The Swedish Transport Agency´s Statute book

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AVIATION
Series GEN

The Swedish Transport Agency´s regulations on unmanned aircraft systems (UAS)

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Translation.
In the event of disagreement concerning the interpretation and content of this text, the printed Swedish version has priority

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AVIATION

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The Swedish Transport Agency´s regulations on unmanned aircraft systems (UAS);

Adopted on 14 October 2009.

The Swedish Transport Agency, in pursuance of Article 131 of the aviation ordinance (1986:171), has prescribed[1] the following:

Chapter 1 Introductory provisions

Area of application

Section 1 These regulations shall apply to design, manufacture, modification, maintenance and activities with civil unmanned aircraft system within Sweden which are not covered by Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC.

The regulations shall also apply to the design, manufacture, modification, maintenance and operations with civil unmanned aircraft systems within Sweden which are used or are designed for

1. testing or research,
2. commercial purposes, which includes all types of activities for which remuneration is received for work carried out,
3. professional occupation or similar activities not considered as recreation, or
4. flight beyond the visual line of sight of the pilot.

[1] The notification has been issued in accordance with The European Parliamant's and the Council's directive 98/34/EC of 22 June 1998 on an informational procedure for technical standards and regulations and for regulations for information society services (OJ L 204, 21.7.1998, P.37, Celex 31998L0034), amended through The European Parliamant's and the Council's directive 98/48/EC (OJ L 217, 5.8.1998, P.18, Celex 31998L0048).

Definitions and abbreviations

Section 2 The following definitions and abbreviations are used in these regulations

ACAS	an Airborne Collision Avoidance System is a system that is installed in an aircraft, using signals from SSR transponders operating independently of ground-based equipment, to provide the operator with advisory information on whether the SSR transponder-equipped aircraft represents a collision risk
AIP	Aeronautical Information Publication is a publication which is published by a state or on behalf of a state and which contains permanent information which is of importance to aviation
AIP supplement	AIP Supplement - SUP specify temporary changes to the content of AIP, published on specific pages
pilot-in-command	The pilot who is responsible for the aircraft's operation and safety in flight
fail-safe system	a support system integrated in the UAS, independent from the regulary manoeuvre and control systems, that in case of loss of communication or pilot control of the aircraft, can control the aircraft in a preset mode and/or terminate the flight
IFR	Instrument Flight Rules are regulations and procedures which are to be followed when an aircraft is flown and where instruments are primarily used to control the aircraft's attitude, navigation and separation from obstacles, terrain and to some extent other aircraft
IMC	Instrument Meteorological Conditions is a term that describes instrument weather conditions
visual line of sight	the maximum distance between the pilot and the aircraft within which the position and the trajectory of the aircraft can be visually observed without the use of camera, binoculars or other visual aids, and the distance where the aircraft can be safely maneuvered and collisions with other aircraft, persons or property on the ground can be avoided. Other visual aids are not spectacles or contact lenses used for correction of reduced vision
kinetic energy	The work which is required to stop a body in motion. It is used in this regulation to describe impact energy and is calculated using the equation $E_k = \frac{m_{max} \cdot (v_{max})^2}{2}$, where m_{max} is the maximum takeoff mass and v_{max} is the impact velocity
Communication	A system of two-way transmission between pilot

functions	position and the aircraft of manouever, control, indication, and radio functions for the manouevering and navigation of the aircraft in accordance with the rules of the air and the operational provisions.
controlled airspace	delimited airspace in which air traffic control is carried out for IFR-flights and VFR-flights in accordance with the provisions for this specific class of airspace
night	The state considered to be prevalent during the period of time between sunset and sunrise, where a prominent unlit object cannot be clearly distinguished at a distance of more than 8 km due to reduced daylight
NOTAM	Notice to Airmen is a notification which is distributed via telecommunication and contains information on the establishing, nature or change of facilities, services, regulations or obstacles to aviation, the prompt notification of which is of great importance to air traffic
SSR transponder	Secondary Surveillance Radar transponder, is an automatic response transmitter for secondary radar
Traffic Information Area	(TIA), is delimited uncontrolled airspace which extends upwards from a defined lower limit above the ground surface within which aerodrome flight information service is provided for an airport (AFIS)
Traffic Information Zone	(TIZ), is a delimited uncontrolled airspace which extends upwards from the ground surface to a specified upper limit, within which aerodrom flight information service is provided for an airport (AFIS)
UAS	an Unmanned Aircraft System is a system which consists of an unmanned aircraft and other components which are required to be able to control the aircraft at a distance, by one or more persons. These other components can include a control station, communication links and the peripheral equipment which is required to take off or land the unmanned aircraft
VFR	Visual Flight Rules are regulations and procedures which can be followed if the weather conditions are sufficiently good to allow the person who is operating the aircraft to visually be able to control the aircraft's attitude, to navigate the aircraft and maintain separation from obstacles, the ground and other aircraft
VMC	Visual Meteorological Conditions are weather conditions expressed in terms of values of flight visibility, distance from clouds, visibility and cloud cover height where these values are equal to or greater than set minima.

