UNMANNED AIRCRAFT SYSTEMS

Remote Identification and Operations Over People and Moving Vehicles Regulations Update

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New FAA Regulations for 2021

What's the 411?

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FAA Published Two New Rules January 15, 2021

<u>Effective Date:</u> April 21, 2021 (April 6 for amendments):

- **Remote Identification of Unmanned Aircraft**
  - Newly minted **14 CFR Part 89**
- **Operations of Small Unmanned Aircraft Systems Over People**
  - **Amendment** to Part 107, Establishing **Subpart D**
    - Flying at Night, and Ops over people and moving vehicles
    - Recurrent Testing and Training

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Remote ID

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Exec summary 3 pages; rule 499 pages; 53,000 comments; Done one year after NPRM

Impacts operators, designers, and manufacturers

Rule establishes 14 CFR 89, amends a few sections of part 107, 91, 1, 47 & 48

New definition of UA to differentiate from an unmanned aircraft system

Specifically for the unmanned air vehicle itself, based on registration

(UA-unmanned aircraft vs UAS – which includes the control station and data link)

Recognizes manufacturers might make UA's controlled by another manufacturer's control station

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- The Rule was to be effective 60 days from the publication date (January 15, 2021) in the Federal Register unless delayed by Presidential freeze authority
- Date became April 21: Manufacturers now have 18 months and Operators have thirty months from this date to comply
- Requires a ***broadcast identifier*** or "digital license plate" for UA to be operated in U.S.

  One that both people on the ground and other airspace users can receive
- Need to understand

  Who needs RID **Types** of RID **Methods** of Compliance for RID

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RID is needed for:

- Any unmanned aircraft that **requires** registration under Part 47 or 48 must comply:
  - **All** aircraft under 55 lbs operated under part 107
  - **All** aircraft over 250 grams and under 55 lbs operated for **recreational** purposes.

    No, the DJI Mini and Mini 2 don't have to comply if flown for recreational purposes
- Unmanned aircraft operated for **public safety** must also comply
- State, local, and Tribal government **are still required** to meet Remote ID requirements (all based on activities that require registration under Part 47 and 48)
- Note: NPRM requirement that all UA obtain a unique registration number was eliminated
  - Rec users can still have one registration number for multiple UA
  - But, serials numbers of all RID aircraft or RID modules will be associated with the Certificate of Aircraft Registration

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RID Is <u>Not Needed</u> For:

- ***Homebuilt unmanned aircraft***: new definition as built solely for education or recreation; <u>only fly in a FRIA and RID not required in FRIA</u>
- ***UA of the United States government armed forces*.** Registration based rule and military aircraft are not required to be registered under part 47 or part 48.
- ***UA that weigh 0.55 pounds or less on takeoff <u>if used for rec use</u>***
  - ***Due to no registration requirement***
- ***And,***

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RID Is <u>Not Needed</u> For (Cont'd) :

- ***Research or Educational UA***
- ***UA with an exception or deviation***

  ex: Aero Research or Manufacturer Flight to show compliance
- ***UA flying under part 91 that are transmitting ADS-B Out (§ 89.101(b))***.

  Part 107 operators still cannot use ADS-B Out or transponders but UAS operating under part 91 can use ADS-B Out under an exception
- ***Indoor UA Operations***

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2 Types of RID:

Standard: hard wired in by manufacturer that includes unique identifier broadcast of UA's and GCS lat/long/altitude/velocity

RID Broadcast Module: retrofit option for a/c not hard wired
uses takeoff location instead of GCS
means that only Standard RID will be able to do BVLOS

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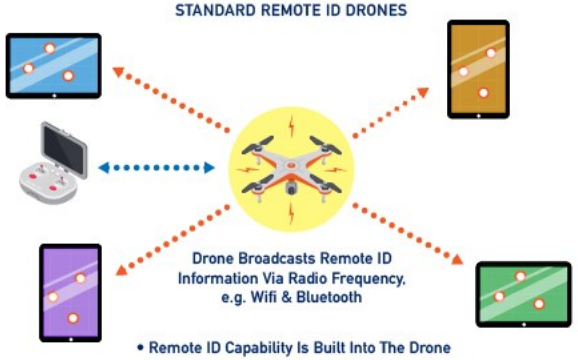
3 WAYS DRONE PILOTS CAN MEET REMOTE ID RULE

