa flight from Frankfurt approaching Los Angeles International Airport reported a drone flew about **200 feet above the Airbus A380!**
- March 28, 2016: Drone flown within 10 feet of Boeing 777 night landing at Heathrow
- **2015 alone, FAA received reports of over 1,200 close encounters with planes**
 - Dozen cases drones flying near aircraft fighting CA wildfires forcing groundings
- **FAA worried about reckless drone operators! Could a drone bring down a pass. plane?**
- Tests: Virginia Tech's CRASH Lab performed simulation, 8-pound quad-copter rotor flown into 9-foot diameter engine fan found on Boeing 777 and Airbus A380. Result: in less than 1/200th of a second, drone's destruction decimated fan blades and created an engine failure! Worry: engine cowling can't contain damage!



FAA proposes new rules for commercial use, lowers the bar

- Old Rules: Section 333 exemption, drone operators required to have pilot's license!
- New rules: Published draft rules February 16, 2015; **effective August 29, 2016**
- Lead to new era in US in which UAS flights become common!
- Huerta: "Most flexible regime for small drones in the world"

TODAY



FAA's New Drone Rules: 14 CFR Part 107

*Effective August 29, 2016

Pilot Requirements:

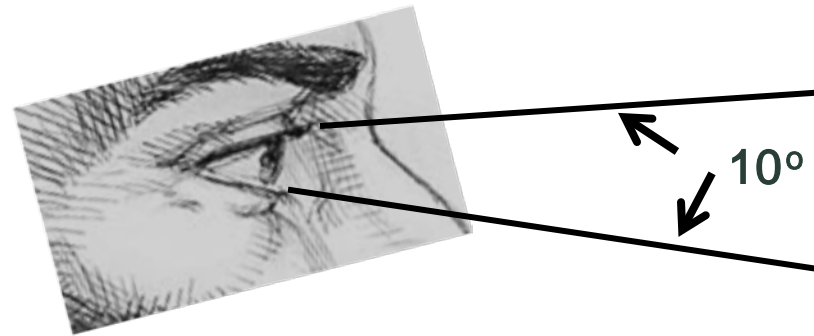
- Must be at least 16 years old
- Pay \$150, pass an aeronautical knowledge test at FAA-approved testing center
- Background check by the Transportation Safety Administration (TSA)

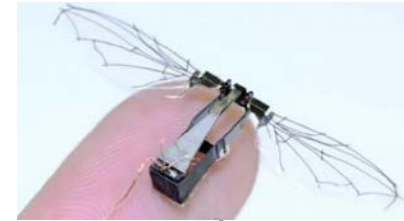
Aircraft Requirements:

- Less than 55 lbs.
- Must be registered

Operating Rules:

- Class G airspace:
 - "uncontrolled" airspace near the ground everywhere except controlled airspace around airports.
 - Flights near airports with a tower require prior permission, heliports too
- Must keep the aircraft in sight (visual line-of-sight)
- Must fly under 400 feet
- Must fly during the day
- Must fly at or below 100 mph
- Must yield right of way to manned aircraft
- Must NOT fly over people
- Must NOT fly from a moving vehicle





