Unmanned Aerial Systems (UAS) and the Law: A Look at the Regulations and Integration of UAS into the National Airspace System

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FAA’s Historical Regulation of UAS

Source: https://b-townyouth.co.uk/things-to-do/flying-model-aircraft/
Subject: MODEL AIRCRAFT OPERATING STANDARDS

1. PURPOSE. This advisory circular outlines, and encourages voluntary compliance with, safety standards for model aircraft operators.

2. BACKGROUND. Modelers, generally, are concerned about safety and do exercise good judgement when flying model aircraft. However, model aircraft can at times pose a hazard to full-scale aircraft in flight and to persons and property on the surface. Compliance with the following standards will help reduce the potential for that hazard and create a good neighbor environment with affected communities and airspace users.
3. OPERATING STANDARDS.

a. Select an operating site that is of sufficient distance from populated areas. The selected site should be away from noise sensitive areas such as parks, schools, hospitals, churches, etc.

b. Do not operate model aircraft in the presence of spectators until the aircraft is successfully flight tested and proven airworthy.

c. Do not fly model aircraft higher than 400 feet above the surface. When flying aircraft within 3 miles of an airport, notify the airport operator, or when an air traffic facility is located at the airport, notify the control tower, or flight service station.

d. Give right of way to, and avoid flying in the proximity of, full-scale aircraft. Use observers to help if possible.

e. Do not hesitate to ask for assistance from any airport traffic control tower or flight service station concerning compliance with these standards.

R. J. VAN VUREN
Director, Air Traffic Service
Notice 07-01

- FAA “reasserts” control over all UAS:
  1. Operating as public aircraft – Certificate of Waiver or Authorization (COA)
  2. Operating as civil aircraft – Special Airworthiness Certificate
  3. Flown for hobby or recreational purposes – AC 91-57
Pirker Decision – November 18, 2014

1. October 17, 2011 – Pirker operated Styrofoam glider on University of Virginia campus (4 pounds, 7 ounces)

2. April 13, 2012 - FAA issues Notice of Proposed Assessment - civil penalty of $10,000


4. March 6, 2014 – ALJ Patrick Geraghty struck down the fine and stated that Notice 07-01 was ineffective due to lack of proper notice provided

5. November 18, 2014 – NTSB overturned March 6 ruling and asserts that “any device used for flight in the air” is an “aircraft.”
Congress and President Obama explicitly commanded the FAA to allow UAS to integrate into the NAS including an ambitious timeframe to do so.

1. Commercial Use – Section 333 directed the FAA to allow safe use of UAS if public is NAS, national security and the public are not in danger due to:
   a. UAS size, weight, speed and operational capacity;
   b. Proximity of use to airports and populated areas; and
   c. UAS is operated within visual line of sight

2. Recreational Use – not to be hindered by FAA regulations
Section 333

• Demonstrate that UAS operation did not need to abide by FARs:
  1. Manuals carried onboard
  2. Size of markings
  3. Registration of the “aircraft” with the FAA including $5 check and pink carbon-copy application
  4. Time frame for approval 6 months, realistically 9 – 18 months, and specific model of UAS applied for was usually surpassed by new technology, requiring an amendment to the § 333
FAA’s Modern Regulation of UAS

Source: https://www.popsci.com/tags/commercial-drones
Small Unmanned Aircraft Rule - FAA Part 107

1. Enacted August 29, 2016
2. Legislation specific to UAS
3. For commercial UAS operation, operator must obtain remote pilot certificate
   a. Take and pass aeronautical knowledge test at FAA test center
   b. Re-test every 2 years
4. Section 333 process only applicable for UAS greater than 55 lbs.
Part 107 Elements

Operational Restrictions
1. 55 lbs or less
2. Visual line of sight only
3. May not operate over people
4. 30 minutes +/- sunrise and sunset
5. Visual observer not required
6. Maximum airspeed of 100 mph (87 knots)
7. Maximum altitude of 400 feet above ground level or within 400 feet of a structure
8. Operations in Class G airspace are allowed without ATC permission
9. Operator must pass initial aeronautical knowledge test and remain current and be vetted by TSA

Waivable Restrictions via Part 107 Waiver Process
1. Nighttime operations
2. Beyond visual line of sight operations
3. Operations over people not in the flight crew
4. Operating from a moving vehicle or aircraft
Registration Requirements