DRONE REMOTE IDENTIFICATION

STANDARD REMOTE ID DRONES



Drone Broadcasts Remote ID Information Via Radio Frequency, e.g. Wifi & Bluetooth

- Remote ID Capability Is Built Into The Drone
- From Takeoff To Shutdown, Drone Broadcasts:
  - Drone ID
  - Drone Location and Altitude
  - Drone Velocity
  - Control Station Location and Elevation
  - Time Mark
  - Emergency Status

DRONE REMOTE IDENTIFICATION

DRONES WITH REMOTE ID BROADCAST MODULE

Drone Broadcasts Remote ID Information Via Radio Frequency, e.g. Wifi & Bluetooth

- Remote ID Capability Through Module Attached To Drone
- Limited To Visual Line Of Sight Operations
- From Takeoff To Shutdown, Drone Broadcasts:
  - Drone ID
  - Drone Location and Altitude
  - Drone Velocity
  - Takeoff Location and Elevation
  - Time Mark

FAA-RECOGNIZED IDENTIFICATION AREA [FRIA]

DRONES WITHOUT REMOTE ID

- Drones Without Remote ID Can Operate Without Broadcasting
- Drones Without Remote ID Must Operate Within Visual Line Of Sight and Within the FRIA
- Anyone Can Fly There, but FRIAs Can Only be Requested by Community-Based Organizations and Educational Institutions

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There are 3 methods to comply with Remote ID Rule:

1. Operate an aircraft manufactured and equipped with **Standard** Remote ID
   - A UAS so equipped will send an ID message via a radio frequency broadcast
   - The broadcast message will be sent via Wifi or Bluetooth to personal wireless devices (smart phones)

2. Install a Remote ID **broadcast module** on your "old" unmanned aircraft
   - It can be a separate device that is attached to the UA.
   - Module is used to retrofit old aircraft or new/old home-built
   - The Module Serial Number must be attached to the registration record for the UA.
   - Uses similar Wifi/Bluetooth technology.
   - **Must be operated within visual line of sight (no possibility of BVLOS), and**

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3. Without RID, Fly at an FAA Recognized Identification Area (**FRIA**)
   - CBOs, primary and secondary educational institutions, trade schools, colleges, and universities can apply for FRIA
   - Aircraft must fly within VLOS and within the boundaries of the FRIA.
   - Applications for FRIAs will open around September 2022.
   - FRIAs will be approved for 48 months and can be renewed

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Major change by the FAA from the NPRM of note from industry comments:

- Deletion of the networked RID portion (no third party/internet) “at this time”, originally network was wanted for UTM but too many concerns
  - cybersecurity and privacy, and availability
  - Cost of third party Uniformed Service Suppliers
  - Availability in rural or disaster areas
  - Other agencies: EASA said they would only require broadcast only

How does it all work? Why is Frequency spectrum important? What is a FRIA?

https://www.federalregister.gov/documents/2021/01/15/2020-28948/remote-identification-of-unmanned-aircraft

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107 Subpart D: Operation of Small Unmanned Aircraft Systems Over People

- Ops over people and moving vehicles
- Night operations
- Recency Testing and Training

Ops Over People/Moving Vehicles

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Amended Part 107 Rule and establishment of Subpart D

Next step in FAA's incremental approach to integrating UAS into the national airspace system with performance based rulemaking

- Based on demands for increased operational flexibility and experience gained since part 107 initially published in 2016
- Permits routine operation of small UAS at night or over people or vehicles under certain conditions **without waiver or exemption**
- **https://www.faa.gov/news/media/attachments/OOP_Final%20Rule.pdf**

Ops Over People/Moving Vehicles

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- This is **only for sUAS operating under Part 107**
  - Classified into **4 Categories, I to 4**
    1. **First 3 from NPRM based on injury risk to people on the ground**
    2. **New category 4 based on airworthiness certificate under Part 21, to operate IAW 107**

  - **All categories have different requirements in weight limit, exposed rotating parts, safety defects, injury limit, means and declaration of compliance, labeling, where you can fly over people with or without RID, and sustained flight over people**

