

Regulations

Module 1

Ground Lesson 1

Lesson Objective

- The student shall gain knowledge of Federal Aviation Administration regulations that apply to the Operator's operations.
 - Public aircraft operations
 - 14 CFR Part 1
 - 14 CFR Part 48
 - 14 CFR Part 89
 - 14 CFR Part 91
 - 14 CFR Part 830 – NTSB Accident Reporting

Public Aircraft Operations

An overview

Drone Regulation Frameworks

- Drone operations are federally regulated by the Federal Aviation Administration
- Public safety agencies can operate under two regulatory frameworks:
 1. Part 91 regulations as a Public Aircraft Operator with a Certificate of Waiver and/or Authorization
 2. Part 107 regulations

FAA FORM 7711-1 UAS COA Attachment		Page 1 of 10
Public Agency sUAS COA		
2022-ESA-10830-COA		
DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION		
CERTIFICATE OF WAIVER OR AUTHORIZATION		
ISSUED TO	Public Agency	Part 91
This certificate is issued for the operations specifically described hereinafter. No person shall conduct any operation pursuant to the authority of this certificate except in accordance with the standard and special provisions contained in this certificate, and such other requirements of the Federal Aviation Regulations not specifically waived by this certificate.		
OPERATIONS AUTHORIZED		
Operation of small Unmanned Aircraft System(s) (sUAS) weighing less than 55 pounds and operating at speeds of less than 87 kts. (100 mph) in Class G airspace at or below 400 feet Above Ground Level (AGL) in the vicinity of the City of Easley, SC under the jurisdiction of Greer Airport Traffic Control Tower (GSP ATCT) and Atlanta Air Route Traffic Control Center (ZTL ARTCC). See Special Provisions and Attachments.		
LIST OF WAIVED REGULATIONS BY SECTION AND TITLE		
14 CFR §91.113(b) (BVLOS)		
STANDARD PROVISIONS		

Public Aircraft Operations

- A public aircraft operation has two requirements:

Requirement	How the Operator meets this requirement
The aircraft must be owned or leased by the government of a State (Title 49 U.S.C. § 40102)	OTI is a political subdivision of the State of New York and owns the aircraft being flown
Flights must not be conducted for a commercial purpose	OTI must not be receiving compensation for the flights. Public safety & emergency management operations are providing a public service.

Aircraft airworthiness and crewmember self-certification

- The Operator must self-certify aircraft airworthiness and crewmembers
 - Small unmanned aircraft do not typically have FAA Airworthiness Certificates (like a Boeing 737 would)
 - The Operator must implement a program that ensures aircraft are in an airworthy condition before flight
 - Crewmembers are not required to hold FAA Pilot Certificates
 - But similarly, the Operator must implement a training program that ensures crewmembers are appropriately qualified and trained

Examples

1. OTI staff deploys an Agency-owned Skydio X10 for disaster response in the city
2. OTI staff deploys an Agency-owned Skydio X10 for training or a maintenance functional check flight
3. OTI staff deploys his/her personal drone to conduct an inspection
4. OTI staff deploys an Agency-owned Skydio X10 for emergency response where FEMA is reimbursing the operations



14 CFR Part 1

General definitions

General Definitions

- 14 CFR Part 1 is a list of definitions used by the FAA. For example, the term “small unmanned aircraft” is defined:

Small unmanned aircraft

- An unmanned aircraft weighing less than 55 pounds on takeoff



Small unmanned aircraft system

- A small unmanned aircraft and its associated elements



14 CFR Part 48

Small unmanned aircraft registration

Small unmanned aircraft registration

- Must be registered with the FAA in accordance with Part 48
- Each small unmanned aircraft (sUA) must have its registration number marked on the external surface so that it is legible
- Operators should have the registration card readily accessible when operating the sUA



Small UAS Certificate of Registration

Registered Owner: Skydio, Inc

UAS Manufacturer: Skydio

UAS Model: X2

Serial Number: 1668BE10JA00A87E

Registration Number: FA39FY773X

Issued: 01/05/2023

Expires: 01/05/2026



*This Small UAS Certificate of Registration is **not an authorization to conduct flight operations** with an unmanned aircraft. Operations must be conducted in accordance with applicable FAA requirements. The operator of the aircraft is responsible for knowing and understanding what those requirements are. For more information on flying requirements, please visit the FAA website at www.faa.gov/uas.*

For U.S. citizens, permanent residents, and certain non-citizen U.S. corporations, this document constitutes a Certificate of Registration. For all others, this document represents a recognition of ownership.

