

UAS Standards, Reg, Law & Exam

FAA Regulations: Part 107 / Airman Certification Standards

Lesson 0b – General Knowledge Areas



Remote Pilot – Small Unmanned Aircraft Systems

- Airman Certification Standards (FAA-S-ACS-10B)
- General Knowledge Areas
 - Regulations
 - Airspace Classification and Operating Requirements
 - Weather
 - Loading and Performance
 - Operations



FAA-S-ACS-10B

Remote Pilot – Small Unmanned Aircraft Systems Airman Certification Standards

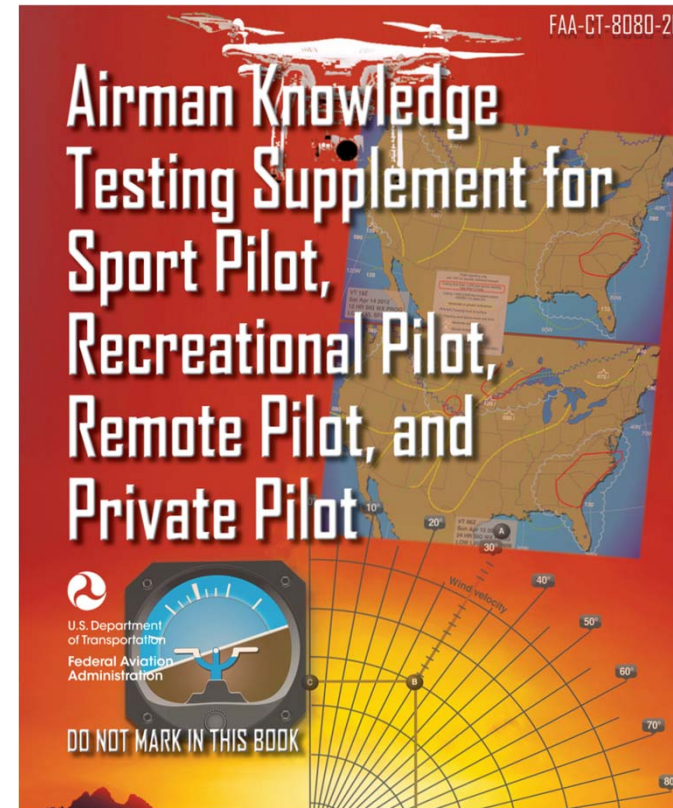
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Remote Pilot – Small Unmanned Aircraft Systems

- Airman Knowledge Testing Supplement for Sport Pilot, Recreational Pilot, Remote Pilot, and Private Pilot (FAA-CT-8080-2H)
- Download this document from the course website “Documents Menu.”
- You will need it for the Quizzes AND the Final Exam.
- Have this document open and available BEFORE beginning any of the Quizzes or the Final Exam.



FAA Regulations Objectives

- To determine that the applicant is knowledgeable in the general regulatory requirements of 14 CFR part 107.
- To determine that the applicant is knowledgeable of the operating rules of 14 CFR part 107, the registration rules of 14 CFR parts 47 and 48, and other associated operating requirements.
- To determine that the applicant is knowledgeable in the requirements associated with remote pilot certification with an sUAS rating.
- To determine that the applicant is knowledgeable of the FAA waiver policy and requirements.



FAA Regulations – Part 107 – General

- The applicability of 14 CFR part 107 to small unmanned aircraft operations.
- Definitions used in 14 CFR part 107.
- The ramification of falsification, reproduction, or alteration of a certificate, rating, authorization, record, or report.
- Accident Reporting.
- Inspection, testing, and demonstration of compliance.



FAA Regulations – Part 107 – Operating Rules

- Registration requirements for sUAS.
- The requirement for the sUAS to be in a condition for safe operation.
- Medical condition(s) that would interfere with safe operation of an sUAS.
- The responsibility and authority of the remote PIC.
- Allowing a person other than the remote PIC to manipulate the flight controls.
- Regulatory deviation and reporting requirements for in-flight emergencies.
- Hazardous operations.
 - Careless or reckless
 - Dropping an object
- Operating from a moving aircraft or moving land- or water-borne vehicle.
- Alcohol or drugs and the provisions on prohibition of use.
- Daylight operation.
- Visual line of sight (VLOS) aircraft operations.
- The requirements when a visual observer is used.
- The prohibition of operating multiple sUAS.



FAA Regulations – Part 107 – Operating Rules

- The prohibition of carrying hazardous material.
- Staying safely away from other aircraft and right-of-way rules.
 - See and avoid other aircraft and other potential hazard considerations of the remote PIC
- Operations over human beings.
- Prior authorization required for operation in certain airspace.
- Operating in the vicinity of airports.
- Operating in prohibited or restricted areas.
- Flight restrictions in the proximity of certain areas designated by notice to airmen (NOTAM).
- Preflight familiarization, inspection, and actions for aircraft operations.
- Operating limitations for sUAS.
 - Maximum groundspeed
 - Altitude limitations
 - Minimum visibility
 - Cloud clearance requirements
- The requirements for a Remote Pilot Certificate with an sUAS rating.



FAA Regulations: Remote Pilot Certification with an sUAS rating

- Offenses involving alcohol or drugs.
- The consequences of refusing to submit to a drug or alcohol test or to furnish test results.
- The eligibility requirements for a Remote Pilot Certificate with an sUAS rating.
- Aeronautical knowledge recency.