Waivers to Rule 107 Requirements

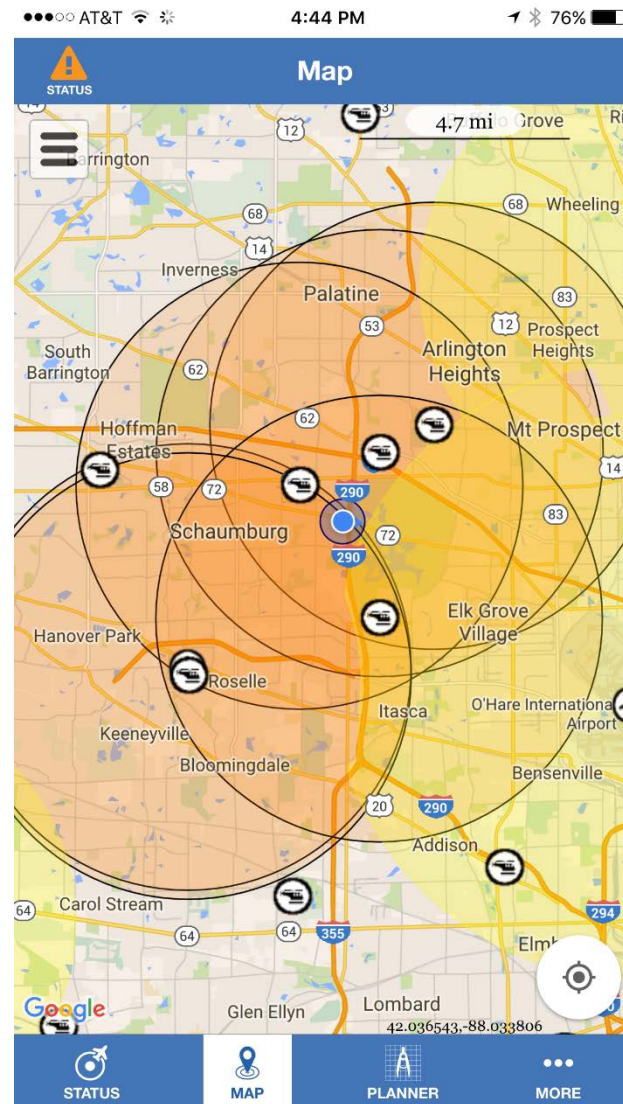
- Apply for a certificate of waiver, approve *if the FAA finds that the proposed operation can be performed safely*. Only certain elements of Rule 107 can be waived:
 - Operation from a moving vehicle or aircraft
 - *Daylight operation* - First day rules in effect, FAA already granted 76 exemptions, most of them to companies that want to fly drones at night.
 - Visual line of sight aircraft operation
 - Visual observer
 - Operation of multiple small unmanned aircraft systems
 - Operation over people
- **Drones more than 55 pounds at takeoff?** Use Section 333 exemption process (pilot's license required)
- **Government entities** or organizations (e.g. law enforcement agencies, public universities, state governments, local municipalities)
 - Fly in compliance with Rule 107, or
 - Obtain a blanket public Certificate of Waiver or Authorization (COA)

FAA Requires Registration of Recreational Drones

- FAA issued its requirement that recreational drone users must register aircraft with Department of Transportation:
 - Hobby drones never flown purchased **after** December 21, 2015, register before first flight
 - Hobby drones purchased & flown **before** December 21st, register by Feb 19, 2016
 - Non-hobby drones register using same hobby drone registration: March 31, 2016
- Registration on-line, \$5 for each non-hobby drone, \$5 for entire fleet of hobby drones, good for 3 years
- FAA issues registration number to be marked on drones' hulls
- Goal: forcing owners to register drones will make them think twice about responsibility to fly safely, could be held accountable for an accident.
- Penalty for failure to register: **FAA interim rule says may “result in civil penalties up to \$27,500. Criminal penalties for failure to register can include fines of up to \$250,000 and/or imprisonment up to 3 years.”**
 - Enforcement: FAA v. local police departments?

Flying a drone away from other aircraft can be complicated!

Schaumburg, Illinois



“airports” include actual airports, regional, municipal, & commercial + hospital and police “heliports”

Source: FAA iOS app, B4UFLY

FAA Fines drone startup \$2 million for unlicensed flights

- FAA reported on Oct 6, 2015 a fine for drone startup SkyPan International
 - Specializes in panoramic photographs of city skylines.
- Fine of \$1.9 million for allegedly conducting 65 drone flights
 - without the required authorization
 - near airports without control tower permission
 - lacked other gear required by FAA
- Largest civil penalty ever by FAA on a drone company
- Between March 2012 and December 2014, allegedly flew drones over NYC and Chicago to take aerial imagery.
- SkyPan filed for license (§333 exemption) in Dec. 2014, received April 2015
- *Retroactive* application, seems clear FAA getting tough, setting example!

