

Law, Regulations and Liability in the
Operation of Commercially Available Unmanned Aerial Systems
and the Implications for Personal Privacy

- I. A brief history of UAS
- II. Current systems
 - A. Military
 - 1) Intelligence, Surveillance, Reconnaissance
 - 2) Weaponization
 - 3) Autonomous Operations
 - B. Civilian
 - 1) Hobbyist/enthusiast
 - a. Photography
 - b. Film
 - c. Entertainment
 - 2) Commercial
 - 3) Academic
 - 4) Law Enforcement
 - a. Surveillance
 - b. Armed threats
 - c. SAR
 - C. Proliferation – from
 - D. Risks
 - 1) Bodily injury and property damage on the ground
 - 2) Airborne collisions: FAA study shows collision of a B-737 with a commonly available commercial drone weighing 2.7 – 4 lbs. at 250 kts. “may result in a damage severity level of medium-high on the horizontal and vertical stabilizer, medium on the wing leading edge and medium-low on the windshield.” (<https://aviationweek.com/faa-study-drones-more-dangerous-birds>; November 28, 2017).
 - 3) Terrorism: “Some terrorist groups overseas are using battlefield experiences to pursue new technologies and tactics, such as unmanned aerial systems and chemical agents that could be used outside the conflict zones. Additionally, terrorists continue to target commercial aviation and air cargo, including with concealed explosives.” DHS National Terrorism Advisory System Bulletin (Nov. 9, 2017).
- III. Specifications and Performance of Commercial UAS – is UAS operation inherently dangerous?
 - A. Size
 - B. Weight (for commercial UAV) 300 grams (10 ozs) to 55 lbs.
 - C. Altitude (up to 400 ft. AGL)
 - D. Speed (up to 100 mph)
 - E. Power (battery)
 - F. Endurance
 - G. Range
 - H. Control

- 1) Pilot in Command Qualifications
 - 2) Methods
 - 3) Lack of System Redundancy
 - 4) Fail Safe
- IV. Commercial uses for UAS
- A. Common commercial uses could include:
 - 1) Data collection – Electro-Optical, Digital, Infrared, Spectroscopy
 - 2) Infrastructure inspection (highways, roads, bridges, pipelines)
 - 3) Insurance Claims (storm damage, crop damage, environmental damage) – approved by the FAA in 2015
 - 4) Delivery
 - 5) News
 - 6) Surveillance
 - 7) Communications relay
 - B. How is the data collected and transmitted?
 - C. How secure is the data?
 - 1) In August 2017 US Army banned use of DJI UAVs including DJI electrical components, software, flight computers, cameras, radios, batteries, speed controllers, GPS units, and handheld control stations, due to issues regarding cyber security.
 - 2) In 2017 hackers penetrated and manipulated DJI GPS software
 - 3) In May 2017, DJI directed users to register UAVs with DJI
 - D. Management of UAV Fleet and Operations by Large Commercial Users
 - 1) Inventory of UAVs and maintenance status.
 - 2) Off aircraft (cloud based) autonomous navigation and flight paths
 - 3) Pilot qualifications, performance and currency
- V. The Legal Framework
- A. Federal – Regulatory Framework (FAA)
 - 1) 2015 Registration Rule
 - a. FAA “may not promulgate any rule or regulation regarding a model aircraft.” FAA Modernization and Reform Act of 2012, Pub. L. No. 112-95, 126 Stat. 11, 49 U.S.C. § 40101.
 - b. But in late 2015, the FAA required owners of small commercial UAVs to register with the FAA by providing the owner’s name, physical, mailing and email address, assessed a fee of \$5.00, established compliance deadlines, required the use of a unique numerical identifier issued by the FAA, established civil and criminal penalties for non-compliance which included 3 years in jail. Registration and Marking Requirements for Small Unmanned Aircraft, 80 Fed. Reg. 78,594 (Dec. 16, 2015).
 - c. Registration requirement ruled unlawful. Taylor v. Huerta, 856 F.3d 1089, 1093 (D.C. Cir. 2017).
 - 2) Current – 14 CFR Part 107 (effective August 29, 2016) permits routine use of UAS in national airspace. Level of oversight related to risk of operations; regulation of UAS represents a low barrier to entry

