Is 2019 the Year of the Drone?

The Aviation Symposium Webinar Series

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New Rulemakings – Where Are We in the Process?

Notice and Comment Rulemaking

- "Notice of Proposed Rulemaking" in the Federal Register
- Public comment period – usually 60 days
  - Agency creates a public docket for the rulemaking
  - Agency seeks clear explanation of commenters' views, including basis for any assumptions and empirical evidence or test data where relevant
  - Specific alternative language can be helpful
  - Agency either proceeds with rulemaking it proposed, issues a new or modified proposal, or withdraws proposal
- When agency issues Final Rule, it addresses public comments
- Additional review performed by Office of Management and Budget's (OMB) Office of Information and Regulatory Affairs (OIRA)
- Final Rule published in Federal Register

New Rulemakings – Where Are We in the Process?

Advance Notice and Comment Rulemaking

- Advanced Notice of Proposed Rulemaking (ANPRM) sometimes issued, prior to NPRM.
- ANPRMs used for variety of reasons, including:
- To obtain comments on how to address an issue before making a proposal.
- To identify wide range of alternatives and then narrow choices before making proposal.
- To obtain additional information on subject before making proposal
- No action required after ANPRM.
- Based on information gained, usually results in an NPRM after an extended time for study.

Safe and Secure Operation of Unmanned Aircraft Systems

- Advance Notice of Proposed Rulemaking Published in the Federal Register on February 15, 2019.
- Comments close on April 15, 2019.
- Stand Off Distances from People and Objects
  - Currently no prescriptive horizontal/vertical distances
  - Performance based rule based on assessment of the risk (107.19(c)) and no flight directly over bystanders
  - Canada, UK and EASA all have stand off distances
  - Should there be distances?
  - What should they be?
  - What is the cost of using a specific distance?
  - What additional training would be needed?

Safe and Secure Operation of Unmanned Aircraft Systems

Altitude, Airspeed, Performance

- Speeds over 170 MPH are possible with current aircraft
- Altitudes of over 10,000 feet and climb rates of 6,000 FPM are possible
- Part 107 limit is 100 mph and 400’ AGL, plus additional margin for structures
- Speed limit is based on hazard of loss of positive control and injury potential
- Altitude limit is based on needs of the airspace system
- What additional performance limitations should there be?
- What classes of UAS should they be applied to?
- Is there a national security threat that should be considered
- What is the cost of further limiting speed and altitude?

Safe and Secure Operation of Unmanned Aircraft Systems

Unmanned Traffic Management

- FAA and NASA are jointly tasked with developing an implementation plan for UTM services
- No UTM required under Part 107
- What would the safety benefit be for UTM?
- What types of UAS should be covered?
- How much information should be publicly available?
- What are the one-time and recurring costs of the system?
- What are the costs for UAS operators?
- How is the system to be funded?
- What additional training would be required?

Safe and Secure Operation of Unmanned Aircraft Systems

Payload Restrictions

- The ability of a UAS to carry a payload poses a safety and security risk.
- Risks include prison contraband smuggling, chemical and radiological exposures, espionage, disruption to infrastructure.
- In October 2018, Congress made it illegal to operate a UAS equipped with a dangerous weapon.
- The term "dangerous weapon" means a weapon, device, instrument, material, or substance, animate or inanimate, that is used for, or is readily capable of, causing death or serious bodily injury, except that such term does not include a pocket knife with a blade of less than 2½ inches in length.

Safe and Secure Operation of Unmanned Aircraft Systems

Payload Restrictions

- Should the definition of hazardous material be expanded beyond 107.36?
- Should payload limitations only apply to certain UAS?
- Should limits on payload extend to place, time, population density or purpose?
- What operations would be affected by additional limits?
- What are the costs of any restrictions?

Safe and Secure Operation of Unmanned Aircraft Systems

UAS Critical System Design Requirements

- Redundancy is key to safety in manned aircraft operations
- Currently no Airworthiness Certificate or other design requirements
- Some waivers do require proof of redundant systems
- For BVLOS, should there be design requirements and what should they be?
- Should design requirements be imposed for flight over people outside the new proposed rule?
- Are there any types of missions that should have design requirements as a prerequisite?
- What are the costs of any design requirements?

Roadblock to Additional Rulemaking

Remote Identification of UAS

- In 2016 Congress required FAA to convene stakeholders to develop a consensus standard for remote ID
- UAS Identification and Tracking Aviation Rulemaking Committee (ARC)
- ARC Issued recommendations September 30, 2017
- FAA has separate rulemaking for Remote ID underway
- Divergent views on whether compliance should focus on operators or manufacturers
- Issues with retrofitting existing aircraft
- Direct broadcast v. network based system
- Timeline for phased implementation
- What types of data should the system include: speed, heading, mission type, unique identifier, route data, controller location, aircraft location
- How should the system interact with ATC

Operation of Small Unmanned Aircraft Systems Over People

- Published February 13, 2019
- Comment Period closes April 15, 2019
- Regulatory framework for UAS operations over people and night flight under Part 107
- Risk based approach to ensure flexibility and aid future development
- Attempts to be “technologically neutral”
- Covers flight over people and night operations

Operation of Small Unmanned Aircraft Systems Over People

Night Operations

- As of December 2017, FAA had received 4,837 requests for waivers, granted 1,233 and disapproved 2,256.
- Currently, 2,441 waivers of all types have been granted. 2,287 (93.6%) are for night flight.
- Night operations to be permitted if the operator completes a new training course and passes testing related to night operations
- All night operating UAS have to have 3 mile anti-collision lights.