Drone Regulation in Other Countries



- Do you need permission from Transport Canada to fly?
 - No permission required:
 - Recreational use + less than 35 kgs/77lbs
 - Commercial use + less than 25kgs/55lbs (exceptions where SFOC needed)
 - SFOC required:
 - Recreational use + more than 35kgs/77lbs
 - Commercial use + more than 25kgs/55lbs



- Mainland Europe operates under the jurisdiction of the European Aviation Safety Agency (EASA),
- Need certification in any situation
- Certification granted on a case-by-case basis
- Requests proposing flight in unpopulated areas usually approved



- Brazil a leading player in UAV use: Uses UAVs to patrol its borders
- No laws that cover civilian use



- No Civil Aviation Authority regulations on UAV users
- Government encourages UAV use
- UASs used to monitor drug trafficking and university research.



- UASs have been in use since 1980
- Mainly agricultural purposes –response to aging farming population
- Vast majority of crops are sprayed using unmanned helicopters and drones



- 20 kg (or 44 pounds) – considered “small unmanned aircraft”
- Need “Permit to Fly” classification, relatively easy to acquire
- If heavier or used for aerial photography requires a “Permit to Carry Out Aerial Work;” has tougher restrictions
- Pilot qualification, design & construction certificates.



- An “Unmanned Aircraft System” profit-seeking “air work,” has requirements including pilot certification, but relatively easy to meet
- “model aircraft, flown for sport & recreation and education,” which essentially are not regulated (except VFR required)

Drone Insurance Legal Issues



Insurability: Potential legal issues raised by use of drones

- **Violating FAA Rules**

- Fines can be very large – *Do insurers want to cover?*
- Injunction stopping use – *Do insurers want to pay for lost income?*
- Ex. § 336 FMRA requires recreational drone operators give notice to airports within 5 miles of use. Will every model aircraft user comply every time?



- **Physical damage and bodily injury**

- What if your drone crashes into property or people on the ground? – *Most want this coverage*
- State tort laws may impose liability, negligence and strict liability
- BUT drone strikes a passenger plane? Loss could be in the tens of millions! – *How much coverage?*

- **Nuisance**

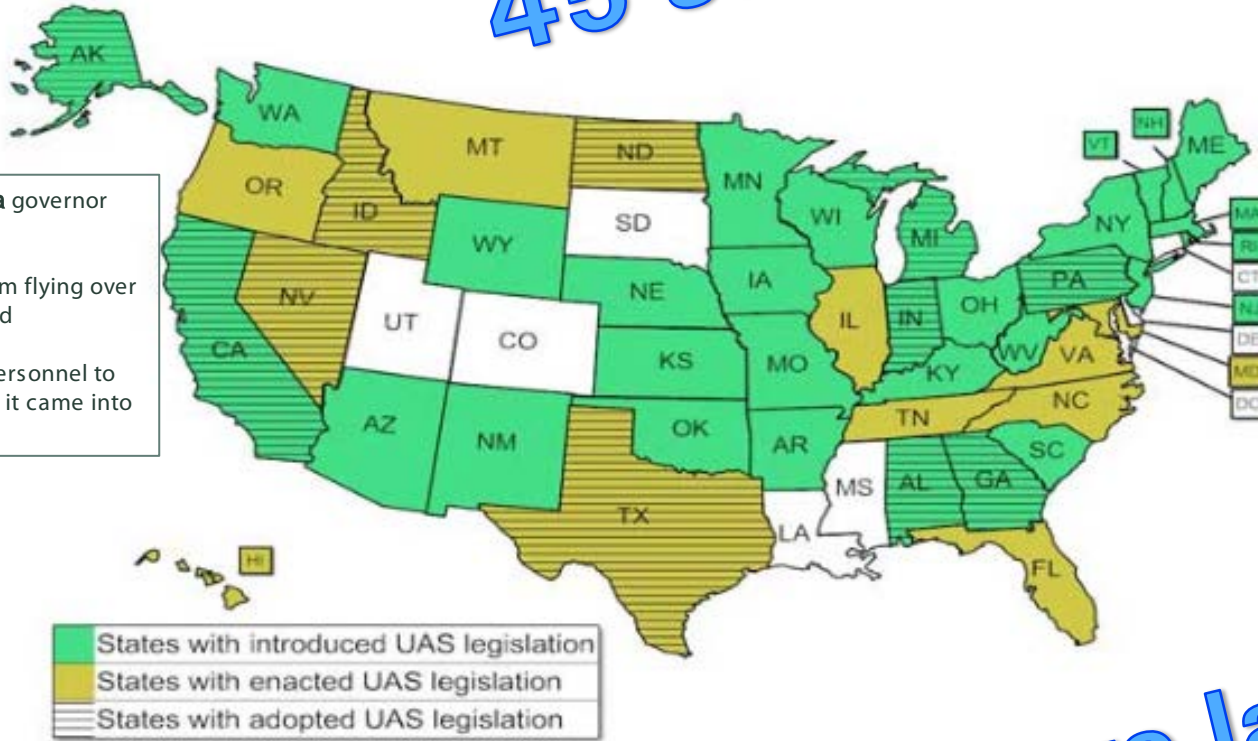
- Depending on drone size, noise or kicking up dust onto neighbor's property
- Interfere in neighbor's use of property = lawsuit for nuisance – *Do insurers want to cover this tort?*

