



U.S. Department  
of Transportation

**Federal Aviation  
Administration**

**FAA-S-ACS-10B**

# **Remote Pilot – Small Unmanned Aircraft Systems**

## **Airman Certification Standards**

**April 2021**

**Flight Standards Service  
Washington, DC 20591**

### **Acknowledgments**

The U.S. Department of Transportation, Federal Aviation Administration (FAA), Office of Safety Standards, Regulatory Support Division, Airman Testing Branch, P.O. Box 25082, Oklahoma City, OK 73125 developed this Airman Certification Standards (ACS) document with the assistance of the subject matter experts in the area related to small Unmanned Aircraft Systems (UAS).

### **Availability**

This ACS is available for download from [www.faa.gov](http://www.faa.gov). Please send comments regarding this document using the following link to the Airman Testing Branch mailbox: [AFS630Comments@faa.gov](mailto:AFS630Comments@faa.gov).

Material in FAA-S-ACS-10B is effective April 6, 2021.

## **Foreword**

The Federal Aviation Administration (FAA) publishes the Remote Pilot – small Unmanned Aircraft Systems (UAS) Airman Certification Standards (ACS) document to communicate a means to evaluate the aeronautical knowledge standards for certification knowledge testing for a Remote Pilot Certificate with a small UAS rating.

The FAA views the ACS as the foundation of its transition to a more integrated and systematic approach to airman certification. The ACS is part of the Safety Management System (SMS) framework that the FAA uses to mitigate risks associated with airman certification training and testing. Specifically, the ACS, associated guidance, and test question components of the airman certification system are constructed around the four functional components of an SMS:

- Safety Policy that defines and describes aeronautical knowledge, risk management, and flight proficiency as integrated components of the airman certification system;
- Safety Risk Management processes through which both internal and external stakeholders identify changes in regulations, safety recommendations, or other factors. These changes are then evaluated to determine whether they require modification of airman testing and training materials;
- Safety Assurance processes to ensure the prompt and appropriate incorporation of changes arising from new regulations and safety recommendations; and
- Safety Promotion in the form of ongoing engagement with both external stakeholders (e.g., the aviation training community) and FAA policy divisions.

Rick Domingo  
Executive Director, Flight Standards Service

## Revision History

| Document      | Description                                                                                                                   | Revision Date |
|---------------|-------------------------------------------------------------------------------------------------------------------------------|---------------|
| FAA-S-ACS-10  | Remote Pilot – Small Unmanned Aircraft Systems Airman Certification Standards                                                 | July 2016     |
| FAA-S-ACS-10A | Remote Pilot – Small Unmanned Aircraft Systems (Certification and Recurrent Knowledge Testing) Airman Certification Standards | June 2018     |
| FAA-S-ACS-10B | Remote Pilot – Small Unmanned Aircraft Systems Airman Certification Standards                                                 | April 2021    |

## Major Enhancements to Version FAA-S-ACS-10B

| Section                                                                  | Action  | Description                                                                             |
|--------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------|
| Introduction                                                             | Updated | “Airman Certification Standards Concept” subsection                                     |
|                                                                          | Updated | Using the ACS subsection                                                                |
| References                                                               | Updated | Task references, as necessary                                                           |
| Area of Operation I, Regulations                                         | Added   | Knowledge elements K6, K7, and K8 to Task A, General                                    |
|                                                                          | Added   | Knowledge elements K23, K24, K25, K26, K27, and K28 to Task B, Operating Rules          |
|                                                                          | Added   | Task E, Operations Over People                                                          |
|                                                                          | Added   | Task F, Remote Identification (RID)                                                     |
| Area of Operation II, Airspace Classification and Operating Requirements | Added   | Knowledge elements K6, K7, K8, K9, and K10 to Task B, Airspace Operational Requirements |
| Area of Operation V, Operations                                          | Added   | Knowledge element K8 to Task B, Airport Operations                                      |
|                                                                          | Added   | Knowledge elements K6 and K7 to Task C, Emergency Procedures                            |
|                                                                          | Added   | Knowledge elements K8 and K9 to Task E, Physiology                                      |
|                                                                          | Added   | Knowledge elements K6 and K7 to Task F, Maintenance and Inspection Procedures           |
| Appendices                                                               | Updated | Appendix 1: Certification Knowledge Test, Eligibility, and Testing Centers              |
|                                                                          | Updated | Appendix 3: Airman Knowledge Test Report for Certification                              |
|                                                                          | Updated | Appendix 4: References                                                                  |

# Table of Contents

|                     |                                                           |    |
|---------------------|-----------------------------------------------------------|----|
| <b>Introduction</b> |                                                           |    |
|                     | Airman Certification Standards Concept                    | 1  |
|                     | Using the ACS                                             | 1  |
| <b>I.</b>           | <b>Regulations</b>                                        |    |
|                     | A. General                                                | 2  |
|                     | B. Operating Rules                                        | 3  |
|                     | C. Remote Pilot Certification with an sUAS Rating         | 5  |
|                     | D. Waivers                                                | 6  |
|                     | E. Operations Over People                                 | 7  |
|                     | F. Remote Identification (RID)                            | 8  |
| <b>II.</b>          | <b>Airspace Classification and Operating Requirements</b> |    |
|                     | A. Airspace Classification                                | 9  |
|                     | B. Airspace Operational Requirements                      | 10 |
| <b>III.</b>         | <b>Weather</b>                                            |    |
|                     | A. Sources of Weather                                     | 11 |
|                     | B. Effects of Weather on Performance                      | 12 |
| <b>IV.</b>          | <b>Loading and Performance</b>                            |    |
|                     | A. Loading and Performance                                | 13 |
| <b>V.</b>           | <b>Operations</b>                                         |    |
|                     | A. Radio Communications Procedures                        | 14 |
|                     | B. Airport Operations                                     | 15 |
|                     | C. Emergency Procedures                                   | 16 |
|                     | D. Aeronautical Decision-Making                           | 17 |
|                     | E. Physiology                                             | 18 |
|                     | F. Maintenance and Inspection Procedures                  | 19 |
| <b>Appendices</b>   |                                                           |    |
|                     | Table of Contents                                         | 20 |

## Introduction

### Airman Certification Standards Concept

The goal of the airman certification process is to ensure the applicant possesses knowledge consistent with the privileges of the Remote Pilot Certificate with a small Unmanned Aircraft Systems (sUAS) rating, as well as the ability to manage the risks of flight in order to act as a remote pilot-in-command (PIC).

