MARSH

SOLUTIONS...DEFINED, DESIGNED, AND DELIVERED.

Unmanned Aircraft Systems (UAS)

September 19, 2017

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Regulatory Environment

Regulatory Environment

- General FAA Regulatory Structure
- Regulations apply based upon UAV/UAS size and type of use
- Commercial – § 333 or Part 107; Recreational – COA or § 336; Public/Military – always COA

	Commercial	**Recreational**	**Military/public use**
Over 55 lbs.	FMRA § 333 Exemption/Approval - Who, what, when, where, how - Everything contained within the 4 corners of the doc - Streamlined version of COA/SAC	Certificate of Authorization/Special Airworthiness Certificate	Certificate of Authorization
Under 55 lbs.	FAA Part 107 Regulations	FMRA § 336 Requirements	Certificate of Authorization

Regulatory Environment
FAA Part 107 Regulations

- Applies to “small” UAV/UASs
- “Line of sight” requirement
- Operational (airspace and parameters) and pilot licensure requirements
- Penalties

Regulatory Environment
FRMA – Section 333 and Section 336

- Section 333 is a case-by-case approval for large UAV/UAS to perform commercial operations
  - Seeks to provide competitive advantage and safety while discouraging illegal operations
  - All operating parameters for the specific UAV/UAS are contained within the FAA's approval letter
- Section 336 – Rules governing small recreational UAV/UAS ("model aircraft")
  - Strict usage requirement; community based standards; ATC clearance and non-interference with manned aircraft

Regulatory Environment
UAV/UAS/UAS in 2017

- More than 850,000 UAS have been registered with the FAA (est. 2,000 requests per day)
- More than 60,000 licensed remote pilots / 1.3 million licensed by 2020
- $100 billion global industry within 5 year?
  - Precision Agriculture: $1.4bn
  - Construction: $1.3bn
  - Insurance claims: $473mn
  - Infrastructure inspection: $206m
  - Journalism: $120mn
  - Real estate: $68mn
  - Cinematography: $14mn
  - Delivery?

Goldman Sachs report 2016

Regulatory Environment
UAV/UAS/UAS By The Numbers

- Industry shakeout widely predicted
- Specialization, fewer companies
- Nation’s First BVLOS UAS test operations approved (ND)
- Exploration transitioning to Implementation
- Public Acceptance
- Insurance will be a Priority

Insurance – UAV/UAS Policies and Coverage

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- Aviation Insurance Coverage for:
  - Manufacturers
  - Primary Operator
  - For Hire/Contracting

Insurance – UAV/UAS Policies and Coverage
What Can Be Covered?

- Physical Damage (1st party) – drone/payload/equipment
- Third Party Liability
- War Risks – (hijack/malicious damage)
- Products
- GL coverages
- Invasion of Privacy
- Additional coverages (non-owned)
- Worldwide
- Open pilot language
- Any use

Insurance – UAV/UAS Policies and Coverage
Manufacturers: Products/Completed Operations Liability

- Standard definition:
  - "Insurer agrees to pay on behalf of the Insured all sums which the Insured shall become legally obligated to pay as damages because of Bodily Injury and/or Property Damage. . . caused by an Occurrence and arising out of the Aerospace Products Hazard."

Insurance – UAV/UAS Policies and Coverage
Primary Operator: Hull and Liability

- Standard Coverages:
  - Hull, Hull War, Liability, Third Party War Liability
- Ancillary Coverages:
  - Non-Owned, Premises, Sale of Aircraft Parts and Services, automatic attachment, automatic increase in value, Personal Injury (limited privacy)

Insurance – UAV/UAS Policies and Coverage
For Hire/Contracting: Non-Owned Liability

- Coverage that sits excess and above the Primary Operator's policy.
- Coverage Triggers:
  - There must be an occurrence that results in BI and/or PD
  - Found legally liable for the occurrence
  - Primary operator's policy has been exhausted or is void
- For Operators, Commercial Only; Military not contemplated
- Policy Forms: H&L, NOL, Products, endorsements to other forms