- **Trespass**

- State laws prohibiting drone use over private property without owner consent, private cause of action *Do insurers want to cover this tort?*
- Some states prohibit use of drone to capture of image with intent of surveillance
- Property boundaries may sometimes be difficult to notice for a drone operator

As of 2016

45 states, 168 bills



26 states have laws

Insurability: More potential legal issues in use of drones

- **Invasion of privacy**
 - By private individuals:
 - Some states passed laws forbidding photos or video by drones (TX, ID, MO) *Do insurers want to cover this tort?*
 - Reasonable expectation of privacy then publication?
 - Abuse by law enforcement/gov't:
 - US 4th Amendment, unreasonable searches - *Do insurers want to cover this tort?*
 - Some US states require police to obtain search warrant to gather criminal evidence by drone
 - New draft US federal privacy rules introduced Feb 2015 for gov't & private use
- **Stalking and harassment**
 - Drones could be used by criminal voyeur or stalker and in harassment by paparazzi
- **Wiretap laws**
 - Drone could be used to intercept oral communications
 - Commercial microphones can record sound up to 300 feet away
 - Could violate federal (criminal) wire tap statutes
- **In sum: Simple to operate, but quietly create complicated legal problems for users and their insurance companies**



Trespass: Where does private property end and public airspace begin? *The Causby Case – a “govt taking”*

- Guidance: US. v. Causby (1946)
- Causby family lived on property, raised chickens
- US military rented neighboring property as landing strip for large aircraft, landing planes flew directly over Causby property
 - Closest flight was 83 feet over property: 67 ft. above home, 18 feet above trees
 - Causby family constantly subjected to noise and light, day and night
 - Had to give up chicken business (too many died, spooked, flew into walls)
 - Causby argued government “took” his property, owed family \$ for the taking
 - Government claimed flights in public airspace, no trespass so no taking
- Court ruled for Causby: government *effectively* took over land, reduced value: nuisance (interfere enjoyment, use) = gov’t trespassed, interfered substantially with Causby use of land
 - Court: “landowner owns at least as much of the space above ground as he can occupy or use in connection with the land”
 - Owns even if doesn’t use in traditional sense, does use for purpose of light and air (wind)
 - Invasion of that space by air isn’t traditional trespass but is in “the same categories as invasions of the surface.”
 - Same result: Guith v. Consumers Power (Mich. 1940)(built towers that interfered w/ airport)



Trespass: Where does private property end and public airspace begin? *Boggs v. Meredith*