In fulfilling its responsibilities for the airman certification process, the Federal Aviation Administration (FAA) Flight Standards Service (AFS) plans, develops, and maintains materials related to airman certification testing. These materials include several components. The FAA knowledge test measures mastery of the aeronautical knowledge areas listed in Title 14 of the Code of Federal Regulations (14 CFR) parts 89 and 107. Other materials, such as airman knowledge testing supplements in the FAA-CT-8080 series and FAA online training, provide guidance to applicants on aeronautical knowledge and risk management.

The FAA recognizes that safe operations in today's complex National Airspace System (NAS) require a more systematic integration of aeronautical knowledge and risk management. The FAA further recognizes the need to more clearly calibrate knowledge and risk management to the level of the Remote Pilot Certificate with an sUAS rating.

The ACS integrates the elements of knowledge and risk management in 14 CFR parts 89 and 107 for a Remote Pilot Certificate with an sUAS rating. It thus forms the comprehensive standard for what an applicant knows and considers to successfully complete each Task tested on the knowledge test.

In keeping with this integrated and systematic approach, the knowledge Task elements of each Task identify what the applicant should know and understand for sUAS operations conducted under 14 CFR parts 89 and 107. The applicant demonstrates this understanding by passing the knowledge test.

### Using the ACS

This Remote Pilot ACS includes Areas of Operation and Tasks for the issuance of a Remote Pilot Certificate with an sUAS rating in accordance with 14 CFR part 107, section 107.65.

Element codes in the ACS divide into four components. For example:

#### **UA.I.B.K10:**

**UA** = ACS (Unmanned Aircraft Systems)

**I** = Area of Operation (Regulations)

**B** = Task (Operating Rules)

**K10** = Knowledge Element (Visual line of sight (VLOS) aircraft operations.)

At the conclusion of a knowledge test, an applicant is given their Knowledge Test Report (KTR). The KTR lists the applicant's name, date of the test, the type of test, a unique test identification number, the score and ACS Codes for questions that were answered incorrectly. The printed ACS Codes guides the applicant to the area(s) that were found to be deficient in the test. The codes are found in this Airman Certification Standards document.

The FAA encourages applicants to use this ACS as a reference while preparing for the certification airman knowledge test. The FAA revises this ACS as circumstances require.

For those applicants who do not pass the knowledge test for certification, remedial instruction and an endorsement from an instructor is not required for retesting. See Appendix 1: Certification Knowledge Tests, Eligibility, and Testing Centers for details on passing the Unmanned Aircraft General – Small (UAG) certification airman knowledge test.

## I. Regulations

### Task A. General

|                        |                                                                                                                             |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>References</b>      | <i>14 CFR parts 89 and 107, subpart A; AC 107-2; FAA-H-8083-25; FAA-G-8082-22</i>                                           |
| <b>Objective</b>       | <i>To determine that the applicant is knowledgeable in the general regulatory requirements of 14 CFR parts 89 and 107.</i>  |
| <b>Knowledge</b>       | <i>The applicant demonstrates understanding of:</i>                                                                         |
| UA.I.A.K1              | Applicability of 14 CFR part 107 to small unmanned aircraft operations.                                                     |
| UA.I.A.K2              | Definitions used in 14 CFR part 107.                                                                                        |
| UA.I.A.K3              | The ramifications of falsification, reproduction, or alteration of a certificate, rating, authorization, record, or report. |
| UA.I.A.K4              | Accident reporting.                                                                                                         |
| UA.I.A.K5              | Inspection, testing, and demonstration of compliance.                                                                       |
| UA.I.A.K6              | Multiple category sUAS.                                                                                                     |
| UA.I.A.K7              | Record retention.                                                                                                           |
| UA.I.A.K8              | Previously manufactured sUAS.                                                                                               |
| <b>Risk Management</b> | <i>[Reserved]</i>                                                                                                           |
| <b>Skills</b>          | <i>[Not Applicable]</i>                                                                                                     |

## I. Regulations

### Task B. Operating Rules

|                   |                                                                                                                                                                                                    |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>References</b> | 14 CFR parts 47, 48, 89, and 107, subpart B; AC 107-2; FAA-H-8083-25; FAA-G-8082-22                                                                                                                |
| <b>Objective</b>  | To determine that the applicant is knowledgeable of the operating rules of 14 CFR parts 89 and 107, the registration rules of 14 CFR parts 47 and 48, and other associated operating requirements. |
| <b>Knowledge</b>  | The applicant demonstrates understanding of:                                                                                                                                                       |
| UA.I.B.K1         | Registration requirements for sUAS.                                                                                                                                                                |
| UA.I.B.K2         | Requirement for the sUAS to be in a condition for safe operation.                                                                                                                                  |
| UA.I.B.K3         | Medical condition(s) that would interfere with safe operation of an sUAS.                                                                                                                          |
| UA.I.B.K4         | Responsibility and authority of the remote PIC.                                                                                                                                                    |
| UA.I.B.K4a        | a. Allowing a person other than the remote PIC to manipulate the flight controls                                                                                                                   |
| UA.I.B.K5         | Regulatory deviation and reporting requirements for in-flight emergencies.                                                                                                                         |
| UA.I.B.K6         | Hazardous operations.                                                                                                                                                                              |
| UA.I.B.K6a        | a. Careless or reckless                                                                                                                                                                            |
| UA.I.B.K6b        | b. Dropping an object                                                                                                                                                                              |
| UA.I.B.K7         | Operating from a moving aircraft or moving land- or water-borne vehicle.                                                                                                                           |
| UA.I.B.K8         | Alcohol or drugs and the provisions on prohibition of use.                                                                                                                                         |
| UA.I.B.K9         | Daylight operations.                                                                                                                                                                               |
| UA.I.B.K10        | Visual line of sight (VLOS) aircraft operations.                                                                                                                                                   |
| UA.I.B.K11        | Requirements when a visual observer is used.                                                                                                                                                       |
| UA.I.B.K12        | Prohibition of operating multiple sUAS.                                                                                                                                                            |
| UA.I.B.K13        | Prohibition of carrying hazardous material.                                                                                                                                                        |
| UA.I.B.K14        | Staying safely away from other aircraft and right-of-way rules.                                                                                                                                    |
| UA.I.B.K14a       | a. See and avoid other aircraft and other potential hazard considerations of the remote PIC                                                                                                        |
| UA.I.B.K15        | Operations over human beings (Refer to Area of Operation I, Task E).                                                                                                                               |
| UA.I.B.K16        | Prior authorization required for operation in certain airspace.                                                                                                                                    |
| UA.I.B.K17        | Operating in the vicinity of airports.                                                                                                                                                             |
| UA.I.B.K18        | Operating in prohibited or restricted areas.                                                                                                                                                       |
| UA.I.B.K19        | Flight restrictions in the proximity of certain areas designated by notice to airmen (NOTAM).                                                                                                      |
| UA.I.B.K20        | Preflight familiarization, inspection, and actions for aircraft operations.                                                                                                                        |
| UA.I.B.K21        | Operating limitations for sUAS.                                                                                                                                                                    |
| UA.I.B.K21a       | a. Maximum groundspeed                                                                                                                                                                             |
| UA.I.B.K21b       | b. Altitude limitations                                                                                                                                                                            |
| UA.I.B.K21c       | c. Minimum visibility                                                                                                                                                                              |
| UA.I.B.K21d       | d. Cloud clearance requirements                                                                                                                                                                    |
| UA.I.B.K22        | Requirements for a Remote Pilot Certificate with an sUAS rating.                                                                                                                                   |
| UA.I.B.K23        | Automated operations.                                                                                                                                                                              |

