

**Thursday, September 24, 2015
Des Moines, IA**

9:30–10:30 a.m.

DRONES AND INSURANCE

Presented by



**Millicent W. Workman, CPCU, CRIS, MLIS, AFIS
Director of Training and Education
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The growing use of drones is poised to transform agriculture. Drones are on the verge of helping growers oversee millions of acres because agriculture operations span large distances yet are mostly free of privacy and safety concerns that arise with other types of drone use. Still at question is what rules the Federal Aviation Administration will put forth. This session will explore the definition of a drone and the applications in agriculture. The risks, the extent of insurance coverage, and underwriting challenges will be discussed in depth.

Notes

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Millicent W. Workman, CPCU, CRIS, MLIS, is a research analyst with primary editorial responsibility for *Practical Risk Management*. She is also the director of IRMI's training and education programs, which include its seminars, webinars, insurance CE programs, and annual IRMI Construction Risk Conference.

Ms. Workman has an extensive background in risk management and the insurance industry. In addition to consulting on risk management issues since 1986, she served as director of risk financing for Baptist Memorial Health Care Corporation, one of the largest not-for-profit health-care systems in the nation, and as director of risk management for Mueller Industries, Inc., a leading fabricator of copper, brass, aluminum, and plastic products. She was also formerly director of corporate risk management for Belz Enterprises, a real estate development and hotel company based in Memphis, Tennessee.

Ms. Workman graduated magna cum laude, first in class, from Union University, with a B.S. in biology. She received her Chartered Property Casualty Underwriter (CPCU) designation in 1975 and the Associate in Underwriting designation in 1979.

Ms. Workman is a nationally recognized speaker on risk management and business continuation issues, having spoken for groups such as CPCU Society, RIMS, ASSE, and the National Coordinating Council of Emergency Managers. She was cofounder of the Business Emergency Preparedness Council and the Memphis Disaster Recovery Business Alliance, coalitions of business and government for business continuation planning. Ms. Workman served as the first non-alum chair of the Ole Miss Insurance Advisory Board and was named Outstanding Supporter of the Insurance and Risk Management Program in 2006.

Ms. Workman is active in the CPCU Society. She is a past president and treasurer of the Society's Memphis Chapter, served as national president of the CPCU Society in 2005–2006, and is currently chair of the CPCU Loman Education Foundation. She has also served as a regional vice president, national director, and chair of a number of Society committees and task forces. She is active with RIMS as past president of the Memphis Chapter and the Ole Miss Insurance Advisory Board.

Business Insurance magazine named Ms. Workman "Risk Manager of the Year" in 1992, one of the "100 Leading Women in the Insurance Industry" in 2000, and one of 80 "Women to Watch" in 2006. She was inducted into The Robert E. Musto Tennessee Insurance Hall of Fame in August 2002.

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Drones and Insurance

An Overview of Drone Technology, Regulatory Climate and Hurdles,
Potential New Risk Exposures, and Insurance Coverage Options

What Is a Drone?

- Unmanned aerial vehicle (UAV)
- Unmanned aircraft systems (UAS)
- Unmanned vehicle system (UVS)

What Is a Drone?

- Federal Aviation Administration (FAA) defines an unmanned aircraft (UA) as “an aircraft operated without the possibility of direct human intervention from within or on the aircraft.”
(Sec. 331(8) of Public Law 112–95)
- Devices that are flown remotely by a person not occupying the aircraft

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Nano Drones

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Styles of Drones

Fixed Wing

Rotary Blade

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Benefits of Drones

- Smaller
- Generally easier to operate, particularly in hazardous environments
- Lower maintenance and running costs than conventional aircraft

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Potential Uses for Drones

- **Public services**

- **Search and rescue:** finding missing persons including hikers, backpackers, mountain climbers, plane crash sites, missing sea vessels, etc.
- **Law enforcement:** facilitating police chases, monitoring borders, locating illegal crops
- **Disaster recovery:** evaluating damages, delivery of emergency supplies
- **Firefighting:** locating hot spots and assessing burn patterns
- **Transportation:** inspection of bridges and overpasses, monitoring traffic hot spots
- **Inspection:** roof and other building inspections as required by applicable permits
- **Security:** maintaining safety at public events or in public spaces

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Potential Uses for Drones

- **Construction**

- Monitoring and documenting project progress and conditions
- Inspection of building envelope on multistory buildings
- Accident investigation and documentation