Operation of Small Unmanned Aircraft Systems Over People

- Flight Over People
- Currently 24 waivers granted under §107.39
- Rule is broken down into 3 categories of aircraft

Category 1 – Aircraft under .55 pounds

- Flights under Part 107 generally without any equipment or operational restrictions
- No design standards

Operation of Small Unmanned Aircraft Systems Over People

Category 2 – Not weight based

- Collision would produce a less severe injury than that caused by the transfer of 11 ft-lbs. of kinetic energy from a rigid object.
- Speed limitations
- Frangible materials
- Slow the vehicle if there is a loss of control or power

- Some design standards
  - No exposed rotating parts that can lacerate human skin
  - Shroud or cowl
  - Materials that do not cut skin

Operation of Small Unmanned Aircraft Systems Over People

Category 2 – Continued

- Means of Compliance
  - Manufacturer is required to demonstrate to FAA that this injury threshold is met using a “Means of Compliance”
  - If the Means of Compliance is based on operational limitations such as speed restrictions, the manufacturer has a duty to warn operators.
- No operation if it has an FAA identified “safety defect”
  - Ability to produce a level 3 injury on the Abbreviated Injury Scale
  - “Serious” such as open fracture of arm, probability of death 8-10%
- No additional operational limitations beyond those imposed under Part 107.

Operation of Small Unmanned Aircraft Systems Over People

Category 3

- No weight restriction
- Collision would produce a less severe injury than that caused by the transfer of 25 ft-lbs. of kinetic energy from a rigid object.
- Risk mitigation through operational limitations
  - No flight over open air assemblies of people
  - Within or over a closed or restricted access site and all persons within the site must be notified of the operation
  - If outside a restricted site, it may only transit over people, i.e. no hovering.
- No rotating parts that can lacerate human skin
- No operation if it has an FAA identified safety defect that “presents more than a low probability of causing a fatality if operating over people.

Operation of Small Unmanned Aircraft Systems Over People

- Additional requirements on Operators
  - Operator is obligated to mark aircraft with a label showing it is suitable for operation under Category 2 or 3, not the manufacturer.
  - All manufacturer instructions related to category 2 or 3 operations must be followed; failure means serious civil penalty
  - Duty of the pilot to verify that the aircraft is suitable for flight over people prior to each flight
- Three additional waivers proposed
  - Separate waiver to fly over moving vehicles.
  - Operations over people not permitted by the new rule.
  - Waiver of the anti-collision lighting for night operations.
- Changes to Part 107
  - Requirement to show license to FAA, NTSB, TSA, state and federal law enforcement.
  - Changing two year renewal test to a knowledge training requirement.

Congressional Mandates: UAS Test Sites

- Tasks the FAA with more responsibility for accommodating the work done at the test sites.
- Expedite waivers and airspace changes
- Permits FAA to waive 49 USC 44711 for test site work
  - Airworthiness certificates
  - Pilot Certificates
  - Air Carrier Certificates
  - Airport Certificates

Congressional Mandates: UAS Design Standards

- Permits the FAA to accept industry consensus design standards
- Authorize a manufacturer to self-certify that the standard is met
- Consensus standards can take the place of airworthiness certification
- Guidance on the approval process and considerations for the FAA to weigh
- If a consensus standard is set, it is illegal to operate any system that does not comply with the standard or is authorized under some other section

Congressional Mandates: UAS Package Delivery

- FAA must issue regulations on the carriage of property by UAS within 1 year.
  - Use performance-based requirements
  - Consider varying levels of risk to other aircraft and to persons and property on the ground
  - Tailor performance-based requirements to appropriately mitigate risk
  - Consider the unique characteristics of highly automated, small unmanned aircraft systems
  - Airworthiness of the systems
  - Qualifications for operators
  - Operating specifications for the air carriers

Congressional Mandates: Model Aircraft

- A person may operate a small unmanned aircraft without specific certification or operating authority from the Federal Aviation Administration if the operation adheres to all of the following limitations:
  - The aircraft is flown strictly for recreational purposes.
  - The aircraft is operated in accordance with or within the programming of a community-based organization's set of safety guidelines that are **developed in coordination with the Federal Aviation Administration.**
  - The aircraft is flown within the visual line of sight of the person operating the aircraft **or a visual observer co-located and in direct communication with the operator.**
  - The aircraft is operated in a manner that does not interfere with and gives way to any manned aircraft.