|                        |                                        |
|------------------------|----------------------------------------|
| UA.I.B.K24             | Civil twilight operations.             |
| UA.I.B.K25             | Night operations.                      |
| UA.I.B.K26             | Transportation of property.            |
| UA.I.B.K27             | ATC transponder equipment prohibition. |
| UA.I.B.K28             | ADS-B Out prohibition.                 |
| <b>Risk Management</b> | <i>[Reserved]</i>                      |
| <b>Skills</b>          | <i>[Not Applicable]</i>                |

## I. Regulations

### Task C. Remote Pilot Certification with an sUAS Rating

|                        |                                                                                                                                             |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>References</b>      | <i>14 CFR part 107, subpart C; AC 107-2; FAA-H-8083-25; FAA-G-8082-22</i>                                                                   |
| <b>Objective</b>       | <i>To determine that the applicant is knowledgeable in the requirements associated with remote pilot certification with an sUAS rating.</i> |
| <b>Knowledge</b>       | <i>The applicant demonstrates understanding of:</i>                                                                                         |
| UA.I.C.K1              | Offenses involving alcohol or drugs.                                                                                                        |
| UA.I.C.K2              | The consequences of refusing to submit to a drug or alcohol test or to furnish test results.                                                |
| UA.I.C.K3              | The eligibility requirements for a Remote Pilot Certificate with an sUAS rating.                                                            |
| UA.I.C.K4              | Aeronautical knowledge recency.                                                                                                             |
| <b>Risk Management</b> | <i>[Reserved]</i>                                                                                                                           |
| <b>Skills</b>          | <i>[Not Applicable]</i>                                                                                                                     |

## I. Regulations

### Task D. Waivers

**References** 14 CFR part 107, subpart D; AC 107-2; FAA-H-8083-25; FAA-G-8082-22

**Objective** To determine that the applicant is knowledgeable of the FAA waiver policy and requirements.

**Knowledge** The applicant demonstrates understanding of:

UA.I.D.K1 Waiver policy and requirements.

**Risk Management** [Reserved]

**Skills** [Not Applicable]

## I. Regulations

### Task E. Operations Over People

**References** 14 CFR parts 89 and 107; AC 107-2; FAA-H-8083-25; FAA-G-8082-22

**Objective** To determine that the applicant is knowledgeable of the operating rules of 14 CFR parts 89 and 107, and the associated operating requirements when operating over people.

**Knowledge** The applicant demonstrates understanding of:

UA.I.E.K1 Remote pilot responsibilities when operating over people.

UA.I.E.K2 Operations over people at night.

UA.I.E.K3 Category of operations, including:

UA.I.E.K3a a. Category 1

UA.I.E.K3b b. Category 2

UA.I.E.K3c c. Category 3

UA.I.E.K3d d. Category 4

UA.I.E.K4 Selecting an operational area.

UA.I.E.K5 Minimum distances from a person.

UA.I.E.K6 Operations over moving vehicles.

UA.I.E.K7 Modifications to an sUAS.

UA.I.E.K8 Closed and restricted access sites.

UA.I.E.K9 Remote Pilot operating instructions.

UA.I.E.K10 Required components and Category declaration.

UA.I.E.K11 Optional components.

UA.I.E.K12 Applicant produced, designed, or modified sUAS for operations over people.

UA.I.E.K13 Declaration of Compliance (DoC).

UA.I.E.K14 Maintenance of an sUAS that is eligible for operations over people.

UA.I.E.K15 Means of Compliance (MoC).

UA.I.E.K16 Impact kinetic energy.

UA.I.E.K17 Exposed rotating parts.