- **Energy**

- Inspection of pipelines, rigs, utility lines, and other infrastructure
- Oil spill assessment

- **Real estate**

- Assistance with site surveys and appraisals
- Marketing of properties to the public

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Potential Uses for Drones

- **Communications**
 - Inspection of cell towers
 - Roving wireless hotspots, especially in remote areas
- **News and entertainment**
 - Obtaining local traffic and news footage for television broadcast
 - Film production, especially landscape, chase, and action scenes
 - Providing footage for live events, such as sports broadcasts and concerts
- **Photography**
 - Obtaining aerial photographs for clients (e.g., weddings, landowners, tourism departments, corporate clients, etc.) or for sale to the public (e.g., landscapes)

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Potential Uses for Drones

- **Retail delivery**
 - Same-day delivery of purchases within a specified radius
- **Research**
 - Collection of data: weather, sea patterns, glacier movement, flood mapping, migration patterns, etc.
 - Location and inspection of archaeological sites
- **Insurance**
 - Underwriting—for example, assessing site risks
 - Claims—for example, inspection of roofs and other elevated property, assessment of damages in disaster locations

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Potential Uses for Drones in Agriculture

- Measurement and inspection of fields—for example, assessing crop yields, identifying watering issues
- Evaluating soil conditions
- Precision agriculture—that is, tailoring use of pesticides, herbicides, fertilizer, and other applications based on how much is needed at a specific point in a field
- Monitoring crop health—for example, identifying insect problems
- Monitoring livestock and tracking down cattle that have wandered off
- Studying how yields are affected by changes in topography
- Gathering evidence for crop insurance claims

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Projected Annual Sales of Unmanned Vehicles

Source: The Association of Unmanned Vehicle Systems International. 12

Regulation of Drones

- Current aviation regulations contemplate two types of aircraft
 - Manned aircraft such as passenger and cargo planes
 - Model (hobby) aircraft used for recreational purposes
- In 2013, Congress directed FAA to come up with drone regulations by September 2015
- FAA released draft proposal in February, has also been issuing guidance on a case-by-case basis for entities interested in using drones
 - Comment period through April 24

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Regulation of Drones

- Top priority is maintaining safety for manned aircraft and people on the ground
- Privacy issues are also high on the list of concerns
- Apply to drones weighing less than 55 pounds
- Regulations fall in three categories
 - Operational requirements
 - Operator certification and responsibilities
 - Aircraft requirements
- Insurance is not required by FAA regulations

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Regulation of Drones

- Some draft rules were singled out for particular criticism
 - Requirement that pilots remain in visual contact with their drones at all times
 - Height restriction that limits the crafts to flying no more than 500 feet above ground
 - Stipulation that drones cannot be flown “over people not involved in the operation”

One area conspicuously missing from the model regulations is maintenance.

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Regulation of Drones

- Until final regulations are approved (2016–2017), commercial operations require an exemption
 - Exemptions are company/application specific
 - Not for entire industry for that application
 - Not for entire company for all applications

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Exemptions to Rule 333

- Exemptions to Rule 333 of the FAA Modernization Act must cite
 - Exact provisions for which an exception is being requested
 - Pilot certification
 - Exterior aircraft lighting
 - Size of exterior ownership markings
 - Onboard operator manuals
 - And ... as many as 10–12 total rules
 - How, where, and what type of drones will be used

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Exemptions to Rule 333 (cont'd)

- Plan for protecting the safety and privacy of the public as well as those involved in the operation is also required.
 - The draft regulations issued by the FAA in 2015 provide a blueprint for addressing these concerns—for example:
 - Limiting operations to daylight hours
 - Maximum speed of 100 mph
 - Avoid populated areas and maintain visual contact
 - Failsafe technology (auto hover, auto land, return to launch, geo-fencing)

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Exemptions

- Uses that have already been granted an exemption
 - Aerial production for entertainment purposes (film and television)
 - Crop scouting (agriculture)
 - Measurement and inspection of fields (agriculture)
 - Aerial footage of buildings (real estate)
 - Inspection of flare stacks (oil/petrochemical)
 - Aerial surveys to oversee maintenance in oil field (oil/gas)
 - Monitoring construction site

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Regulation Outside of the United States

- As federal regulators struggle to define how drones can be used for commercial purposes, many countries around the world have loose guidelines for how these devices can be used.
- Drones are being used for agriculture in many countries including Canada, Australia, Japan, and Brazil.

