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# Remote Identification of Unmanned Aircraft and Flight Over People

## The Final Rules

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# Presented By



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# Remote ID NPRM – The Basics

- 300-page draft rule published in the Federal Register on December 31, 2019
- Notice and Comment period closed March 2, 2020
- FAA received 53,000 comments
- Final Rule released for publication December 28, 2020
- Final Rule is 470 pages



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# Why Remote ID

- Success of the Hobby Industry and Part 107
- Law enforcement
- Flight Over People Rule
- BVLOS
- Future UTM system
- Full integration of UAS into the NAS
- FAA enforcement tool
- Congressional mandate



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# Who Does The Rule Apply To?

- All UAS Built in the United States
  - Rule is effective 60 days and 18 months after publication in the Federal Register (Reduced from 24 months in NPRM)
- All UAS Operated in the United States
  - Rule is effective 60 days and 30 months after publication in the Federal Register (down from 36 months in the NPRM)
- Excludes aircraft weighing less than .55 pounds so long as they are not being operated under part 91, 107, 135, or an exemption issued under 49 U.S.C. 44807



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# Means of Compliance

- Standard Remote ID
  - Broadcast signal
- Remote ID Broadcast Module (replaces limited remote ID)
  - Broadcast Signal
- FAA Recognized Identification Area (FRIA)
  - No Broadcast or Equipment Requirements



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# Standard Remote ID

- Must be able to broadcast remote ID data from takeoff to shutdown
- FAA uses shutdown instead of landing to give law enforcement and FAA additional time to locate wrongdoers
- Signal must include:
  - ID signal (either serial number or session ID)
  - Location of the control station (latitude/longitude/altitude)
  - Location of the aircraft (latitude/longitude/altitude/velocity)
  - Time
  - Emergency condition
- Altitudes are Geometric rather than Barometric



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# Remote Identification Broadcast Module

- Must be able to broadcast remote ID data from takeoff to shutdown
- Option for retrofitting existing aircraft through additional equipment or software upgrade
- Signal must include:
  - Serial Number of the Broadcast Module Assigned to the Producer
  - Take-off location (latitude/longitude/altitude) (not control station)
  - Location of the aircraft (latitude/longitude/altitude/velocity)
  - Time
- Emergency Condition not required
- Altitudes are Geometric rather than Barometric



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# No Remote ID Capability

- Larger legacy UAS and amateur UAS without remote ID capability can only be operated at designated fixed sites (FAA-Recognized Identification Areas “FRIA”)
- Operations at FRIA’s limited to VLOS
- Only CBO’s and educational institutions can establish a FRIA
- FAA will begin accepting applications for FRIAs 60 days and 18 months after publication in the Federal Register (up from 12 months in NPRM)
- FRIA designation good for 4 years, but can be renewed
- FAA is no longer going to phase out FRIAs
- FAA will issue an AC with further guidance on the application process



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# Internet Connection

- Original proposal required an internet connection with data sent to third party service providers
- Final rule abandoned this requirement:
  - Public opposition
  - Technical problems (interoperability / connectivity)
  - Cybersecurity
  - Data privacy
- The NPRMs original Limited Remote ID proposal was based on the internet solution, so it was abandoned as well



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# Operator Requirements – Standard

- Must ensure the aircraft was produced under an accepted declaration of compliance issued to the manufacturer (label and serial number listed with FAA)
- Equipment is functioning at the time of use and complies with the rules
- If equipment fails, flight must be terminated “as soon as practicable”
- Remote ID equipment has not been disabled
- Certificate of Registration must include the serial number of the aircraft
- Foreign aircraft must file a “Confirmation of Identification” under 89.130



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# Operator Requirements – Broadcast Module

- Must ensure the Broadcast Module meets the requirements of the rule
- Must ensure the Broadcast Module is functioning properly during flight
- Must meet all manufacturer installation requirements
- If equipment fails, flight must be terminated “as soon as practicable”
- VLOS flight only
- The serial number appears in the FAA accepted Declaration of Compliance
- The aircraft registration must include the serial number of the broadcast module or the serial number of the unmanned aircraft must be provided to the FAA in a notice of identification pursuant to § 89.130 prior to the operation



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# Manufacturer's Obligations