**Risk Management** [Reserved]

**Skills** [Not Applicable]

## I. Regulations

### Task F. Remote Identification (RID)

|                        |                                                                                                                                                                  |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>References</b>      | <i>14 CFR part 89; AC 107-2; FAA-H-8083-25; FAA-G-8082-22</i>                                                                                                    |
| <b>Objective</b>       | <i>To determine the applicant exhibits satisfactory knowledge associated with operating rules of 14 CFR part 89 and their associated operating requirements.</i> |
| <b>Knowledge</b>       | <i>The applicant demonstrates understanding of:</i>                                                                                                              |
| UA.I.F.K1              | Standard remote identification.                                                                                                                                  |
| UA.I.F.K2              | Alternative remote identification.                                                                                                                               |
| UA.I.F.K3              | Operations for aeronautical research.                                                                                                                            |
| UA.I.F.K4              | ADS-B Out.                                                                                                                                                       |
| UA.I.F.K5              | Confirmation of identification.                                                                                                                                  |
| UA.I.F.K6              | Minimum message elements broadcast for remote identification.                                                                                                    |
| UA.I.F.K7              | Product labeling.                                                                                                                                                |
| <b>Risk Management</b> | <i>[Reserved]</i>                                                                                                                                                |
| <b>Skills</b>          | <i>[Not Applicable]</i>                                                                                                                                          |

## II. Airspace Classification and Operating Requirements

### Task A. Airspace Classification

**References** 14 CFR part 71; AC 107-2; AIM; FAA-H-8083-25; FAA-G-8082-22

**Objective** To determine that the applicant is knowledgeable in airspace classification.

**Knowledge** The applicant demonstrates understanding of:

UA.II.A.K1 General airspace:

UA.II.A.K1a a. Class B controlled airspace

UA.II.A.K1b b. Class C controlled airspace

UA.II.A.K1c c. Class D controlled airspace

UA.II.A.K1d d. Class E controlled airspace

UA.II.A.K1e e. Class G uncontrolled airspace

UA.II.A.K2 Special-use airspace, such as prohibited, restricted, warning areas, military operation areas, alert areas, and controlled firing areas.

UA.II.A.K3 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.

UA.II.A.K4 Air Traffic Control (ATC) and the NAS.

**Risk Management** [Reserved]

**Skills** [Not Applicable]

## II. Airspace Classification and Operating Requirements

### Task B. Airspace Operational Requirements

**References** 14 CFR part 71; AC 107-2; AIM; FAA-H-8083-25; FAA-G-8082-22; SAFO 10015

**Objective** To determine that the applicant is knowledgeable of airspace operational requirements.

**Knowledge** The applicant demonstrates understanding of:

UA.II.B.K1 Basic weather minimums.

UA.II.B.K2 ATC authorizations and related operating limitations.

UA.II.B.K3 Operations near airports.

UA.II.B.K4 Potential flight hazards.

UA.II.B.K4a a. Common aircraft accident causal factors

UA.II.B.K4b b. Avoid flight beneath unmanned balloons

UA.II.B.K4c c. Emergency airborne inspection of other aircraft

UA.II.B.K4d d. Precipitation static

UA.II.B.K4e e. Light amplification by stimulated emission of radiation (laser) operations and reporting illumination of aircraft

UA.II.B.K4f f. Avoiding flight in the vicinity of thermal plumes such as smoke stacks and cooling towers

UA.II.B.K4g g. Flying in the wire environment

UA.II.B.K5 The NOTAM system, including how to obtain an established NOTAM through Flight Service.

UA.II.B.K6 Operator equipment for night flight.

UA.II.B.K7 Ground structures and ground structure lighting.

UA.II.B.K8 Hazards on the ground that do not have lighting.

UA.II.B.K9 Manned aircraft lighting.

UA.II.B.K10 sUAS lighting requirements.

**Risk Management** [Reserved]

**Skills** [Not Applicable]

### III. Weather

#### Task A. Sources of Weather

**References** AC 107-2; AIM; FAA-H-8083-25; FAA-G-8082-22

**Objective** To determine that the applicant is knowledgeable in sources of weather information.

**Knowledge** The applicant demonstrates understanding of:

UA.III.A.K1 Internet weather briefing and sources of weather available for flight planning purposes.

UA.III.A.K2 Aviation routine weather reports (METAR).

UA.III.A.K3 Terminal aerodrome forecasts (TAF).

UA.III.A.K4 Weather charts.

UA.III.A.K5 Automated surface observing systems (ASOS) and automated weather observing systems (AWOS).

**Risk Management** [Reserved]

**Skills** [Not Applicable]

### III. Weather

#### Task B. Effects of Weather on Performance

**References** AC 107-2; AIM; FAA-H-8083-25; FAA-G-8082-22

**Objective** To determine that the applicant is knowledgeable of the effects of weather on performance.

**Knowledge** The applicant demonstrates understanding of:

UA.III.B.K1 Weather factors and their effects on performance.

UA.III.B.K1a a. Density altitude

UA.III.B.K1b b. Wind and currents

UA.III.B.K1c c. Atmospheric stability, pressure, and temperature

UA.III.B.K1d d. Air masses and fronts

UA.III.B.K1e e. Thunderstorms and microbursts

UA.III.B.K1f f. Tornadoes

UA.III.B.K1g g. Icing

UA.III.B.K1h h. Hail

UA.III.B.K1i i. Fog

UA.III.B.K1j j. Ceiling and visibility

UA.III.B.K1k k. Lightning

**Risk Management** [Reserved]

**Skills** [Not Applicable]

## IV. Loading and Performance

### Task A. Loading and Performance

**References** AC 107-2; FAA-H-8083-25; FAA-G-8082-22

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

**Knowledge** The applicant demonstrates understanding of:

UA.IV.A.K1 General loading and performance, including:

UA.IV.A.K1a a. Effects of loading changes

UA.IV.A.K1b b. Balance, stability, and center of gravity

UA.IV.A.K2 Importance and use of performance data to calculate the effect on the aircraft's performance of an sUAS.

**Risk Management** [Reserved]

**Skills** [Not Applicable]

## V. Operations

### Task A. Radio Communications Procedures

**References** AC 107-2; AIM; FAA-H-8083-25; FAA-G-8082-22

**Objective** To determine that the applicant is knowledgeable in radio communication procedures.

**Knowledge** The applicant demonstrates understanding of:

UA.V.A.K1 Airport operations with and without an operating control tower.

UA.V.A.K2 The description and use of a Common Traffic Advisory Frequency (CTAF) to monitor manned aircraft communications.

UA.V.A.K3 Recommended traffic advisory procedures used by manned aircraft pilots such as self-announcing of position and intentions.

UA.V.A.K4 Aeronautical advisory communication station (UNICOM) and associated communication procedures used by manned aircraft pilots.

UA.V.A.K5 Automatic Terminal Information Service (ATIS).

UA.V.A.K6 Aircraft call signs and registration numbers.

UA.V.A.K7 The phonetic alphabet.

UA.V.A.K8 Phraseology: altitudes, directions, speed, and time.

