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Federal Department of the Environment, Transport,
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Unmanned Aircraft Systems (UAS)

FOCA-UAS-GM-STS-EXAM (EN)

Subjects of the Theoretical Knowledge Examination for UAS Operations under the European Standard Scenarios (STS-01 and STS-02)



Date	Issue	Revision	Applied changes
01.01.2024	1	0	Document creation
27.10.2025	1	1	Language and layout modifications

1. Introduction

Remote pilots intending to operate unmanned aircraft systems (UAS) under the European Standard Scenarios (STS-01 and/or STS-02) must demonstrate that they possess the required theoretical knowledge and practical skills.

- **Theoretical aspects:** Remote pilots must hold a “Remote Pilot Certificate of Theoretical Knowledge for STS” (commonly referred to as the “STS Certificate”), issued upon successful completion of a theoretical examination, organized by FOCA. **This document outlines the examination requirements.**
- **Practical aspects:** Remote pilots must obtain an accreditation of completion of STS practical training and assessment, issued by an entity recognized by the FOCA, upon successful completion of a practical training course provided by such entity.

Holding an A1/A3 certificate is mandatory in order to register for the STS theoretical examination.

The theoretical examination consists of **40 multiple-choice questions** (MCQs) divided into **8 subjects**. For remote pilots also holding an A2 certificate, the examination is reduced to 30 questions covering 5 subjects.

To pass the examination, candidates must achieve a **minimum score of 75%** correct answers.

Table of content	Applicable Exam Subjects (×)	
	if I hold only the A1/A3 certificate	if I also hold the A2 certificate
STS.010 Aviation regulations	×	×
STS.020 Human performance limitations	×	×
STS.030 Operational procedures	×	×
STS.040 Technical and operational mitigations for air risks	×	×
STS.050 UAS general knowledge	×	×
STS.060 Meteorology	×	
STS.070 UAS Flight performance	×	
STS.080 Technical and operational mitigations for ground risk	×	

2. Preparation Material

Unlike the A1/A3 and A2 examinations, the FOCA does not provide an online training course nor official preparation material for the theoretical exam. However, some organizations in Switzerland offer theoretical courses, though **attendance is not mandatory**.

To prepare effectively, FOCA primarily recommends consulting the applicable regulations, in particular Regulations [\(EU\) 2019/947](#) and [\(EU\) 2019/945](#). The “[Easy Access Rules for Unmanned Aircraft Systems](#)”, published by EASA, are also a valuable resource, as they consolidate these regulations together with their Acceptable Means of Compliance (AMC) and Guidance Material (GM). It is important to always refer to the most recent version.

In addition, candidates may use other preparation resources, such as specialized textbooks, online training platforms, or any other relevant educational tools.

3. Detailed Programme of the Theoretical Examination

The following sections of this document present the detailed syllabus of the theoretical examination.

STS.010 Aviation regulations

STS.010.01 Introduction to the Specific Category

STS.010.01.01 General Elements of the Specific Category

- (01) Understand the general elements of the Specific category.
- (02) Know the conditions for operating in a country other than the Member State of registration.
- (03) Describe the general responsibilities of a remote pilot in the Specific category.
- (04) Know the general responsibilities of an operator in the Specific category.

STS.010.01.02 Risk Assessment and Introduction to the SORA Methodology

- (01) Understand the principle of a risk assessment.
- (02) Describe that a risk assessment has already been conducted for the standard scenarios.
- (03) Define the acronym "SORA" and be able to briefly explain what this methodology consists of.
- (04) Become familiar with the concept of a Pre-Defined Risk Assessment (PDRA).
- (05) Know the list and characteristics of the PDRAs published to date.

STS.010.02 Standard Scenarios

STS.010.02.01 Concept of Operational Declaration

- (01) Explain what an operational declaration under the STS entails, and how to proceed.

STS.010.02.02 Standard Scenario STS-01

- (01) Know the general provisions applicable under STS-01.
- (02) Know the operational conditions applicable under STS-01.
- (03) Know the operator's responsibilities applicable under STS-01.
- (04) Know the remote pilot's responsibilities applicable under STS-01.