- **July 2015** – Kentucky: W. Meredith man shoots drone hovering allegedly above backyard
 - Meredith arrested, criminal mischief, Judge dismisses saying had right to shoot drone for trespass and invasion of privacy
 - Drone operator J. Boggs Court said drone was 200 feet up, pictures of landscape only
 - **Argues no trespass because was in public airspace**
 - **No invasion of privacy because no expectation when outside, seen from air**
 - **Shooting unlawful violation of federal law, is felony to shoot down an “aircraft”**
 - **Who is right?** Where did Meredith’s vertical property end and public domain begin? In which space was Bogg’s drone at 200 feet up?
 - If 200 feet is in public domain, no trespass, Meredith no right to shoot, **Boggs wins**
 - If 200 feet up was part of Meredith’s property, Bogg’s trespassed, **Meredith wins**
 - Federal district court will decide
 - *Boggs v. Meredith*, W. Dist. KY, Jan 2016 (3:16-cv-00006)



Trespass: Where does private property end and public airspace begin? *Unclear today!*

- FAA: lowest aircraft (MSA) can fly is 500 ft above ground uncongested areas, BELOW 500 ft is “Class G airspace” *not controlled by FAA; so 500 ft is delineation public & private property!*
- Causby court: Class G is in public domain BUT doesn’t include “immediate reaches above the land.”
 - Implication: 83 feet was top of Causby’s private property, government effectively trespassed, took Causby land
 - Note: 83 feet based on *Causby’s specific use of surface of land and how much of vertical space used or could use*; different facts could lead to different result/height!
 - Open question: Who owns airspace between 84 feet and 500 feet?
 - Tension: Between public right to fly aircraft in NAS & private property rights
- FAA’s Likely Position: Has power to regulate airspace above surface or *at least at 500 ft down to top of private property* (84 feet & up in Causby)
 - Authority: Class G airspace starts at surface or top of private property to 500 feet; top of property depends on use
 - 1. Congress gave FAA power to regulate “the airspace necessary to ensure safety of aircraft and efficient use of airspace.” 49 USC § 40103(b)(i) = **FAA can regulate airspace at any altitude!**
 - 2. Congress gave FAA authority to issue regulations, standards, methods that FAA “finds necessary in air commerce and national security.” 49 USC § 44701 (a) = **FAA can regulate below 500 feet!**
 - 3. Congress gave FAA authority to issue rules on “flight of aircraft for navigating, protecting, identifying aircraft” and “protecting individuals and property on the ground” 49 USC § 40103(b)(2) = **FAA can regulate non-navigable air**
- **My opinion: Causby rule will prevail favoring landowners BUT vertical ceiling to vary based on use, resulting in detailed air maps perhaps to municipal level.**

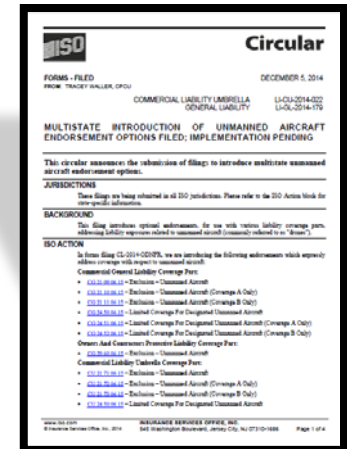


Drone Insurance Trends



ISO drone endorsements effective June 1, 2015 - Generally

- Endorsements specifically to deal with coverage of risks associated with drones, provide “underwriting flexibility” in addressing drone related risks
- Endorsements to
 - Commercial Liability Umbrella policies, and
 - General Liability Policies
- 12 exclusions
- 6 provisions for “limited coverage”
- New term: drone = “unmanned aircraft” = aircraft not designed to be controlled directly by a person from within or on the aircraft
- Options
 - (1) **Exclude liability** not precluded by policy with respect to unmanned aircraft, or
 - (2) An exception to exclusions for UA **specifically designated** in a schedule to the policy BUT ONLY FOR **designated operations or projects**
- Interesting: No requirement that drone operator have FAA permission!