- FAA has adopted performance based requirements
- Manufacturers must demonstrate compliance with the standard to the FAA through performance validation and testing
  - Submit a detailed description of the means of compliance,
  - Justification for how the means of compliance meets the minimum performance requirements of the rule,
  - Any substantiating material including performance validation and testing
- FAA encourages consensus standards bodies to develop means of compliance and submit them to the FAA for acceptance



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# Manufacturer's Obligations

- Each unmanned aircraft or remote identification broadcast module must be given a serial number that complies with the ANSI/CTA-2063-A serial number standard.
- The UAS or Remote ID module must be labeled to indicate that it is remote identification compliant.
- Submit a declaration of compliance for acceptance by the FAA, declaring that the standard remote identification unmanned aircraft or remote identification broadcast module complies with the requirements of the rule.
- A person producing a standard remote identification unmanned aircraft for operation in the airspace of the United States must comply with the requirements of subpart F of part 89 by 60 days and 18 months after the rule is published in the Federal Register



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# Manufacturer's Obligations

- Standard Remote ID aircraft must be incapable of taking off if the ID system is not functioning
- Standard and broadcast module equipment must continuously monitor performance and notify operator of any failure
- Remote ID system must be tamper resistant
- Remote ID system cannot interfere with other broadcasts



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# Manufacturer's Obligations

- The Remote ID system must use radio frequency spectrum in accordance with 47 CFR part 15 that is compatible with personal wireless devices and must be designed to maximize the range at which the broadcast can be received.
- No licensed spectrum requirements
- Concept is for local broadcast that would be receivable to smart devices and other compatible receivers within a limited proximity to the aircraft.



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# Manufacturer's Obligations

- Remote ID solution must be able to accommodate either a serial number or Session ID
- Meet position and altitude accuracy requirements (compatible with existing equipment)
- Meet a latency requirement of 1 second and broadcast a signal every second



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# Manufacturer's Obligations – Means of Compliance

- Means of Compliance must be submitted to FAA
- Detailed description of operation, how requirements are met, all substantiating data, and a validation and testing protocol
- Means of Compliance will be developed and refined as the process moves forward and MoC are approved
- FAA encourages development of industry consensus standards
- FAA will publish notices of accepted means of compliance but not reveal “commercially valuable information”
- Accepted Means of Compliance can be rescinded or modified
- Means of Compliance documentation must be kept for 2 years



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# Manufacturer's Obligations – Production

- FAA has right to inspect facilities, technical data, and any standard remote identification unmanned aircraft the person produces, and to witness any tests necessary to determine compliance
- Must have independent audits on a recurring basis and must provide the results of all such audits to the FAA upon request.
- Must maintain product support and notification procedures to notify the public and the FAA of any defect or condition within 15 calendar days of the date the person becomes aware of the defect or condition.
- For Broadcast Modules, must make available instructions for installing and operating the remote identification broadcast module



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# Manufacturer's Obligations – Declaration of Compliance

- Filed with FAA and required for production
- Contact information of the manufacturer
- UAS or Module Make and Model
- The FCC Identifier of the 47 CFR part 15-compliant radio frequency equipment used
- Serial number range of the aircraft or module produced under the Declaration
- Means of Compliance used
- Statement that manufacturer will comply with audit and recordkeeping obligations
- Statement of compliance with FCC rules



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# Miscellaneous

- Use of ADS-B by UAS is prohibited without specific permission (Exemption or Waiver)
- Cost/benefit analysis – Final rule 60% cheaper to public than the original NPRM



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# Operation of Small Unmanned Aircraft Systems Over People

- NPRM Published February 13, 2019
- Comment Period closed April 15, 2019
- NPRM Received 949 comments
- 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
- Final rule is 292 pages



# Operation of Small Unmanned Aircraft Systems Over People

## Night Operations

- No Significant Change from NPRM
- Night operations to be permitted if the operator completes a new training course and passes testing related to night operations
- New Training and knowledge test will be available 45 days after the final rule is published in the Federal Register
- All night operating UAS have to have 3 mile anti-collision lights that flash at a rate sufficient to avoid a collision.
- Pilots may rely on the manufacturer's assertions but are ultimately responsible for ensuring the lights meet the performance standard.
- No Waiver is needed.
- All existing waivers terminated 120 days after the rule is published in the Federal Register.
- FAA Strongly rejected giving state or local governments a say in night operations or use of airspace at night.