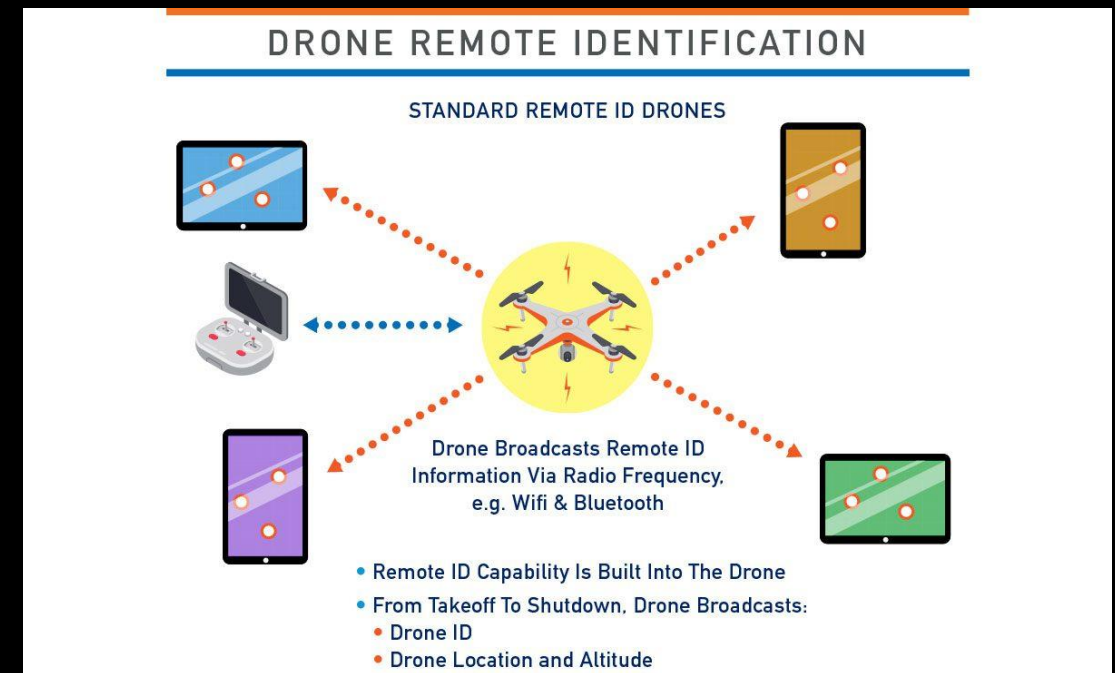
Operators of unmanned aircraft must ensure they comply with the appropriate safety authority from the FAA and economic authority from the DOT.

14 CFR Part 89

Remote identification

Remote ID Overview

- Remote ID refers to the ability of a drone to broadcast identification and location information that can be received by other parties.
- The Operator must use Standard Remote ID equipped drones
- To verify a drone has remote ID, go to the FAA's website:
<https://uasdoc.faa.gov/listDocs>



Remote ID Broadcast Information

- Standard Remote ID drones broadcast the following information from takeoff to shutdown:
 - ID (serial number)
 - Location and altitude
 - Velocity
 - Control station location and elevation
 - Time mark
 - Emergency status

The screenshot shows a mobile application interface for a drone's Remote ID broadcast information. At the top, there is a header with a back arrow, a signal strength indicator, and the ID '1596F350916063290764' and 'CZEiw52wss8acj6u'. Below the header, the interface is divided into several sections: 'CONNECTION', 'AIRCRAFT', and 'LOCATION'. The 'CONNECTION' section displays 'Type' as BT 5 Extended with a signal strength of -77 dBm, and 'Mac Address' as C8:B3:6E:6F:CA:6D. The 'AIRCRAFT' section shows 'UA ID Type' as Serial Number, 'UA Type' as None, and 'UAS ID' as 1596F350916063290764 with a Dronetag icon. There is a 'Label' input field with a checkmark and trash icon. The 'LOCATION' section displays 'Status' as Airborne, 'Heading Track' as 76°, 'Distance from me' as 18.0 m, 'Location' as 50.0924, 14.3853, 'Height' as 0.5 m, 'Height Type' as Takeoff, 'Altitude Press' as 272.5 m, and 'Altitude Geod.' as 340.5 m.