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State Laws

- Several states have passed or are considering laws relating to usage of drones.
 - Most of these laws focus on how drones may be used by law enforcement.
 - Some states also make it unlawful to use a drone to conduct surveillance, harass, or take video or photographs of a person without their knowledge for purposes of distribution.
- The National Conference of State Legislatures publishes a summary of state laws relating to the use of UAs.

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Risks: What Ifs

- Damage to hull
- Third-party bodily injury (BI)/property damage (PD) (on the ground as well as collision with other aircraft)
- Violation of another's rights (trespass, invasion of privacy)
- Data risks

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Risks: What Ifs

- Damage to the UA due to collision with an object (including the ground)
- Damage to another aircraft (manned or unmanned) due to collision or interference by the drone
- Injury to passengers of an aircraft due to interference by the drone
- Injury or damage to people or property on the ground
- Violation of another's rights when flying over private property
- Damage to the property on which operations are being performed
- Unauthorized use or collection of data

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Insuring Drones

- Comprehensive general liability (CGL) policy
- Aviation policy (provides BOTH hull and liability coverage)
- Drone insurance policy

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Damage to Hull

- Damage to one's own drone is a first-party property exposure
- Standard first-party policies such as the building and personal property policy
 - Provides no coverage for damage to drones
- Aviation policies
 - Provide both hull and liability coverages; hull coverage responds to damage to the drone itself
- Self-insure exposure

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CGL

- Two coverage parts
 - Coverage A: BI/PD liability
 - Coverage B: personal and advertising injury
- Standard CGL includes aircraft and watercraft exclusion for Coverage A
 - Removes coverage for liability arising out of the ownership, maintenance, or use of aircraft or watercraft that is owned, operated by, rented to, or loaned to an insured
 - No distinction made between manned and unmanned aircraft
 - Preserves coverage for the insured's vicarious liability arising out of someone else's use of an aircraft or watercraft
- Coverage B has no specific aircraft exclusion

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CGL: Basic Coverage Form

	Coverage A* (BI/PD)	Coverage B* (P&AI)
Direct Liability: Ownership, maintenance or use of any UA, including entrustment of such aircraft to others	✘	✔
Vicarious Liability: Another party's use of an UA (not owned, rented or borrowed by the insured) on behalf of the insured	✔	✔
Contractual Liability: Liability assumed by the insured in an "insured contract" for losses arising out of the ownership, maintenance or use of an UA.	✔	✘
*Subject to the other terms and provisions of the policy.		

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Options for Coverage under CGL

- Add exception to aircraft exclusion for UA
 - Insurers seem fairly willing to provide coverage for this exposure for incidental uses at little to no extra cost ... so far
- Insurance Services Office, Inc. (ISO), endorsements to CGL and umbrella policies

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ISO Endorsements

- Treat BI and PD (Coverage A) and/or personal and advertising injury (Coverage B) separately, offering three options
 - Allow insurer to insure both exposures
 - Allow insurer to exclude both exposures
 - Allow insurer to insure either and exclude the other
- The UA must be scheduled and site of operations must be designated
- Allow for a separate aggregate limit for UA liability

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Aviation Policy

- Provides BOTH hull and liability coverage
- Underwriters very open to writing coverage for UA
- Limits of up to \$10 million are readily available; up to \$20 million in the excess market
- Premium of roughly \$1,500 for first million of liability insurance
- Cost is roughly 8–10 percent for hull coverage for a mid-level drone (\$3,000–5,000)

(Note: aviation policies typically do not include coverage for personal injury exposures such as trespass or invasion of privacy in the standard form but can usually be modified to do so.)

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Drone Policies

- Coverage available includes legal liability, together with physical damage for the owner/operator and product liability for the service provider
- While some insurers have developed their own policy forms for drone coverage, others are adapting their airline liability policy forms to drones
- Only about 21 insurers offer policies
 - Hampered by a lack of historical and analytical data
 - Concern about lack of international, regional, and local regulations for the safe operation of UAVs (despite FAA plans)
 - Concern about lack of certification of UAV pilot

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Underwriting Challenges

- Unknown quantity in terms of repair costs and loss ratios
- Size of potential liabilities
- Insuring the value of the whole asset
- Privacy issues
- Products liability issues

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Best Practices

- Prepare a **mission plan**
- Conduct a **pre-flight inspection**
- Use a **visual observer (VO)**
- Hold a **debriefing**
- Keep a **flight log**
- Follow a **strict maintenance schedule**

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Summary of FAA Draft Regulations for Commercial Use of Small UAs*