# Operation of Small Unmanned Aircraft Systems Over People

- Flight Over People
- Currently 149 waivers granted under §107.39
- Creates new Subpart D in Part 107
- Rule is broken down into 4 categories of aircraft
- Category 4 was not in NPRM



# Operation of Small Unmanned Aircraft Systems Over People

## Sustained Flight Over Persons - Clarification

- Categories 1, 2 and 4 permitted to fly over open air assemblies of people
- Category 3 is forbidden
- Sustained flight over persons includes:
  - Hovering above the heads of persons,
  - Flying back and forth over an open-air assembly,
  - Circling above the assembly where the UA remains above some part the assembly.
- Sustained flight over persons does not include:
  - a brief, one-time transiting over a portion of the assembled gathering, where the transit is merely incidental to a point-to-point operation unrelated to the assembly





# Operation of Small Unmanned Aircraft Systems Over People

## Category 1 - Aircraft under .55 pounds

- Flights under Part 107 generally without any equipment or operational restrictions
- Aircraft cannot have rotating parts capable of lacerating human skin
- If flying over assemblies of people, Remote ID standard must be met



# 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
- 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.
  - Operator must ensure that the aircraft is listed on a Declaration of Compliance filed with the FAA
- No operation if it has an FAA identified “safety defect”



# Operation of Small Unmanned Aircraft Systems Over People

## Category 2 – Continued

- The aircraft must have a label on the aircraft indicating eligibility to conduct Category 2 operations,
- The manufacturer must have operating instructions that apply to the operation of the small unmanned aircraft; and
- Must be subject to a product support and notification process.



# 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.
- Same labeling, instruction and product support requirements as Category 2



# Operation of Small Unmanned Aircraft Systems Over People

## Means of Compliance – Category 2 & 3

- The Means of Compliance is how the applicant shows that the injury threshold has been met
- Must include
  - A detailed description of the means of compliance
  - Explain exactly how the testing, analysis, or inspection establishes the small UAS meets one or more of the safety requirements.
  - Include substantiating data, including studies or research reports
- The FAA will indicate acceptance of a means of compliance by publishing a Notice of Availability in the *Federal Register* identifying the means of compliance as accepted and by informing the applicant of its acceptance
- Once accepted, anyone may use a Means of Compliance
- No changes to the FAA provided Means of Compliance in the NPRM





# Operation of Small Unmanned Aircraft Systems Over People

## Category 4 (NEW)

- Applies to aircraft with a Part 21 Type Certificate
- These aircraft can be operated over people pursuant to Part 107 so long as neither the flight manual permits nor limits imposed by the Administrator prohibit it
- Remote ID requirements must be met
- Maintenance and alteration requirements and recordkeeping required by Part 21 for continued airworthiness must be met



# Operation of Small Unmanned Aircraft Systems Over People

## Flight Over Moving Vehicles

- Permitted for Category 1-4 aircraft with certain limitations:
  - The small unmanned aircraft must be within or over a closed- or restricted-access site where any human being located inside a moving vehicle within the closed- or restricted-access site is on notice that a small unmanned aircraft may fly over them; or
  - If the operation is not within or over a closed- or restricted-access site, the small unmanned aircraft must not maintain sustained flight over moving vehicles
- Bicycles, boats and rollercoasters are considered vehicles for purposes of this rule



# Operation of Small Unmanned Aircraft Systems Over People

- Insurance

- FAA rejected requests to impose insurance requirements for persons operating at night or over people
- FAA questioned whether it had the authority to do so as these operations don't rise to the level of air transportation

- Privacy

- Many commenters objected to the rules on privacy grounds
- FAA's rules are safety based
- FAA reaffirmed that it has no role in regulating privacy issues

- Noise

- FAA has broad authority to regulate noise issues from aircraft
- FAA recognizes noise implications but normally only addresses noise issues in the context of aircraft certification
- FAA is collecting noise data and may address the issue with a new rulemaking in the future





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# Thank You

If you have any questions, please contact us:

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