**Risk Management** [Reserved]

**Skills** [Not Applicable]

## V. Operations

### Task B. Airport Operations

**References** AC 107-2, 150/5200-32; AIM; FAA-H-8083-25; FAA-G-8082-22

**Objective** To determine that the applicant is knowledgeable in airport operations.

**Knowledge** The applicant demonstrates understanding of:

- |            |                                                                                                                              |
|------------|------------------------------------------------------------------------------------------------------------------------------|
| UA.V.B.K1  | Types of airports such as towered, uncontrolled towered, heliport, and seaplane bases.                                       |
| UA.V.B.K2  | ATC towers, such as ensuring the remote pilot can monitor and interpret ATC communications to improve situational awareness. |
| UA.V.B.K3  | Runway markings and signage.                                                                                                 |
| UA.V.B.K4  | Traffic patterns used by manned aircraft pilots.                                                                             |
| UA.V.B.K5  | Security Identification Display Areas (SIDA).                                                                                |
| UA.V.B.K6  | Sources for airport data.                                                                                                    |
| UA.V.B.K6a | a. Aeronautical charts                                                                                                       |
| UA.V.B.K6b | b. Chart Supplements                                                                                                         |
| UA.V.B.K7  | Avoiding bird and wildlife hazards and reporting collisions between aircraft and wildlife.                                   |
| UA.V.B.K8  | Airport and seaplane base lighting.                                                                                          |

**Risk Management** [Reserved]

**Skills** [Not Applicable]

## V. Operations

### Task C. Emergency Procedures

**References** AC 107-2; FAA-H-8083-25; FAA-G-8082-22; SAFOs 09013, 10017, 15010

**Objective** To determine that the applicant is knowledgeable in sUAS emergency procedures.

**Knowledge** The applicant demonstrates understanding of:

UA.V.C.K1 Emergency planning and communication.

UA.V.C.K2 Characteristics and potential hazards of lithium batteries.

UA.V.C.K2a a. Safe transportation such as proper inspection and handling

UA.V.C.K2b b. Safe charging

UA.V.C.K2c c. Safe usage

UA.V.C.K2d d. Risks of fires involving lithium batteries

UA.V.C.K3 Loss of aircraft control link and fly-aways.

UA.V.C.K4 Loss of Global Positioning System (GPS) signal during flight and potential consequences.

UA.V.C.K5 Frequency spectrums and associated limitations.

UA.V.C.K6 Procedures for operations over people.

UA.V.C.K7 Procedures for operations at night.

**Risk Management** [Reserved]

**Skills** [Not Applicable]

## V. Operations

### Task D. Aeronautical Decision-Making

**References** AC 107-2; FAA-H-8083-2, FAA-H-8083-25; FAA-G-8082-22

**Objective** To determine that the applicant is knowledgeable in aeronautical decision-making.

**Knowledge** The applicant demonstrates understanding of:

UA.V.D.K1 Aeronautical decision-making (ADM).

UA.V.D.K1a a. Effective team communication

UA.V.D.K1b b. Task management

UA.V.D.K2 Crew Resource Management (CRM).

UA.V.D.K3 Situational awareness.

UA.V.D.K4 Hazardous attitudes.

UA.V.D.K5 Hazard identification and risk assessment.

**Risk Management** [Reserved]

**Skills** [Not Applicable]

## V. Operations

### Task E. Physiology

**References** AC 107-2; FAA-H-8083-2, FAA-H-8083-25; FAA-G-8082-22

**Objective** To determine that the applicant is knowledgeable in the physiological factors affecting remote pilot performance.

**Knowledge** The applicant demonstrates understanding of:

UA.V.E.K1 Physiological considerations and their effects on safety such as dehydration and heatstroke.

UA.V.E.K2 Drug and alcohol use.

UA.V.E.K3 Prescription and over-the-counter medication.

UA.V.E.K4 Hyperventilation.

UA.V.E.K5 Stress and fatigue.

UA.V.E.K6 Factors affecting vision.

UA.V.E.K7 Fitness for flight.

UA.V.E.K8 Physiological aspects of night operation.

UA.V.E.K9 Night illusions.

**Risk Management** [Reserved]

**Skills** [Not Applicable]

## V. Operations

### Task F. Maintenance and Inspection Procedures

**References** AC 107-2; FAA-H-8083-25; FAA-G-8082-22

**Objective** To determine that the applicant is knowledgeable in sUAS maintenance and inspection procedures.

**Knowledge** The applicant demonstrates understanding of:

UA.V.F.K1 Basic maintenance.

UA.V.F.K2 Preflight inspection.

UA.V.F.K3 Techniques to mitigate mechanical failures of all elements used in sUAS operations such as the battery and any device(s) used to operate the sUAS.

UA.V.F.K4 Appropriate record keeping.

UA.V.F.K5 Persons that may perform maintenance on an sUAS.

UA.V.F.K6 Preflight inspection for night operations.

UA.V.F.K7 Manufacturer's Declaration of Compliance for Category 2 and 3 operations.

**Risk Management** [Reserved]

**Skills** [Not Applicable]

## Appendix Table of Contents

### Appendix 1: Certification Knowledge Test, Eligibility, and Testing Centers

|                                          |     |
|------------------------------------------|-----|
| Certification Knowledge Test Description | A-1 |
| Aviation English Language Standard       | A-2 |
| Knowledge Test Requirements              | A-2 |
| Knowledge Test Centers                   | A-2 |
| Knowledge Test Registration              | A-2 |

### Appendix 2: Knowledge Test Procedures and Tips

|                                                                     |     |
|---------------------------------------------------------------------|-----|
| Acceptable Materials Table                                          | A-3 |
| Test Tips                                                           | A-4 |
| Cheating or Other Unauthorized Conduct                              | A-4 |
| Testing Procedures for Applicants Requesting Special Accommodations | A-4 |

### Appendix 3: Airman Knowledge Test Report for Certification

|                                                             |     |
|-------------------------------------------------------------|-----|
| Applying for a Remote Pilot Certificate with an sUAS Rating | A-5 |
| FAA Knowledge Test Question Coding                          | A-5 |
| How to Obtain the Remote Pilot Certificate                  | A-5 |
| Remote Pilot Certificate Paths Table                        | A-6 |

### Appendix 4: References

|            |     |
|------------|-----|
| References | A-7 |
|------------|-----|

### Appendix 5: Abbreviations and Acronyms

|                            |     |
|----------------------------|-----|
| Abbreviations and Acronyms | A-8 |
|----------------------------|-----|

# Appendix 1: Certification Knowledge Test, Eligibility, and Testing Centers

## Certification Knowledge Test Description

The certification knowledge test is an important part of the airman certification process. Applicants who do not meet the requirements in 14 CFR part 107, section 107.61(d)(2) must pass the knowledge test before applying for a Remote Pilot Certificate with an sUAS rating.