- No changes to Section 44809 for recreational pilots

Operations Over People

- **Category 1**
  - No applicant requirements (No DOC required)
  - Must not contain exposed rotating parts that would lacerate human skin
- **Category 2**
  - Will not cause injury equivalent to or greater than that of an injury caused by the transfer of 11 ft. lbs. of kinetic energy from a rigid object
  - Must not contain exposed rotating parts that would lacerate human skin
  - Must not have any safety defects
- **Category 3**
  - Will not cause injury equivalent to or greater than that of an injury caused by the transfer of 25 ft. lbs. of kinetic energy from a rigid object
  - Must not contain exposed rotating parts that would lacerate human skin
  - Must not have any safety defects
- **Category 4**
  - Aircraft that cannot meet the injury severity limits to be eligible as a Category 2 or Category 3 aircraft
  - Go through the Airworthiness Process for Airworthiness Certificate

Operations Over People

- **Category 1**
  - UAS 0.55 pounds or less
  - No exposed rotating parts that can lacerate
  - No sustained flight over open-air assemblies of people unless RID compliant
- **Category 2**
  - Aircraft meets safety requirements
    - Injury severity limits/No exposed rotating parts that can lacerate
  - No sustained flight over open-air assemblies of people unless RID compliant (14 CFR § 89.110 or § 89.115(a))
- **Category 3**
  - Aircraft meets safety requirements
    - Injury Severity Limits
    - No exposed rotating parts that can lacerate
  - Operating restrictions: closed/restricted sites or transiting only

Waiver process remains available to UAS unable to meet safety requirements of categories

- **Category 4**
  - Aircraft meets Airworthiness requirements
    - No sustained flight over open-air assemblies of people unless RID compliant (14 CFR § 89.110 or § 89.115(a))
    - Operating Limitations must not prohibit Operations Over People
    - Owner or Operator required to maintain records

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Flying at Night and recurrent training

Night Flying With UAS

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- New 107 Rule **allows routine operations of small UAS at night without a waiver, amends sUAS training and testing, and provides other small changes**

- **Night operations allowed under two conditions**
  - Remote pilot in command must complete an updated current initial knowledge test or updated recurrent training, as applicable, to ensure familiarity with the risks and appropriate mitigations for nighttime operations.
  - Small unmanned aircraft must have lighted anti-collision lighting visible for at least 3 statute miles that has a flash rate sufficient to avoid a collision
  - No need to comply with RID to fly at night until RID in effect in 2023

Daylight waivers (107.29) issued prior to April 21 have expired as of May 17, 2021

Recency Testing and Training

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- No longer a requirement to pass a recurrent aeronautical knowledge **test** every 24 calendar months (saves $160).
- Maintains provision IAW 61.56 that pilots holding Part 61 certificate (other than students) and have completed a flight review within 24 months may complete either initial or recurrent **training**
- Subjects in training and testing are harmonized, updated, and adding night operations
- Complete the free **training** on the FAASafety.gov website (which will include night subject areas, required to fly at night)
- Three courses on faasafety.gov: Part 61's ALC-451 and ALC-515 initial and recurrent that have been updated, plus new ALC-677 recurrent course for non-61 pilots

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Other 107 changes

Other Part 107 Changes

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- This rule is the next regulatory step to anticipate increased demand for flexibility and BVLOS in small UAS operations for uses such as motion picture filming, newsgathering, law enforcement, photography, inspection, and construction
- You must now present your **remote Pilot certificate, registration, and picture ID** for inspection upon request from
  - The FAA
  - The NTSB
  - Federal, State, and local law enforcement officers
- No change: You must make available to the FAA any document, record, report required to be kept under the regulations in Part 107

Other Part 107 Changes

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- Clarification of UA vs UAS
  - Small UAS used in the past, however UA needed for Ops over People as GCS won't fly over people
- Administration of recreational tests by FAA will change
  - "Test Administrator" solicitation has been published: 16 selected so far
  - TA's will not be compensated by FAA
  - If TA meets the requirements, then they will be selected
- BVLOS Waivers available while ARC meets & new rule worked

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Thank You!

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