Congressional Mandates: Model Aircraft

- In Class B, Class C, or Class D airspace or within the lateral boundaries of the surface area of Class E airspace designated for an airport, the operator obtains prior authorization from the Administrator or designee before operating and complies with all airspace restrictions and prohibitions.
- In Class G airspace, the aircraft is flown from the surface to not more than 400 feet above ground level and complies with all airspace restrictions and prohibitions.
- **The operator has passed an aeronautical knowledge and safety test described in subsection (g) and maintains proof of test passage to be made available to the Administrator or law enforcement upon request**.
- The aircraft is registered.
- **Unmanned aircraft operations that do not conform to the limitations in subsection (a) must comply with all statutes and regulations generally applicable to unmanned aircraft and unmanned aircraft systems.**

Congressional Mandates: Model Aircraft - *Increased Authority*

- The Administrator, in consultation with government, stakeholders, and community-based organizations, shall initiate a process to periodically update the operational parameters
  - Mitigate risks to aviation safety and national security
  - Operations outside the membership, guidelines, and programming of a community based organization
  - Physical characteristics, technical standards, and classes of aircraft
  - Trends in use, enforcement, or incidents involving unmanned aircraft systems
  - Equipage requirements that facilitate safe, efficient, and secure operations and further integrate all unmanned aircraft into the national airspace system

Congressional Mandates: Model Aircraft - *Increased Authority Clawback*

- Nothing in this subsection shall be construed as expanding the authority of the Administrator to require a person operating an unmanned aircraft under this section to seek permissive authority of the Administrator, beyond that required in subsection (a) of this section, prior to operation in the national airspace system.

Congressional Mandates: Community Based Organization

- A CBO is defined as a:
  - Tax exempt entity;
  - The mission of which is demonstrably the furtherance of model aviation;
  - Provides a comprehensive set of safety guidelines for all aspects of model aviation;
  - Provides programming and support for any local charter organizations, affiliates, or clubs; and
  - Provides assistance and support in the development and operation of locally designated model aircraft flying sites.
- FAA has 180 days to issue an AC with the criteria for an organization to be recognized as a CBO.

Congressional Mandates: Institutions of Higher Learning

- Codifies the Chief Counsel Opinion that certain educational UAS use can be conducted as a recreational activity
  - Limited to education of students
  - University research into the use of UAS
  - Research sponsored by the federal government
  - “other academic pursuits”
- Permits the FAA to add or modify the operational parameters for education and research as needed.
- FAA has 270 days to establish the procedures and standards

Congressional Mandates: Funding of UAS Regulations and Services

- Comptroller General must report in 180 days on how to monetize UAS services, considering:
  - The total annual costs incurred by the FAA for UAS operations
  - Air traffic services provided to UAS
  - The number of full-time employees dedicated to UAS
  - The use of privately operated UTM
  - Projected growth of UAS operations
  - The number of small businesses involved
  - How the matter is handled overseas.

Congressional Mandates: Miscellaneous

- **UAS public/private pilot program**: Codifies the program, the selection criteria and research that should be supported, requires notification of Congress of any additional undertakings and requires detailed reports to Congress of the results.
- **Waiver Transparence**: Requires FAA to release more information about the technical requirements for granted waivers
- **Underground UAS operation**: Remain unregulated
- **Privacy**: GAO has 180 days to issue a comprehensive report on privacy issues and deficiencies in state and local laws.

Congressional Mandates: Miscellaneous

- **Weaponizing UAS:** New $25,000 civil penalty
- **Counter UAS**: report on all executive actions and approach to the issue, requires FAA to deploy counter UAS systems at 5 airports within 1 year.
- **UAS Safety Enforcement Pilot Program**: FAA must establish a mechanism for the public and Federal, State, and local law enforcement to report suspected operation of unmanned aircraft in violation of a Federal law and report on how many enforcement actions resulted.
- **Local Control Over Airspace:** GAO study on the impact of allowing local control of the low level airspace

Congressional Mandates: Miscellaneous

- **Privacy:** Federal Trade Commission has authority to pursue violations of privacy policies involving a UAS as an unfair trade practice.
- **UTM:** FAA must prepare a full plan for UTM services and applicable safety standards, and allows the FAA to authorize private UTM service providers on an interim basis.
- **COAs**: FAA has 270 days to put all particulars of public COAs online in a useable manner.
- **Crimes:** Intentionally interfering with a manned aircraft or airport is a felony with 1 year in prison. Causing injury: 10 years in prison. In furtherance of another crime: Life in prison

UAS Uniform Tort Law

- First meeting to discuss the proposed draft of the law was held in July 2018
- Currently, aerial trespass and trespass to land are handled differently in most states
- Trespass to land carries a presumption of injury and a right to sue
- Aerial Trespass treated more akin to nuisance law, and requires proof of actual injury
- Proposal would make all encroachment below 200’ over another person’s land an actual trespass with a presumption of damages.
- Proposal to be debated and possibly voted on this summer