1596F350916063290764
CZEiw52wss8acj6u

CONNECTION

Type: BT 5 Extended Signal Strength (RSSI): -77 dBm

Mac Address: C8:B3:6E:6F:CA:6D

First Seen: 23s ago Last Seen: < 1 s ago # Messages: 134

AIRCRAFT

UA ID Type: Serial Number UA Type: None

UAS ID: 1596F350916063290764 Dronetag

Label:

LOCATION

Status: Airborne Heading Track: 76°

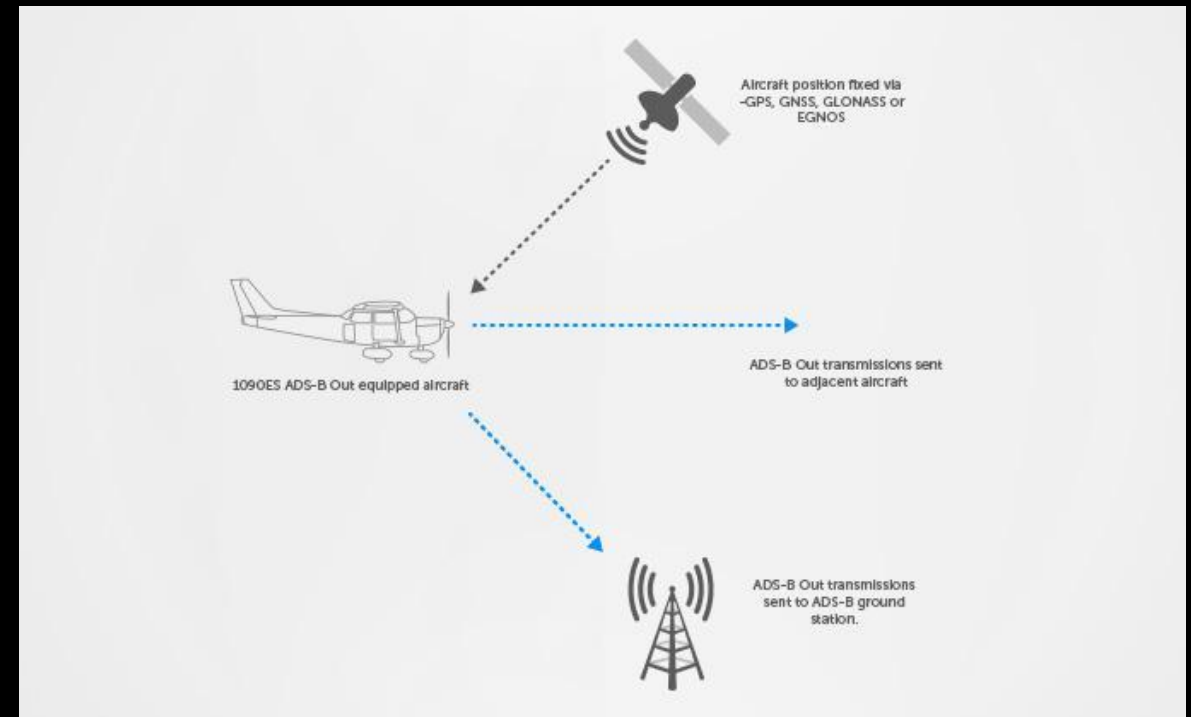
Distance from me: 18.0 m Location: 50.0924, 14.3853

Height: 0.5 m Height Type: Takeoff

Altitude Press: 272.5 m Altitude Geod.: 340.5 m

ADS-B Out Prohibition

- ADS-B Out is a technology used by crewed aircraft to broadcast their position and other information (sort of like Remote ID)
- Drone pilots can **receive** this data and use it to avoid crewed aircraft (required for BVLOS operations)
- Part 89 prohibits sUA from **broadcasting ADS-B**