The certification knowledge test consists of objective, multiple-choice questions. There is a single correct response for each test question. Each test question is independent of other questions. A correct response to one question does not depend upon, or influence, the correct response to another. The knowledge test applicant has up to two hours to complete the test.

| UAS Topics                       | Percentage of Items on Test |
|----------------------------------|-----------------------------|
| I. Regulations                   | 15-25%                      |
| II. Airspace & Requirements      | 15-25%                      |
| III. Weather                     | 11-16%                      |
| IV. Loading & Performance        | 7-11%                       |
| V. Operations                    | 35-45%                      |
| <b>Total Number of Questions</b> | <b>60</b>                   |

## **Aviation English Language Standard**

In accordance with the requirements of 14 CFR part 107, section 107.61(b) and the FAA English Language Standard for an FAA Certificate Issued Under 14 CFR parts 61, 63, 65, and 107 (AC 60-28, as amended), throughout the application and testing process, the applicant must demonstrate the ability to read, write, speak, and understand the English language. However, the FAA may make an exception if the person is unable to meet one of these requirements due to medical reasons, such as a hearing impairment.

## **Knowledge Test Requirements**

To verify your eligibility to take the certification knowledge test, you must meet the following in accordance with 14 CFR part 107, section 107.67:

- In order for an applicant to take the certification knowledge test, they must be at least 14 years of age; and
- Proper identification is provided, which contains the applicant's:
  - Photograph;
  - Signature;
  - Date of birth; and
  - If the permanent mailing address is a post office box number, then the applicant must provide a current residential address.

To register for any Airman Knowledge Test, an applicant needs to obtain an FAA Tracking Number (FTN). Applicants create an account on the Integrated Airman Certification and Rating Application (IACRA) web page in order to obtain an FTN. Reference this video for instructions about creating an IACRA account:

A list of acceptable documents used to provide proper identification can be found in Advisory Circular (AC) 61-65, Certification: Pilots and Flight and Ground Instructors (as amended).

<https://www.youtube.com/watch?v=ETLsH8BruBM>.

For the most current Airman Knowledge Testing General Requirements, refer to the FAA Knowledge Testing Applicant Identification, Information Verification, & Authorization Requirements Matrix:

[https://www.faa.gov/training\\_testing/testing/media/testing\\_matrix.pdf](https://www.faa.gov/training_testing/testing/media/testing_matrix.pdf).

Achieving a score of 70% or better is required to be considered as satisfactory for passing the certification knowledge test for a Remote Pilot Certificate with an sUAS rating.

Retaking the sUAS certification knowledge test after a failure involves the following:

- 14 CFR part 107, section 107.71 specifies that an applicant who fails the knowledge test may not retake that knowledge test for 14 calendar days from the date of the previous failure.
- An applicant retesting **after failure** is required to submit the applicable AKTR indicating failure to the airman knowledge testing center prior to retesting.
- No instructor endorsement or other form of written authorization is required to retest after failure.

## **Airman Knowledge Testing Centers**

The FAA's testing vendor, PSI Services, LLC, operates hundreds of testing centers that offer a full range of airman knowledge tests. For information on authorized airman knowledge testing centers and to register, schedule, and pay for the knowledge test, visit <https://faa.psiexams.com/faa/login>.

## **Knowledge Test Registration**

You may complete registration online, or you may use the link provided above to obtain the contact number for PSI, LLC customer service and register over the phone. In either case, you choose a testing center, and make financial arrangements for test payment. You may **register** for test(s) several weeks in advance, and you may cancel in accordance with the testing center's cancellation policy.

## Appendix 2: Knowledge Test Procedures and Tips

Before starting the actual test, the testing center provides an opportunity to practice navigating through the test. This practice or tutorial session may include sample questions to familiarize the applicant with the look and feel of the software (e.g., selecting an answer, marking a question for later review, monitoring time remaining for the test, and other features of the testing software).

The applicant may use certain aids, reference materials, and test materials, as long as the material conforms to the following criteria and does not include actual test questions or answers:

| <i>Acceptable Materials</i>                                                                                                                                                                                                                                   | <i>Unacceptable Materials</i>                                                                                                                                              | <i>Notes</i>                                                                                                                                                                                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Supplement book provided by proctor                                                                                                                                                                                                                           | Written materials that are handwritten, printed, or electronic                                                                                                             | Testing centers may provide calculators and/or deny the use of personal calculators.                                                                                                                                    |
| All models of aviation-oriented calculators or small electronic calculators that perform only arithmetic functions                                                                                                                                            | Electronic calculators incorporating permanent or continuous type memory circuits without erasure capability                                                               | The proctor may prohibit the use of any calculator if he or she is unable to determine the calculator's erasure capability                                                                                              |
| Calculators with simple programmable memories, which allow addition to, subtraction from, or retrieval of one number from the memory; or simple functions, such as square root and percentages                                                                | Magnetic Cards, magnetic tapes, modules, computer chips, or any other device upon which prewritten programs or information related to the test can be stored and retrieved | Applicants surrender printouts of data at the completion of the test if the calculator incorporates this design feature                                                                                                 |
| Scales, straightedges, protractors, plotters, navigation computers, blank log sheets, holding pattern entry aids, and electronic or mechanical calculators that are directly related to the test                                                              | Dictionaries                                                                                                                                                               | Before, and upon completion of the test, while in the presence of the Unit Member, actuate the ON/OFF switch or RESET button, and perform any other function that ensures erasure of any data stored in memory circuits |
| Manufacturer's permanently inscribed instructions on the front and back of such aids, e.g., formulas, conversions, regulations, signals, weather data, holding pattern diagrams, frequencies, weight and balance formulas, and air traffic control procedures | Any booklet or manual containing instructions related to use of test aids                                                                                                  | The proctor makes the final determination regarding aids, reference materials, and test materials                                                                                                                       |