- a. Operations: a single aircraft no larger than 55 pounds at takeoff may be operated in daylight (including civil twilight) and weather permitting 3 nm. visibility, within visual line of sight (the operator has an unobstructed view of the aircraft using natural vision without vision-enhancing devices), at altitude of up to 400 AGL and speeds of 100 mph, but not over persons or under a covered structure; all without requiring a pilot’s license.
 - b. Remote pilot in command: be 16 years of age or older, obtain certification as a remote pilot in command with a small UAS rating by passing an initial aeronautical knowledge test, be security vetted by TSA.
 - c. Part 107 does not address privacy issues.
- 3) In Development or Proposed
- a. Testing beyond line of sight operation in the national airspace system to support autonomous operations.
 - 1. Detect and avoid systems for cooperative targets
 - 2. Airborne radar for non-cooperative targets
 - b. Evaluating Low Altitude Authorization and Notification Capability systems “to provide near real-time processing of airspace authorization requests for unmanned aircraft (UAS) operators nationwide. The system is designed to automatically approve most requests to operate in specific areas of airspace below designated altitudes.” (<https://www.faa.gov/news/update>, November 20, 2017).
 - c. Proposed regulation for remote identification and tracking of UAVs.
 - d. FAA teaming with industry and 10 state, municipal and academic institutions to participate in the UAS Integration Pilot Program to develop new regulations and the proposed UAS Traffic Management System.
- 4) Compliance and Penalties
- a. Enforcement Actions.
- B. Utah – Chapter 14 of Title 72 of the Utah Code
- 2) General
- a. “Unmanned aircraft” means an aircraft that is: (a) capable of sustaining flight; and (b) operated with no possible direct human intervention from on or within the aircraft. Utah Code Ann. § 72-14-102(4) (West)
 - b. “Unmanned aircraft system” means the entire system used to operate an unmanned aircraft, including: (a) the unmanned aircraft, including payload; (b) communications equipment; (c) navigation equipment; (d) controllers; (e) support equipment; and (f) autopilot functionality. Utah Code Ann. § 72-14-102(5) (West)
 - c. With limited exceptions, the statute preempts local laws, ordinances or rules “governing the private use of an unmanned aircraft...” Utah Code Ann. § 72-14-103 (West).

- d. Chapter 14 does not apply to “a person or business entity: (1) using an unmanned aircraft for legitimate educational or business purposes; and (2) operating the unmanned aircraft system in a manner consistent with applicable Federal Aviation Administration rules, exemptions, or other authorizations.” Utah Code Ann. § 72-14-104 (West).
- 3) Use by Law Enforcement
- a. “Civilian” is a person who is not a law enforcement officer. Utah Code Ann. § 72-14-202(1) (West).
 - b. Law enforcement “may not obtain, receive, or use data acquired through an unmanned aircraft system” without a warrant or “in accordance with judicially recognized exceptions to warrant requirements.” There are exceptions for search and rescue, for “purposes unrelated to a criminal investigation,” and if certain data comes from a nongovernment actor. Utah Code Ann. § 72-14-203 (West).
 - c. Law enforcement is required to destroy the data from the UAS “as soon as reasonably possible” after collecting the data, but within the retention schedule established by GRAMA. Id.
 - d. Law enforcement is not required to destroy the data from a UAS if needed for the “success” of an operation against a “target,” if a court orders the data not to be destroyed, the data was collected inadvertently but “appears to pertain to the commission of a crime,” the data relates to an emergency and use of the data would “assist in remedying the emergency,” or if the data was from a UAS flown over “public lands outside of municipal boundaries.” Utah Code Ann. § 72-14-204 (West).
 - e. Law enforcement must keep documents showing the use of the UAS, the data acquired and the “person from whom the data was received.” Utah Code Ann. § 72-14-205 (West).
- 4) Unlawful Use of Unmanned Aircraft.
- a. With some exceptions for government or DOD, a civilian cannot fly a UAV with a firearm or other weapon attached. Utah Code Ann. § 72-14-303 (West).
 - b. Violation punishable as a Class B misdemeanor. Id.
- 5) Safe Use of UAV. Utah Code Ann. § 72-14-403 (West).
- a. Individual flying a UAV for recreational purposes must comply with 14 CFR Part 101, Subpart E – Special Rule for Model Aircraft.
 - i. Maintain Visual Line of Sight;
 - ii. Know where the UAV is;
 - iii. Know attitude, altitude and heading of UAV;
 - iv. Clear for other traffic or hazards;
 - v. Without endangering “the life or property of another person.”

- b. Obtain prior ATC authorization to fly in certain controlled airspace.
 - c. Fly without interfering with “operations and traffic patterns at any airport, heliport, or seaplane base.”
 - d. Flight from a railway platform or station, or less than 50 feet within “a public transit fixed guideway right-of-way; and directly above any overhead electric lines used to power a public transit rail vehicle” is prohibited.
 - e. Operators must comply with NOTAMs.
 - f. Cannot fly higher than 400 feet AGL.
- 6) Penalties for Unsafe Use.
- a. “An individual who violates (section 14-14-403) is liable for any damages that may result from the violation.” Utah Code Ann. § 72-14-403(8) (emphasis added).
 - b. Graduated criminal penalties – warning – infraction – class B misdemeanor. Id.
 - c. Flights over or near a military base could result in seizure or destruction of the UAV. (August 7, 2017). Ninety-five “drone incidents” occurred near the Pentagon in November - December 2017.