STS.010.02.03 Standard Scenario STS-02

- (01) Know the general provisions applicable under STS-02.
- (02) Know the operational conditions applicable under STS-02.
- (03) Know the operator's responsibilities applicable under STS-02.
- (04) Know the remote pilot's responsibilities applicable under STS-02.
- (05) Know the responsibilities of the airspace observer applicable under STS-02.

STS.010.03 Airspace and Aeronautical Information

STS.010.03.01 General

- (01) Explain the concept of airspace sovereignty.
- (02) Describe the different classes of airspace in Switzerland.
- (03) Describe the operational restrictions applicable to the different classes of airspace.
- (04) Explain how segregated airspace is established and managed.

STS.010.03.02 Specific Zones

- (01) Define dangerous, prohibited, and restricted areas.
- (02) Explain the significance of these areas for a remote pilot.
- (03) Be able to locate information about these areas.

STS.010.03.03 Obtaining and Interpreting Aeronautical Information

- (01) Define and explain the acronym "AIP" (Aeronautical Information Publication).
- (02) Know how to access the AIP in Switzerland.
- (03) Define and explain the acronym "AIC" (Aeronautical Information Circular).
- (04) Define and explain the acronym "NOTAM" (Notice To Airmen).
- (05) Be able to obtain and interpret NOTAMs in Switzerland.
- (06) Be able to access and interpret aeronautical charts.

STS.020 Human performance limitations

STS.020.01 Medical Fitness

STS.020.01.01 Fatigue

- (01) Know that UAS operations should be carried out during normal working hours.
- (02) Understand the circadian rhythm and its effects on fatigue.
- (03) Be aware of the influence of work-related stress on fatigue.
- (04) Be aware of the influence of commercial pressure on fatigue.

STS.020.01.02 Health Precautions

- (01) Know that health precautions such as regular physical exercise and a balanced diet help maintain stable mental and physical well-being.

STS.020.02 Human Perception

STS.020.02.01 General Influences

- (01) Be able to identify factors that influence Beyond Visual Line of Sight (BVLOS) operations.

STS.020.02.02 Situational Awareness

- (01) Understand the factors affecting situational awareness in BVLOS operations.

STS.020.02.03 Environmental Influences

- (01) Be aware of the influence of sunlight on vision.
- (02) Be aware of the influence of specific weather conditions (e.g. haze, fog, snow, heavy rain, etc.) on vision.
- (03) Be aware of the influence of extreme weather conditions (e.g. very high or low temperatures, volcanic ash, etc.) on the ability to operate a UAS.
- (04) Identify the potential effects of extreme weather conditions on the remote pilot (e.g. hypothermia, frostbite, reduced fine motor skills, reduced situational awareness, etc.).

STS.020.02.04 Attention

- (01) Be able to apply and explain the visual scanning technique, which involves scanning 10 to 15 degrees to each side in order to detect other airspace users and/or obstacles.
- (02) Know that other airspace users or obstacles are often difficult to visually detect.
- (03) Know that it is essential to eliminate any distraction during flight.

STS.030 Operational procedures

STS.030.01 Pre-Flight Operational Procedures

STS.030.01.01 Pre-Flight Actions for STS-01 Operations

(01) Know that, in addition to standard pre-flight actions, the remote pilot must verify that the Flight Termination System (FTS) is functional and that the direct remote identification system is active and up to date.

STS.030.01.02 Pre-Flight Actions for STS-02 Operations

(01) Know that, in addition to standard pre-flight actions, the geocaging function must be properly set and operational.

STS.030.01.03 Pre-Flight Actions Common to STS-01 and STS-02

(01) Know that the remote pilot must ensure the suitability of the controlled ground area defined by the operator.

STS.030.02 In-Flight Operational Procedures

STS.030.02.01 Contingency Procedures

(01) Know the typical actions to be taken by the remote pilot and/or by other personnel essential to the UAS operation in the event of an intrusion by uninvolved persons within the controlled ground area.