Operational Requirements

- UA stays in the visual line-of-sight of the operator or VO at all times (a visual observer is allowed but not required). Operator must be capable of seeing the UA without unaided vision other than corrective lenses.
- No person may act as an operator or VO for more than one UA operation at a time.
- Maximum airspeed of 100 mph (87 knots).
- Maximum altitude of 500 feet above ground level.
- Operations in Class B, C, D, and E airspace require permission from the appropriate air traffic controller. No UA operations are allowed in Class A airspace.
- Operator must yield right-of-way to other aircraft.
- UA cannot be operated over any persons not directly involved in the operation.
- Minimum weather visibility of three miles from control station.
- Operations must start after official time of local sunrise and end before official time of local sunset.
- No careless or reckless operations.
- A person may not operate a small UA if he or she knows or has reason to know of any physical or mental condition that would interfere with the safe operation of the device.

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Summary of FAA Draft Regulations for Commercial Use of Small UAs*

Operator Certification and Responsibilities

- Pass an initial aeronautical knowledge test at an FAA-approved knowledge testing center.
- Be vetted by the Transportation Security Administration.
- Obtain a UA operator certificate with a small UAS rating (like existing pilot airman certificates, the certificate will never expire).
- Pass a recurrent aeronautical knowledge test every 24 months.
- Be at least 17 years old.
- Make available to the FAA, upon request, the small UAS for inspection or testing, and any associated documents/records required to be kept under the proposed rule.
- Report an accident to the FAA within 10 days of any operation that results in injury or property damage.
- Conduct a preflight inspection, to include specific aircraft and control station systems checks, to ensure the small UAS is safe for operation.

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Summary of FAA Draft Regulations for Commercial Use of Small UAs*

Aircraft Requirements

- UA must weigh less than 55 lbs.
- Must be maintained in condition for safe operation (and verified during preflight inspection as described previously)
- Must be registered as an aircraft
- Must have appropriate aircraft markings, including registration number and nationality. If aircraft is too small to display markings in standard size, markings should be displayed in the largest practicable manner.

*For purposes of applying the regulations, the FAA defines "unmanned aircraft" as "an aircraft operated without the possibility of direct human intervention from within or on the aircraft." (Sec. 331(8) of Public Law 112-95.)

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ISO Endorsements

Endorsement	Number	Effect
Exclusion—Unmanned Aircraft	CG 21 09	Removes all coverage for liability arising out of the ownership, maintenance, use, or entrustment to others of any UA, as well as negligence or other wrongdoing in the hiring, employment, supervision or training of others regarding the use of any UA.
Exclusion—Unmanned Aircraft (Coverage A Only)	CG 21 10	Removes all coverage for bodily injury and property damage arising out of the ownership, maintenance, use, or entrustment to others of any UA, as well as negligence or other wrongdoing in the hiring, employment, supervision or training of others regarding the use of any UA.
Exclusion—Unmanned Aircraft (Coverage B Only)	CG 21 11	Removes all coverage for personal and advertising injury arising out of the ownership, maintenance, use, or entrustment to others of any UA, as well as negligence or other wrongdoing in the hiring, employment, supervision or training of others regarding the use of any UA.

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ISO Endorsements (cont'd)

Endorsement	Number	Effect
Exclusion—Unmanned Aircraft (Coverage B Only)	CG 21 11	Removes all coverage for personal and advertising injury arising out of the ownership, maintenance, use, or entrustment to others of any UA, as well as negligence or other wrongdoing in the hiring, employment, supervision or training of others regarding the use of any UA.
Limited Coverage for Designated Unmanned Aircraft	CG 24 50	Allows coverage for bodily injury and property damage as well as personal and advertising injury in connection with designated UA used in conjunction with scheduled operations or projects. Also allows for an optional UA aggregate limit (subject to the policy's other aggregate limits).
Limited Coverage for Designated Unmanned Aircraft (Coverage A Only)	CG 24 51	Allows coverage for bodily injury and property damage in connection with designated UA used in conjunction with scheduled operations or projects. Also allows for an optional UA aggregate limit (subject to other applicable policy limits).

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ISO Endorsements (cont'd)

Endorsement	Number	Effect
Limited Coverage for Designated Unmanned Aircraft (Coverage B Only)	CG 24 52	Allows coverage for personal and advertising injury in connection with designated UA used in conjunction with scheduled operations or projects. Also allows for an optional UA aggregate limit (subject to other applicable policy limits).