## Test Tips

When taking a knowledge test, please keep the following points in mind:

1. Carefully read the instructions provided with the test.
2. Answer each question in accordance with the latest regulations and guidance publications.
3. Read each question carefully before looking at the answer options. You should clearly understand the problem before trying to solve it.
4. After formulating a response, determine which answer option corresponds with your answer. The answer you choose should completely solve the problem.
5. Remember that only one answer is complete and correct. The other possible answers are either incomplete or erroneous.
6. If a certain question is difficult for you, mark it for review and return to it after you have answered the less difficult questions. This procedure enables you to use the available time to maximum advantage.
7. When solving a calculation problem, be sure to read all the associated notes.
8. For questions involving use of a graph, you may request a printed copy that you can mark in computing your answer. This copy and all other notes and paperwork are given to the testing center upon completion of the test.

## Cheating or Other Unauthorized Conduct

To avoid test compromise, computer testing centers follow security procedures described in FAA Order 8080.6 (as amended), *Conduct of Airman Knowledge Tests*. Testing centers terminate a test at any time a test unit member suspects cheating or unauthorized conduct as described in 14 CFR section 61.37.

The FAA investigates and, if the agency determines that cheating or unauthorized conduct has occurred, any airman certificate or rating you hold may be revoked. You are also prohibited from applying for or taking any test for a certificate or rating under 14 CFR part 107, section 107.69 for a period of one year.

## Requests for Special Accommodations

An applicant may request approval to take an airman knowledge test with special accommodations. Reasonable accommodations, for testing applicants with disabilities, may be provided, in compliance with applicable law, including the Rehabilitation Act of 1973, and the Americans with Disabilities Act of 1990 (additional information is available at: [www.section508.gov](http://www.section508.gov)).

The applicant's request should include:

- a copy of medical documentation, including the diagnosing physician's name and contact information, verifying the applicant has a learning or reading disability; and
- the requested method of test administration.

## Exemptions from 14 CFR

The following applies to requests for special accommodations if the applicant is unable to meet the eligibility requirements of 14 CFR:

- An applicant not meeting regulatory requirements may submit a petition for exemption, from any 14 CFR regulation, in accordance with 14 CFR part 11.
- FAA field offices do not issue exemptions. Applicants should follow the instructions regarding the process for filing a petition, as described in 14 CFR part 11, section 11.63, found here: [https://www.faa.gov/regulations\\_policies/rulemaking/petition/](https://www.faa.gov/regulations_policies/rulemaking/petition/).

## Appendix 3: Airman Knowledge Test Report for Certification

### Applying for a Remote Pilot Certificate with an sUAS Rating

Immediately upon completion of the certification knowledge test, the applicant receives a printed Airman Knowledge Test Report (AKTR) documenting the score. The applicant should retain the original AKTR.

When applying for a Remote Pilot Certificate with an sUAS rating, the AKTR with passing results is valid for 24 calendar months.

For tests taken prior to January 13, 2020, to obtain a replacement AKTR, the applicant should include a check or money order payable to the FAA in the amount of \$12.00 and mail the request to:

Federal Aviation Administration  
Airmen Certification Branch, AFB-720  
P.O. Box 25082  
Oklahoma City, OK 73125

To obtain a copy of the application form or a list of the information required, please see the Airmen Certification Branch webpage at [https://www.faa.gov/licenses\\_certificates/airmen\\_certification/test\\_results\\_replacement/](https://www.faa.gov/licenses_certificates/airmen_certification/test_results_replacement/).

For tests taken on or after January 13, 2020, AKTRs may be reprinted from <https://faa.psiexams.com/faa/login>.

### FAA Knowledge Test Question Coding

Each Task in the ACS includes an ACS code. ACS codes are displayed on the AKTR to indicate what Task element was proven deficient on the knowledge test.

Element codes in the ACS divide into four components. For example:

#### UA.I.B.K10:

- UA** = ACS (Unmanned Aircraft Systems)
- I** = Area of Operation (Regulations)
- B** = Task (Operating Rules)
- K10** = Knowledge Element (Visual line of sight (VLOS) aircraft operations.)

### How to Obtain the Remote Pilot Certificate

To obtain a Remote Pilot Certificate with an sUAS rating, choose one of the processes described below (from 14 CFR part 107).

- Part 61 pilot certificate holders with a current flight review may follow any process.
- If you are not a part 61 certificated pilot that has completed a flight review in the preceding 24 calendar months, then choose from the two columns on the left.

Visit the References chapter in AC 107-2, Small Unmanned Aircraft Systems (sUAS) (as amended) to review more information about each process.

### Appendix 3: Airman Knowledge Test Report for Certification

#### AC 107-2 sUAS

#### Part 61 Pilot Certificate Holders with a Current Flight Review

| Online Application After Knowledge Test [1]                                                           | Paper Application [2] After Knowledge Test [1]                                                                                                                                                    | Online Application After Online Course                                                                                                                                                                                                                                                                                                                                       | Paper Application [2] After Online Course                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Submit an online application using Integrated Airman Certification and/or Rating Application (IACRA.) | Complete FAA Form 8710-13 and mail it with the original copy of your Knowledge Test Report to:<br><br><i>DOT/FAA<br/>Airmen Certification Branch<br/>PO Box 25082<br/>Oklahoma City, OK 73125</i> | Submit an online application using IACRA. Meet with an FAA-authorized individual [3] to validate your:<br><ul style="list-style-type: none"> <li>• IACRA application ID number</li> <li>• FAA Tracking Number (FTN)</li> <li>• Identification</li> <li>• Online course completion certificate</li> <li>• Pilot certificate</li> <li>• Flight review documentation</li> </ul> | Complete FAA Form 8710-13. Meet with an FAA-authorized individual [3] to validate your:<br><ul style="list-style-type: none"> <li>• FAA Form 8710-13</li> <li>• Identification</li> <li>• Online course completion certificate</li> <li>• Pilot certificate</li> <li>• Flight review documentation</li> </ul> |
| Receive email notification to print and sign a temporary certificate through IACRA.                   | Do not receive a temporary certificate.                                                                                                                                                           | Receive a temporary certificate in person (or if meeting with a Certificated Flight Instructor (CFI), receive email notification to print and sign a temporary certificate through IACRA). [4]                                                                                                                                                                               | Receive a temporary certificate in person (except when meeting with a CFI) [4]                                                                                                                                                                                                                                |
| Receive a permanent certificate by mail.                                                              | Receive a permanent certificate by mail.                                                                                                                                                          | Receive a permanent certificate by mail.                                                                                                                                                                                                                                                                                                                                     | Receive a permanent certificate by mail.                                                                                                                                                                                                                                                                      |

#### Notes:

[1] If you successfully complete the FAA UAG Knowledge Test, you are not required to meet with an FAA-authorized individual because your identity is established at an AKTC.