STS.030.02.02 Emergency Procedures

(01) Be familiar with the typical actions to be taken by the remote pilot in the event that the Flight Termination System (FTS) does not function correctly.

STS.030.02.03 Emergency Response Plan (ERP)

(01) Define the acronym "ERP" (Emergency Response Plan).

(02) Explain what an ERP is and its purpose.

(03) Know the typical actions to be taken by the remote pilot and/or other personnel essential to the UAS operation if the unmanned aircraft exits the operational volume.

STS.040 Technical and operational mitigations for air risks

STS.040.01 General Principles

- (01) Become familiar with the concepts of “risk” and “air risk.”
- (02) Define the following terms: technical mitigation measures; operational mitigation measures; strategic mitigation measures; tactical mitigation measures.
- (03) Understand the principles of “see and avoid” and “detect and avoid.”

STS.040.02 Air Risk in STS-01

- (01) Know that the air risk associated with a UAS operation conducted under STS-01 is already mitigated by the requirement to operate in VLOS, which serves as an operational mitigation measure. This allows the remote pilot to maintain full visual scanning of the airspace surrounding the UA in order to avoid any risk of collision with other aircraft (principle of “see and avoid”).
- (02) Know that the remote pilot may be assisted by a visual observer in fulfilling the “see and avoid” responsibility and that, in such cases, clear and effective communication must be established between them.
- (03) Know that the air risk associated with a UAS operation conducted under STS-01 is also mitigated by a technical mitigation measure – namely, equipping the UAS with a Flight Termination System (FTS).

STS.040.03 Air Risk in STS-02

- (01) Know that the higher air risk associated with a UAS operation conducted under STS-02 (BVLOS) is mitigated through an operational measure requiring the presence of one or more Airspace Observers (AO) or the use of a mandatory pre-programmed flight path.
- (02) Know that this higher air risk is also mitigated through another operational measure requiring a minimum horizontal visibility of 5 km.
- (03) Know that this higher air risk is further mitigated through two technical measures: equipping the UAS with a geocaging function and providing information on the UA's geographical position.

STS.050 UAS General Knowledge

STS.050.01 Technical Knowledge of Class C5 and C6 UAS

STS.050.01.01 Common Technical Knowledge

(01) Know that if a UAS bears one or more class identification labels (C5 and/or C6) and is equipped with a geo-awareness function, it must comply with the technical requirements of class C3 related to that function.

(02) Know that UAS bearing class C5 and/or C6 identification labels must provide the remote pilot with information on the quality of the C2 link, including an alert in case of degradation or loss of the link, and a warning in the event of complete link loss.

STS.050.01.02 Technical Knowledge Specific to Class C5 UAS

(01) Know that a class C5 UAS cannot be of the fixed-wing type unless it is tethered.

(02) Know that a selectable low-speed flight mode must limit ground speed to a maximum of 5 m/s.

(03) Know that the remote pilot must be informed of the unmanned aircraft's altitude.

(04) The Flight Termination System (FTS) must be independent of the flight controller.

(05) Know that a device (e.g. parachute) must reduce the impact energy if the FTS is activated.

(06) Know that a description of the FTS must be included in the UAS user manual.

STS.050.01.03 Technical Knowledge Specific to Class C6 UAS

(01) Know that the ground speed of the unmanned aircraft in level flight must not exceed 50 m/s.

(02) Know that the remote pilot must be aware of the UA's altitude, speed, and geographical position.

(03) Know that a geocaging function must prevent the UA from exiting the operational volume.

(04) Know that the FTS must be independent of both the flight controller and the geocaging function.

(05) Know that a description of the FTS and the geocaging function must be included in the UAS user manual.

(06) Know that the maximum distance likely to be covered by the UA in the event of FTS activation must be stated in the UAS user manual.

STS.050.02 Advanced Technical Knowledge

STS.050.02.01 Flight Termination System (FTS)

(01) Understand the basic operating principle of an FTS.