Insurance – UAV/UAS Policies and Coverage
Limits of Liability

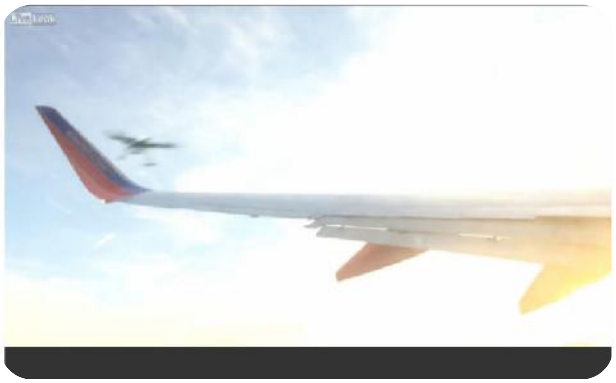
- Insurance Limits depends on two factors:
  - Insured's appetite for risk
  - Underwriter's level of comfort with exposure
- Lower limits - $1M, $2M and $5M most common purchased. Typically the smaller commercial operator.
- Other limits such as $10M or $25M can be made available
- Higher limits - $50M and up are still primarily reserved for larger, well established organizations with professional flight departments (ex. Media, Entertainment, Telecom, Agriculture, Construction, Energy and government agencies)

Insurance – UAV/UAS Policies and Coverage
Potential High-Exposure Claim Scenarios

- Invasion of Privacy
  - Intentional act – something published in a public forum
  - May face challenges to coverage because of intentionality vs. “accident” from perspective of the Insured
- Hiring of a third party vendor for UAV/UAS operations
  - Issues re: operator having insufficient limits available to support contractual obligations
  - Non-owned coverage would sit in excess above Operator’s policy
- Cyber Attack
  - Data collected “hacked” from unit.
  - Separate policy required
  - Business Interruption

Insurance – UAV/UAS Policies and Coverage
Potential High-Exposure Claim Scenarios

- UAV/UAS collision w/ passenger airliner causing major disaster
  - Allegations of product defect in control software
  - Catastrophic Bodily Injury/Wrongful Death/Property Damage
- UAV/UAS tasked with inspecting critical infrastructure (e.g., suspension bridge) fails to capture images of critical structural damage; fails to prevent catastrophic failure
  - Allegations of product defect in imaging software, components
  - Catastrophic Bodily Injury/Wrongful Death/Property Damage



Insurance – UAV/UAS Policies and Coverage
Recent Incidences

- Near misses with commercial airlines:

Aircraft involved	Location	Date
Alitalia Boeing 777 – unknown quadcopter	JFK – New York	Mar 2013
UAL Boeing 767 – helicopter drone	Dulles - Dallas	Jun 2014
Police helicopter – DJI Phantom 2 (two arrested)	Manhattan, NY	July 2014
Gulfstream – UAV/UAS within 100 ft	Atlanta, GA	Dec 2015
Lufthansa A380- UAV/UAS within 200 ft	LAX – Los Angeles	Mar 2016

- Small UAV/UAS owners are unlikely to have adequate insurance coverage.

Best Practices

Best Practices

- Be savvy: Understand the market, current uses, and future uses
- Be aware: Identify intersections of risk exposure – e.g. cyber risk
- Be prudent: Prudent product design with new uses and non-traditional operation in mind
- Be covered: Ensure complete insurance coverages

Best Practices
What have been the main challenges for insurers?

- Volume
- New technology, unknown risk
- Under-developed regulation, eager users
- Lack of flight management / standards
- Claims
  - Repairs
  - OEM support

Best Practices
Looking Towards the Future

- Beyond Visual Line Of Sight
- Integration into the National Air System
- Package / Internet Delivery a reality?
- Automation