VI. Right to Privacy

A. Sphere of reasonable expectations of privacy – increasing or decreasing?

- 1) “The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no warrants shall issue, but upon probable cause, supported by oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized.” U.S. Const. amend. IV.
- 2) “The ‘basic purpose of this Amendment,’ our cases have recognized, ‘is to safeguard the privacy and security of individuals against arbitrary invasions by governmental officials.’” Carpenter v. United States, No. 16-402, 2018 WL 3073916 at *5 (U.S. 2018) *quoting* Camara v. Municipal Court of City and County of San Francisco, 387 U.S. 523, 528 (1967).
- 3) “For the Fourth Amendment protects people, not places. What a person knowingly exposes to the public, even in his own home or office, is not a subject of Fourth Amendment protection...But what he seeks to preserve as private, even in an area accessible to the public, may be constitutionally protected.” Katz v. United States, 389 U.S. 347, 351 (1967).
- 4) There is no legitimate expectation of privacy when a person voluntarily gives information to a third person. Smith v. Maryland, 442 U.S. 735 (1979).
- 5) Tracking a person via a concealed beeper augmented with aerial surveillance did not invade the person’s reasonable expectation of privacy and did not violate the Fourth Amendment. United States v. Knotts, 460 U.S. 276 (1983).

- 6) Warrantless use of a thermal imaging device to detect heat from a suspect's home violated the Fourth Amendment. Kyllo v. United States, 533 U.S. 27 (2001).
 - 7) Covert attachment of a GPS to a suspect's car – authorized by a warrant – violated the Fourth Amendment. United States v. Jones, 565 U.S. 400 (2012).
 - 8) Use of cell site location information obtained under the Stored Communications Act to track the location of a suspect violated the suspect's reasonable expectation of privacy and thus the Fourth Amendment. Carpenter, *supra* at *9-11.
- B. Technological “Progress” - Automation and Artificial Intelligence
- C. “Voluntary” Relinquishment
- 1) Mobile phones, social media
 - 2) Travel by air (TSA)
 - 3) Travel by automobile (data collection, storage and download of vehicle kinetics; GPS tracking)
- D. “Involuntary” Relinquishment via UAV operations
- 1) Methods
 - a. Physical overflight of property or residence
 - b. Airborne surveillance of property or residence from outside physical boundary of the property or residence
 - 2) Property rights:
 - a. Privacy and quiet enjoyment
 - b. Extents of rights in airspace above your property?
 - i. “It is ancient doctrine that at common law ownership of the land extended to the periphery of the universe...But that doctrine has no place in the modern world. The air is a public highway, as Congress has declared.” United States v. Causby, 328 U.S. 256, 260–61 (1946) (suggesting the limits are somewhere between 83 and 500 ft. AGL).
 - ii. “We have said that the airspace is a public highway. Yet it is obvious that if the landowner is to have full enjoyment of the land, he must have exclusive control of the immediate reaches of the enveloping atmosphere. Otherwise buildings could not be erected, trees could not be planted, and even fences could not be run. The principle is recognized when the law gives a remedy in case overhanging structures are erected on adjoining land. The landowner owns at least as much of the space above the ground as he can occupy or use in connection with the land. The fact that he does not occupy it in a physical sense - by the erection of buildings and the like—is not material.” Id. at 264.
 - 3) Legal Remedies
 - a. Trespass: a physical invasion of the land. Walker Drug Co., Inc. v. La Sal Oil Co., 972 P.2d 1238, 1243 (Utah 1998)

- b. Nuisance: “a claim of private nuisance requires proof of a substantial and unreasonable interference with the private use and enjoyment of another’s land.” Id.
- c. Invasion of Privacy: a common law claim
 - i. Reasonable expectation of privacy?
 - ii. Is the action highly offensive to a reasonable person?
- 4) Civil liability of UAV operator
 - i. How does a property owner identify the UAV operator?
 - ii. Damages?
- 5) Self-help
 - a. Instances from various states where property owners or municipal authorities have brought down UAVs (Arkansas, Kentucky, New Jersey, New York, Tennessee, Texas)
 - b. Physical destruction of UAV (shoot it down)
 - i. A felony under federal law to shoot down a UAV. 18 U.S.C. § 32 (“Whoever willfully... destroys, disables, or wrecks any aircraft in the special aircraft jurisdiction of the United States or any civil aircraft used, operated, or employed in interstate, overseas, or foreign air commerce” with the intent to do so may be fined or imprisoned for up to 20 years.)
 - ii. No private cause of action under Title 18. Boggs v. Meredith, Civ. No. 3:16-CV-00006-TBR, 2017 WL 1088093 (W. D. Ken. Mar. 21, 2017).
 - iii. Default to state law and proportionality
 - iv. Liability of property owner if UAV crashes and causes bodily injury or property damage
 - c. Electronic countermeasures – same, plus FCC
- 6) Technology – “electronic fence” around your property?

VII. Questions and Demonstration