(02) Describe the main purpose of an FTS.

STS.050.02.02 Geocaging Function

(01) Understand the operating principle of the geocaging function.

STS.050.02.03 Advanced Battery Knowledge

(01) Describe the main battery parameters (Ah, voltage, charge and discharge rates).

(02) Describe battery configurations (parallel and series).

STS.050.02.04 Sensors

(01) Define the acronym "IMU" (Inertial Measurement Unit) and explain its operating principle.

(02) Describe the difference between indicated and actual airspeeds.

(03) Understand the principles of altitude and height measurement for UAS.

STS.060 Meteorology

STS.060.01 Effects of Weather Conditions on UAS

STS.060.01.01 Wind

- (01) Interpret wind directions presented on a wind rose.
- (02) Know the different wind speed units and their conversions (kt, km/h, m/s, Beaufort).
- (03) Explain the influence of surface friction on wind direction.
- (04) Estimate the approximate change in wind direction and speed compared to frictionless layers.
- (05) Identify how different surface types influence wind.
- (06) Identify the different forms of turbulence.
- (07) Recognize typical areas of turbulence (e.g. below developing cumulonimbus clouds).
- (08) Know the causes of turbulence near the ground.
- (09) Understand the hazards related to certain phenomena (e.g. turbulence, gusts) during UAS operations.

STS.060.01.02 Temperature

- (01) Be able to describe the vertical temperature distribution in the troposphere.
- (02) Know the different temperature units and their conversions (°C, °F, K).
- (03) Understand daily and annual temperature variations.
- (04) Be able to determine the effects of temperature on batteries and flight performance.
- (05) Identify the hazardous effects of low temperatures and icing.

STS.060.01.03 Atmospheric Pressure

- (01) Define the term “atmospheric pressure.”
- (02) Define areas of high and low pressure.
- (03) List the common units of measurement for atmospheric pressure in aviation (hPa, inHg).
- (04) Understand the relationship between pressure and altitude (pressure halves approx. every 5,500 m).

STS.060.01.04 Visibility

- (01) Name the most common types of fog (radiation fog and advection fog).
- (02) Know the conditions required for fog formation.
- (03) Estimate the development of radiation and advection fog.
- (04) Identify the factors that influence visibility (e.g. fog, haze, sun glare, pollution, precipitation).
- (05) List the options available to assess visibility on site (e.g. using reference objects or landmarks).
- (06) Distinguish between fog and haze in terms of visibility.

STS.060.01.05 Air Density

- (01) Understand the relationship between pressure, temperature, and air density (e.g. how density changes when temperature increases while pressure remains constant).
- (02) Know that air density decreases with altitude.
- (03) Know that a change in air density affects the lift generated by rotor blades.

STS.060.01.06 Regional Weather Effects

- (01) Explain the daily evolution of land and sea breezes.
- (02) Describe the effects of land and sea breezes.
- (03) Identify the hazards associated with flying in mountainous regions.
- (04) Identify the hazards associated with flying in desert environments.

STS.060.02 Obtaining Weather Information

STS.060.02.01 Resources and Information on Weather Bulletins

- (01) Be aware of the obligation to obtain weather information as part of the pre-flight briefing.
- (02) Know the most influential weather factors (wind, extreme temperatures, heavy precipitation).
- (03) Explain and interpret the term “UTC.”
- (04) List options for obtaining weather information relevant to UAS operations.
- (05) Interpret simple weather charts and reports/messages.

STS.060.02.02 Weather Bulletins

- (01) Explain the difference between current weather bulletins and forecast data.
- (02) Obtain and extract relevant information from a METAR report.
- (03) Obtain and extract relevant information from a SPECI report.
- (04) Obtain and extract relevant information from a TAF report.

STS.060.02.03 Weather Charts

- (01) Interpret radar images and lightning maps.
- (02) Interpret satellite imagery.
- (03) Interpret surface weather charts.