FAA Regulations: Part 107 – Waivers

- The FAA waiver policy and requirements.



Airspace Classification

- To determine that the applicant is knowledgeable in airspace classification.
- To determine that the applicant is knowledgeable of airspace operational requirements.



Airspace Classification

- General Airspace
 - Class B controlled airspace
 - Class C controlled airspace
 - Class D controlled airspace
 - Class E controlled airspace
 - Class G uncontrolled airspace
- Special-use airspace, such as prohibited, restricted, warning areas, military operation areas, alert areas, and controlled firing areas.
- Other airspace areas, such as Airport Advisory Services, Military Training Routes (MTRs), Temporary Flight Restrictions (TFRs), Parachute Jump Operations, Terminal Radar Service Areas (TRSAs), National Security Areas (NSA) and Visual Flight Rules (VFR) routes.
- Air Traffic Control (ATC) and the NAS.



Airspace – Operational Requirements

- Basic weather minimums.
- ATC authorizations and related operating limitations.
- Operations near airports.
- Potential flight hazards.
 - ❑ Common aircraft accident causal factors
 - ❑ Avoid flight beneath unmanned balloons
 - ❑ Emergency airborne inspection of other aircraft
 - ❑ Precipitation static
 - ❑ Light amplification by stimulated emission of radiation (laser) operations and reporting illumination of aircraft
 - ❑ Avoiding flight in the vicinity of thermal plumes, such as smoke stacks and cooling towers
 - ❑ Flying in the wire environment
- The NOTAM system including how to obtain an established NOTAM through Flight Service.



Weather Objectives

- To determine that the applicant is knowledgeable in sources of weather information.
- To determine that the applicant is knowledgeable of the effects of weather on performance.



Weather – Sources of Weather Information

- Internet weather briefing and sources of weather available for flight planning purposes.
- Aviation routine weather reports (METAR).
- Terminal aerodrome forecasts (TAF).
- Weather charts.
- Automated surface observing systems (ASOS) and automated weather observing systems (AWOS).



Weather – Effects of Weather on Performance

- Density altitude
- Wind and currents
- Atmospheric stability, pressure, and temperature
- Air masses and fronts
- Thunderstorms and microbursts
- Tornadoes
- Icing
- Hail
- Fog
- Ceiling and visibility
- Lightning



Loading and Performance Objectives

- To determine that the applicant is knowledgeable in the loading and performance of an sUAS.



Loading and Performance

- Effects of loading changes.
- Balance, stability, and center of gravity.



Operation Objectives

- To determine that the applicant is knowledgeable in radio communication procedures.
- To determine that the applicant is knowledgeable in airport operations.
- To determine that the applicant is knowledgeable in sUAS emergency procedures.
- To determine that the applicant is knowledgeable in aeronautical decision-making.
- To determine that the applicant is knowledgeable in the physiological factors affecting remote pilot performance.
- To determine that the applicant is knowledgeable in sUAS maintenance and inspection procedures.



Operations – Radio Communications Procedures

- Airport operations with and without an operating control tower.
- The description and use of a Common Traffic Advisory Frequency (CTAF) to monitor manned aircraft communications.
- Recommended traffic advisory procedures used by manned aircraft pilots, such as self- announcing of position and intentions.
- Aeronautical advisory communications station (UNICOM) and associated communication procedures used by manned aircraft pilots.
- Automatic Terminal Information Service (ATIS).
- Aircraft call signs and registration numbers.
- The phonetic alphabet.
- Phraseology: altitudes, directions, speed, and time.



Operations – Airport Operations

- The types of airports, such as towered, uncontrolled towered, heliport, and seaplane bases.
- ATC towers, such as ensuring the remote pilot can monitor and interpret ATC communications to improve situational awareness.
- Runway markings and signage.
- Traffic patterns used by manned aircraft pilots.
- Security Identification Display Areas (SIDA).
- Sources for airport data:
 - Aeronautical charts
 - Chart Supplements
- Avoiding bird and wildlife hazards and reporting collisions between aircraft and wildlife.



Operations – Emergency Procedures

- Emergency planning and communication.
- The characteristics and potential hazards of lithium batteries:
 - Safe transportation, such as proper inspection and handling
 - Safe charging
 - Safe usage
 - Risks of fires involving lithium batteries
- Loss of aircraft control link and fly-aways.
- Loss of Global Positioning System (GPS) signal during flight and potential consequences.
- Frequency spectrums and associated limitations.



Operations – Aeronautical Decision-Making (ADM)

- Aeronautical Decision-Making (ADM):
 - Effective team communication
 - Task management
- Crew Resource Management (CRM).
- Situational awareness.
- Hazardous attitudes.
- Hazard identification and risk assessment.



Operations – Physiology

- Physiological considerations and their effects on safety, such as dehydration and heatstroke.
- Drug and alcohol use.
- Prescription and over-the-counter medication.
- Hyperventilation.
- Stress and fatigue.
- Factors affecting vision.
- Fitness for flight.



Operations – Maintenance and Inspection Procedures

- Basic maintenance.
- Preflight inspection.
- Techniques to mitigate mechanical failures of all elements used in sUAS operations, such as the battery and/or any device(s) used to operate the sUAS.
- Appropriate record keeping.
- Persons that may perform maintenance on an sUAS.