- Small unmanned aircraft weighing more than .55 pounds and less than 55 pounds must be registered and marked with a registration number
- Registration fee $5.00
- Affix registration number to aircraft
  - Permanent marker
  - Label
  - Engraving
  - Must be readily accessible and legible
- Failure to register can result in severe economic penalties
- Even if flying in own yard, must register if UAS weighs more than .55 pounds
FAA Reauthorization Act of 2018

- Reauthorized the FAA for 5 years

1. Longest appropriation timeframe for the FAA’s Airport Improvement Program has since 1982 inception
2. Passed Senate with 92-6 vote showing broad support for UAS integration into the NAS
3. Nighttime and beyond line-of-sight operations are to be allowed
4. All users, commercial and recreational, to pass Aeronautical Knowledge and Safety Test
Integration of UAS into NAS

Source: Star Tribune
Projected UAS Impact on U.S. Economy

- Current UAS global marketing: $11.3 billion
- 2015 – 2025:
  - UAS expected to contribute $82.1 billion to economy through agriculture, public safety, and other activities
- 103,776 new jobs will be created

Source - AUVSI Economic Report
Farming Uses

Checking crops’ viability

Source:
http://tywkiwdbi.blogspot.com/2014/05/

Source:
Farming Uses

Pesticide Application

Source: https://www.geospatialworld.net/article/drones-and-robots-future-agriculture/

Source: https://www.technologyreview.com/s/526491/agricultural-drones/
Farming Uses

Monitoring – pests, moisture and erosion


Power Line Inspection


Source: https://www.linkedin.com/pulse/utilities-deploy-drones-inspect-distribution-transmission-michael-dim/

Source: http://texasdronesprofessionals.com/
Real Estate Uses

Source: http://www.airnest.com/blog/2016/4/12/how-drones-are-revolutionizing-real-estate

Flare Stack Inspection

Source:

Source:
Bridge Inspection

Source: http://statescoop.com/ohio-testing-drones-for-bridge-inspections

Source: http://smartsensys.com/suave/

Source: https://mntransportationresearch.org/2015/09/28/using-drones-to-inspect-bridges/
Turbine Blade Inspection


Source: https://motherboard.vice.com/en_us/article/wind-turbine-drone-inspection-will-be-a-6-billion-industry-in-under-10-years

Oil & Gas Inspection

Source: https://www.intellisystem.it/en/oil-gas-drone-uas-uav-inspection-monitoring/

Environmental Monitoring

Source: https://www.nytimes.com/2014/04/22/business/energy-environment/drones-are-becoming-energys-new-roustabouts.html?_r=0

Source: http://sociable.co/technology/how-drone-technology-sows-restoration/
Emergency Uses


Source: http://www.mirror.co.uk/news/technology-science/technology/ffirefighters-blame-drones-putting-lives-6108779
Amazon’s Delivery Drones

Prime Air – a delivery system from Amazon designed to safely get packages to customers in 30 minutes or less using UAS

Congress has given the FAA until October 5, 2019 to update existing regulations to allow for the carriage of property by commercial operators

Source: http://fortune.com/2017/03/13/amazon-delivery-drones-sxsw/
Existing Minnesota Law

• None currently enacted specifically for UAS

• MSA § 360.12

Subd. 4: The owner of every aircraft which is operated over lands or waters (of Minnesota) is absolutely liable for injury or damage to persons or property on the land or water beneath...whether such owner was negligent or not...

• MSA § 360.59 Aircraft Registration and Listing for Taxation

Subd. 10: Certificate of Insurance

(a) Every owner of aircraft in this state...shall supply any information...that the aircraft...is covered by an insurance policy...

* Apply to UAS?
MN Registration Requirements

- Registration not required for UAS solely for recreational use
- UAS for commercial purposes must be registered with MnDOT Office Aeronautics
- Registration process is the same for all other aircraft
- All aircraft registered in Minnesota required to have insurance
- Minimum coverage is $300,000 per occurrence
Proactive Steps for Airports

• Develop a plan for UAS intrusion – call local law enforcement and inform the Minneapolis Air Route Traffic Control Center

• Instruct all personnel during training and integrate reporting into emergency and security plans

• Have a script ready and integrated into your emergency and security plans
Contact Information

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