STS.060.02.04 Assessment of Local Weather Conditions

- (01) Assess the current local wind direction and speed.
- (02) Be aware of weather changes and their likely significance (e.g. sudden gusts, cloud formation).
- (03) Understand the possible differences between local weather conditions and official weather reports.

STS.070 UAS Flight performance

STS.070.01 Typical Flight Envelopes

- (01) Know that each UAS has an approved flight envelope within which flight safety (under normal, abnormal, and emergency conditions) as well as recovery capabilities, are demonstrated.
- (02) Know that the operational limits of a UAS must always be respected.
- (03) Know that different types of UAS (helicopters, fixed-wing, hybrid configurations, etc.) may have different approved flight envelopes and operating limits, mainly due to their design, and that sufficient time must be taken to become familiar with these limits.

STS.070.02 Mass and Balance

- (01) Define and explain the abbreviation "MTOM" (Maximum Take-Off Mass) and know that it represents a structural limitation.
- (02) Define and explain the abbreviation "CG" (Centre of Gravity).
- (03) Understand the effect of the centre of gravity on energy consumption.
- (04) Explain why payload components must be properly secured.
- (05) Know that, due to differences in their characteristics, payload components can affect flight stability.
- (06) Know that each UAS type has a different centre of gravity position and explain why.
- (07) Describe the relationship between centre of gravity position and UAS stability/controllability.
- (08) Describe the consequences of the centre of gravity being forward of the forward limit.
- (09) Describe the consequences of the centre of gravity being aft of the rear limit.

STS.070.03 Payload Securing

- (01) Know that all payload components must be properly secured before take-off to ensure flight safety.

STS.070.04 Batteries

- (01) Understand battery technology in order to avoid potentially hazardous situations.
- (02) Know the different types of batteries used in UAS (e.g. Li-Po, Li-ion, NiMH, Pb).
- (03) Understand the terminology used for batteries (e.g. capacity, discharge rate).
- (04) Know the correct procedures for charging, using, and storing batteries, as well as the associated risks.

STS.080 Technical and operational mitigations for ground risk

STS.080.01 Definitions and Responsibilities

- (01) Define the term “ground risk.”
- (02) Define the term “controlled ground area.”
- (03) Describe that the controlled ground area includes the following: the “flight geography area,” the “contingency area,” and the “ground risk buffer.”
- (04) Know that, to protect the controlled ground area, the UAS operator may use various means depending on the surrounding population density (e.g. fences, safety tape, personnel, etc.).
- (05) Define the terms “flight geography” and “flight geography area.”
- (06) Define the terms “contingency volume” and “contingency area.”
- (07) Describe the minimum external boundaries of the contingency area for STS-01 and/or STS-02 operations.
- (08) Define the term “operational volume.”
- (09) Define the term “ground risk buffer.”
- (10) Know that, in general, the remote pilot must ensure that the operational environment is compatible with the declared limitations and conditions, including the controlled ground area previously defined by the operator.
- (11) Be able to identify and determine the minimum distance to be covered by the ground risk buffer for a non-tethered UAS under STS-01.
- (12) Describe the radius dimension of the controlled ground area for a tethered UAS under STS-01.
- (13) Describe the distance to be covered by the ground risk buffer under STS-02.

STS.080.02 Ground Risk in STS-01

- (01) Explain why the intrinsic (i.e. unmitigated) ground risk associated with UAS operations under STS-01 is higher than that of operations conducted under the Open category, and the purpose of the controlled ground area in this context.
- (02) Know that the Flight Termination System (FTS) is a technical requirement that also serves to mitigate ground risk (in addition to mitigating air risk).

STS.080.03 Ground Risk in STS-02

- (01) Explain why the intrinsic (i.e. unmitigated) ground risk associated with UAS operations under STS-02 is higher than that of operations conducted under the Open category, and the purpose of the controlled ground area in this context.
- (02) Know that the requirement for the controlled ground area to be entirely located within a sparsely populated environment is an operational measure used to mitigate ground risk.
- (03) Know that the launch and recovery of the unmanned aircraft must be performed in VLOS, which is also an operational measure used to mitigate ground risk.