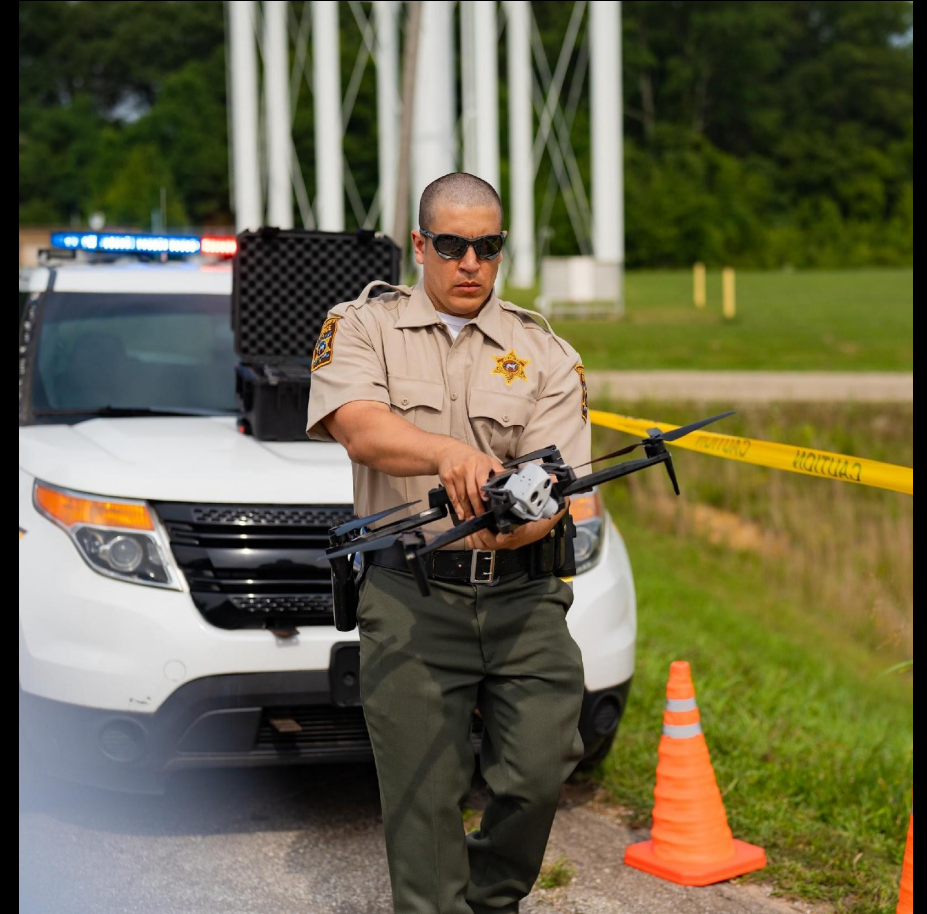


14 CFR Part 91

General operating rules

§ 91.3 – Responsibility and Authority of PIC

- (a) The pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft.
- (b) In an in-flight emergency requiring immediate action, the pilot in command may deviate from any rule of this part to the extent required to meet that emergency.
- (c) Each pilot in command who deviates from a rule shall, upon the request of the Administrator, send a written report of that deviation to the Administrator.



§ 91.13 – Careless or reckless operation

- No person may operate an aircraft in a careless or reckless manner so as to endanger the life or property of another.