[2] Paper applications delay issuance of a permanent certificate because the application is verified and processed by the FAA-authorized individual, FSDO, and Airman Registry.

[3] An FAA-authorized individual may be a Certificated Flight Instructor (CFI), an Airman Certification Representative (ACR) for a pilot school, a person designated by a FSDO, or a Remote Pilot Examiner (RPE).

[4] CFIs can assist in the processing of applications and can facilitate issuance of a temporary certificate through IACRA, but cannot directly issue a temporary certificate when IACRA is not used.

## Appendix 4: References

This ACS is based on the following 14 CFR parts, FAA guidance documents, and other documents.

| Reference       | Title                                                                                                   |
|-----------------|---------------------------------------------------------------------------------------------------------|
| 14 CFR part 47  | Aircraft Registration                                                                                   |
| 14 CFR part 48  | Registration and Marking Requirements for Small Unmanned Aircraft                                       |
| 14 CFR part 61  | Certification: Pilots, Flight Instructors, and Ground Instructors                                       |
| 14 CFR part 71  | Designation of Class A, B, C, D, and E Airspace Areas; Air Traffic Service Routes; and Reporting Points |
| 14 CFR part 89  | Remote Identification (RID)                                                                             |
| 14 CFR part 107 | Small Unmanned Aircraft Systems (sUAS)                                                                  |
| AC 00-6         | Aviation Weather                                                                                        |
| AC 60-28        | FAA English Language Standard for an FAA Certificate Issued Under 14 CFR Parts 61, 63, 65, and 107      |
| AC 107-2        | Small Unmanned Aircraft Systems (sUAS)                                                                  |
| AC 150/5200-32  | Reporting Wildlife Aircraft Strikes                                                                     |
| AIM             | Aeronautical Information Manual                                                                         |
| FAA-H-8083-2    | Risk Management Handbook                                                                                |
| FAA-H-8083-25   | Pilot's Handbook of Aeronautical Knowledge                                                              |
| FAA-G-8082-22   | Remote Pilot – Small Unmanned Aircraft Systems Study Guide                                              |
| SAFO 09013      | Fighting Fires Caused by Lithium Type Batteries in Portable Electronic Devices                          |
| SAFO 10015      | Flying in the Wire Environment                                                                          |
| SAFO 10017      | Risks in Transporting Lithium Batteries in Cargo by Aircraft                                            |
| SAFO 15010      | Carriage of Spare Lithium Batteries in Carry-on and Checked Baggage                                     |

**Note:** Users should reference the current edition of the reference documents listed above. Safety Alerts for Operators (SAFOs) and the current edition of all FAA publications is located at [www.faa.gov](http://www.faa.gov).

## Appendix 5: Abbreviations and Acronyms

| Abbreviation or Acronym | Definition                                                         |
|-------------------------|--------------------------------------------------------------------|
| 14 CFR                  | Title 14 of the Code of Federal Regulations                        |
| AC                      | Advisory Circular                                                  |
| ACR                     | Airman Certification Representative                                |
| ACS                     | Airman Certification Standards                                     |
| ADM                     | Aeronautical Decision-Making                                       |
| AELS                    | Aviation English Language Standard                                 |
| AFS                     | Flight Standards Service                                           |
| AIM                     | Aeronautical Information Manual                                    |
| AKTC                    | Airman Knowledge Testing Center                                    |
| AKTR                    | Airman Knowledge Test Report                                       |
| ASOS                    | Automated Surface Observation System                               |
| ATC                     | Air Traffic Control                                                |
| ATIS                    | Automatic Terminal Information Service                             |
| AWOS                    | Automated Weather Observation System                               |
| CFI                     | Certificated Flight Instructor                                     |
| CRM                     | Crew Resource Management                                           |
| CTAF                    | Common Traffic Advisory Frequency                                  |
| DOT                     | Department of Transportation                                       |
| FAA                     | Federal Aviation Administration                                    |
| FSDO                    | Flight Standards District Office                                   |
| FTN                     | FAA Tracking Number                                                |
| GPS                     | Global Positioning System                                          |
| IACRA                   | Integrated Airman Certification and Rating Application             |
| METAR                   | Aviation Routine Weather Reports (Meteorological Aerodrome Report) |
| MTR                     | Military Training Routes                                           |
| NAS                     | National Airspace System                                           |
| NOTAM                   | Notice to Airmen                                                   |
| NSA                     | National Security Areas                                            |
| ODA                     | Organization Designation Authorization                             |
| PIC                     | Pilot-in-Command                                                   |
| RPE                     | Remote Pilot Examiner                                              |

*Appendix 5: Abbreviations and Acronyms*

| <b>Abbreviation or Acronym</b> | <b>Definition</b>                           |
|--------------------------------|---------------------------------------------|
| SAFO                           | Safety Alert for Operators                  |
| SIDA                           | Security Identification Display Area        |
| SMS                            | Safety Management System                    |
| sUAS                           | Small Unmanned Aircraft System              |
| TAF                            | Terminal Area Forecast                      |
| TFR                            | Temporary Flight Restrictions               |
| TRSA                           | Terminal Radar Service Area                 |
| UAS                            | Unmanned Aircraft Systems                   |
| UNICOM                         | Aeronautical Advisory Communication Station |
| VFR                            | Visual Flight Rules                         |
| VLOS                           | Visual Line of Sight                        |