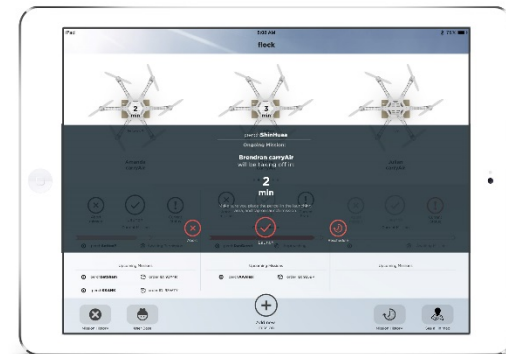


Insurance Underwriting Information

- Qualification of pilot(s)
 - Appropriate FAA licenses?
- Extent of training and experience of the drone's operator?
- Will there be more than one operator?
- Intended use of the drone? Where will you operate it?
- Storage of drone
- Is drone purchased for insured's own use
- Original cost new with copy of receipt and evidence of date purchased
- Manufacturer, model #, serial #
- Description of how drone will be used by insured, specific projects?
- Will the drone carry a payload? What type and what is the max weight?
- Plans in case you lose communication with the drone?

Insurance coverage under drone hull policies

- No credible rates because the exposure is so new
- What deductible to charge: dollar amount or percent of value
- What perils are covered or not covered and other issues:
 - damage to drone from collision in air?
 - damage to drone from take-off or landing?
 - theft?
 - bigger exposure for high schools
 - damage arising out of an inexperienced or unqualified operator?
 - replacement cost or ACV
 - how do drones depreciate in value and what is market values for used drones
 - what is cost to repair a drone and who does the repair?
- Time element coverages?
 - Does insured use drone to perform work for others for a fee?



Who is selling drone insurance coverage in the US?

- Most major insurance companies have been waiting for the FAA to issue its drone rules for commercial use
 - Many commercial users do not have the FAA's required authorization
 - **Aviation brokers:** Aerial Pak, Avalon Risk Management, Aviation Insurance, Aviation Insurance Resources, AVION Insurance, Driessen Assuadeuren, Harpenau Insurance Agency, Kinney Pike Insurance, SkySmith, Skyvuze, Sutton James Incorporated, Transport Risk Management, UAV Protect, Unmanned Risk Management, Verify.
 - **Insurers:** AIG, Global Aerospace, Lloyd's
 - New rules: FAA Expects 600,000 Commercial Drones In Air Within A Year
 - FAA: 7 million in the sky by 2020
 - Commercial insurance policy for a DJI Phantom covering liability up to \$1 million can run as little as \$800-\$1000 a year.
- = Market for insurance approximately \$600M 2016-2017, & by 2020 \$7 billion.**

Takeaways



- **Fully leveraged, drone use in underwriting and claims has big benefits**
 - Cut audit or adjustment costs – send multiple drones to multiple risks, not people
 - Reduce risks to people – no ladders on roof tops, no adjusters in dangerous areas
 - Provide better data and insight – get big picture aerial views, infra-red data
- **Drone insurance = completely new market for insurance products**
 - Potential new source of business
 - Currently no limits on which type of insurers can write, so open to all
 - Sell as stand alone
 - Sell as add on to existing products
- **Drone highways and Drones as a Service**
- **Drones present big potential risks but also big potential rewards!**

Questions?





Legal notice

©2016 Swiss Re. All rights reserved. You are not permitted to create any modifications or derivative works of this presentation or to use it for commercial or other public purposes without the prior written permission of Swiss Re.

The information and opinions contained in the presentation are provided as at the date of the presentation and are subject to change without notice. Although the information used was taken from reliable sources, Swiss Re does not accept any responsibility for the accuracy or comprehensiveness of the details given. All liability for the accuracy and completeness thereof or for any damage or loss resulting from the use of the information contained in this presentation is expressly excluded. Under no circumstances shall Swiss Re or its Group companies be liable for any financial or consequential loss relating to this presentation.