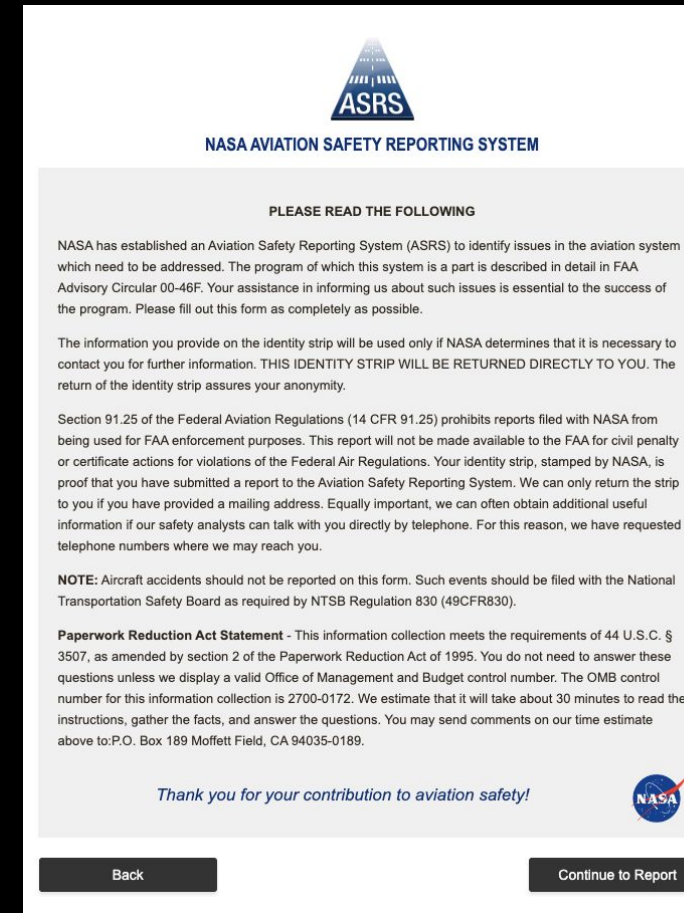



Aviation Safety Reporting Program

- The Aviation Safety Reporting System is managed by NASA and captures voluntary submitted aviation safety incidents and situations from aviation stakeholders.
- These reports are used to identify deficiencies in the NAS, support policy formulation, and strength aviation safety research.

<https://asrs.arc.nasa.gov/report/caveat.html?formType=uas>

- § 91.25 - The Administrator of the FAA will not submitted reports in any enforcement action except information concerning accidents or criminal offenses which are wholly excluded from the Program.




NASA AVIATION SAFETY REPORTING SYSTEM

PLEASE READ THE FOLLOWING

NASA has established an Aviation Safety Reporting System (ASRS) to identify issues in the aviation system which need to be addressed. The program of which this system is a part is described in detail in FAA Advisory Circular 00-46F. Your assistance in informing us about such issues is essential to the success of the program. Please fill out this form as completely as possible.


The information you provide on the identity strip will be used only if NASA determines that it is necessary to contact you for further information. **THIS IDENTITY STRIP WILL BE RETURNED DIRECTLY TO YOU.** The return of the identity strip assures your anonymity.

Section 91.25 of the Federal Aviation Regulations (14 CFR 91.25) prohibits reports filed with NASA from being used for FAA enforcement purposes. This report will not be made available to the FAA for civil penalty or certificate actions for violations of the Federal Air Regulations. Your identity strip, stamped by NASA, is proof that you have submitted a report to the Aviation Safety Reporting System. We can only return the strip to you if you have provided a mailing address. Equally important, we can often obtain additional useful information if our safety analysts can talk with you directly by telephone. For this reason, we have requested telephone numbers where we may reach you.

NOTE: Aircraft accidents should not be reported on this form. Such events should be filed with the National Transportation Safety Board as required by NTSB Regulation 830 (49CFR830).

Paperwork Reduction Act Statement - This information collection meets the requirements of 44 U.S.C. § 3507, as amended by section 2 of the Paperwork Reduction Act of 1995. You do not need to answer these questions unless we display a valid Office of Management and Budget control number. The OMB control number for this information collection is 2700-0172. We estimate that it will take about 30 minutes to read the instructions, gather the facts, and answer the questions. You may send comments on our time estimate above to: P.O. Box 189 Moffett Field, CA 94035-0189.

Thank you for your contribution to aviation safety!



§ 91.103 Preflight action

- Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight.

§ 91.111 Operating Near Other Aircraft

- No person may operate an aircraft so close to another aircraft as to create a collision hazard.

§ 91.113 Right of way rules

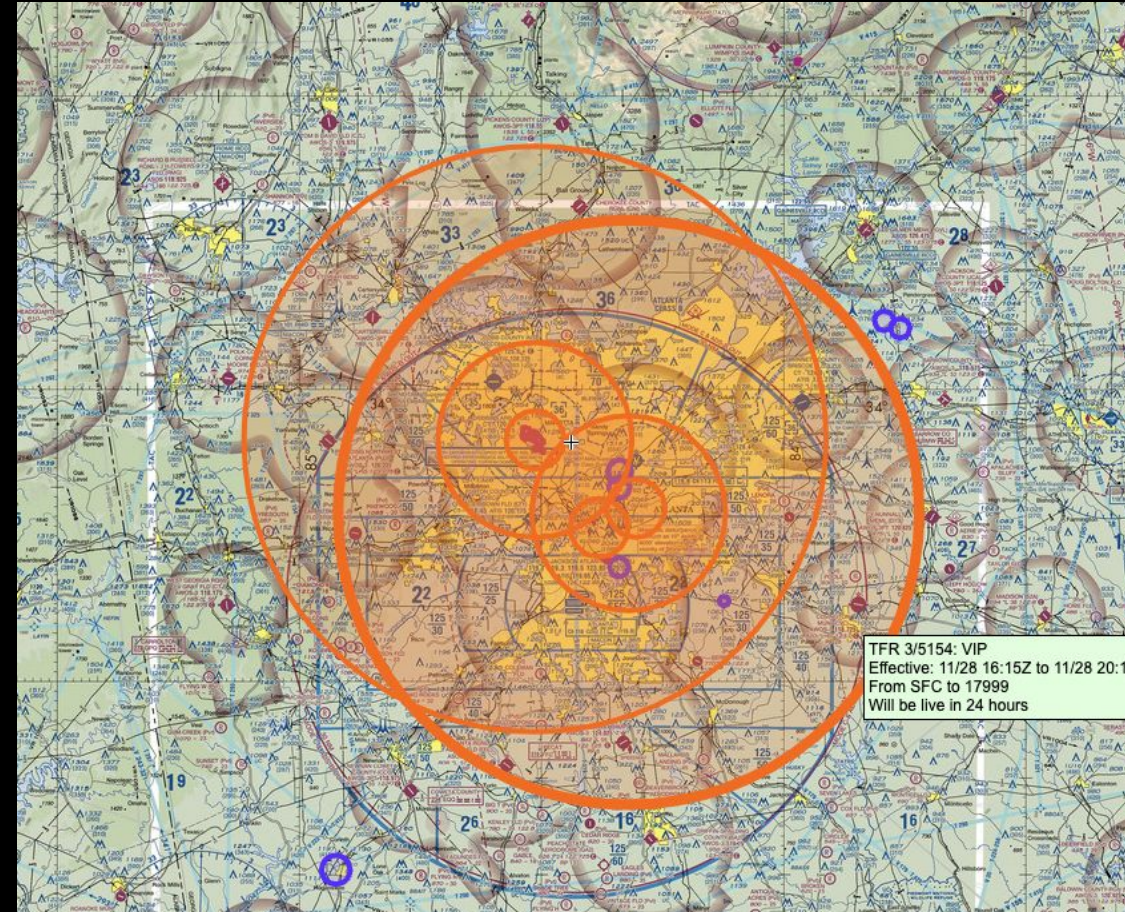
- Unmanned aircraft must yield right of way to all other aircraft.
- We'll discuss this further when we review waivers

Temporary Flight Restrictions

•The FAA can issue Temporary Flight Restrictions (TFRs) for several reasons:

- Disaster/hazard areas
- Emergencies
- VIPs (President, VP, other)
- Major sporting events and aerial demonstrations
- Special Security Instructions (SSI)

Ref: § 99.7, §§ 91.137 – 91.144



14 CFR Part 830

NTSB Accident Reporting

Accident Report

- An unmanned aircraft accident is defined in 49 CFR section 830.2 as an occurrence associated with the operation of any public or civil unmanned aircraft system that takes place between the time that the system is activated with the purpose of flight and the time that the system is deactivated at the conclusion of its mission, in which:
 - (1) any person suffers death or serious injury

Incident Report

Operators must consider that the rest of the reporting requirements for serious incidents listed in section 830.5. Serious incidents include:

- Flight control system malfunction or failure:
- Inability of any required flight crewmember to perform normal flight duties as a result of injury or illness.
- Inflight fire, which is expected to be generally associated with batteries.
- Aircraft collision in flight.
- More than \$25,000 in damage to objects other than the aircraft.
- Release of all or a portion of a propeller blade from an aircraft, excluding release caused solely by ground contact.
- An aircraft is overdue and is believed to have been involved in an accident.