Mutual recognition

Section 3 A product which is legally manufactured or sold in accordance with a set of regulations in other member states within The European Union, Turkey or the European Economic Area (EEA) which are considered to be equivalent to products which comply with the requirements in these regulations, under the condition that an equivalent level of safety is achieved through these states' regulations. The equivalence of the product shall be able to prove.

Chapter 2 General provisions

Categories of UAS

Section 1 UAS activities are subdivided into the following categories:

Category 1A: Unmanned aircraft with maximum take-off weight of less than or equal to 1.5 kg, which develops a maximum kinetic energy of 150 J and is flown only within the visual line of sight of the pilot.

Category 1B: Unmanned aircraft with maximum take-off weight of more than 1.5 kg but less than or equal to 7 kg, which develops a maximum kinetic energy of 1000 J and is flown only within the visual line of sight of the pilot.

Category 2: Unmanned aircraft with maximum take-off weight of more than 7 kg which is flown only within the visual line of sight of the pilot.

Category 3: Unmanned aircraft which is certified to fly and be controlled beyond the visual line of sight of the pilot.

Approvals

Section 2 An approval from the Swedish Transport Agency is required for design, manufacture, modification, maintenance and operations with civil unmanned aircraft systems if Chapter 1 Section 1 is applicable. An application can be made for one and more categories in accordance with Section 1. If the operator is in possession of an unmanned aircraft which, based on the aircraft's weight and kinetic energy, falls into a specific category, but which otherwise does not comply with conditions for this specific category, then the operator shall apply for an approval in a higher category or for a specific approval. This is also applicable for occasional flights at special circumstances or in a restricted airspace.

Section 3 An application for an approval for UAS activities can be made for one or several specific areas or classes of airspace. The operator shall comply with the Swedish Transport Agency´s requirements for these specific areas or classes of airspace.

Section 4 An application for an approval for category 1A and 1B UAS activities shall contain the information and reports specified in Appendix 1.

Section 5 An application for an approval for category 2 UAS activities shall contain the information and reports specified in Appendix 2.

Section 6 An application for an approval for category 3 UAS activities shall contain the information and reports specified in Appendix 3.

Section 7 Category 1 approvals are valid for 2 years. An initial approval for category 2 and 3 UAS activities is valid for 1 year. Upon renewal, approvals are issued for a maximum of 2 years at a time. Application for renewal of an approval shall be submitted to The Swedish Transports Agency 30 days before the approval expires, at the latest. If The Swedish Transports Agency has not audited the operator, an application for approval for category 4 UAS activities shall contain the information and reports specified in Appendix 4.

Section 8 Operators that wish to supplement or change an issued approval, shall submit applications for this to the Swedish Transport Agency. Required changes to the operator manuals shall be enclosed to the application where this is applicable.

Section 9 The operator shall notify the Swedish Transport Agency if activities cease.

Section 10 A specific approval is required from the Swedish Transport Agency for the transport of goods and passengers.

Oversight of UAS companies

Section 11 An applicant for an UAS approval and a holder of a UAS approval must make their flight operations and maintenance technical organisations available for oversight to the extent the Swedish Transport Agency finds necessary. Personnel responsible for these activities shall be available when oversights are carried out.

Insurance

Section 12 An operator shall be insured in accordance with Regulation (EC) No 785/2004 of The European Parliament and of the Council of 21 April 2004 on insurance requirements for air carriers and aircraft operators[2].

Registration and markings

Section 13 Aircraft in category 1 and 2 shall be marked with the operator's name and telephone number and with the approval number which has been

[2] OJ L 138, 30/04/2004 P 1, Celex 32004R0785

assigned by the Swedish Transport Agency. For category 3, the registration number shall be marked on the aircraft and on the ground control station.

Chapter 3 Provisions for UAS category 1

Joint provisions for category 1A and 1B

Section 1 The an approval to be issued, the following criteria shall be met for a category 1A or 1B:

1. Flights are to take place such that the aircraft is well within the visual line of sight of the pilot (without the use of visual aids such as binoculars) and within the aircraft's operational range. Other activities, topography and obstacles, atmospheric effects on radio communication, interference of the frequency used, weather effects etc. shall be taken into consideration

2. Before a flight is carried out, the flight shall be planned and prepared using sources such as aeronautical pilotage chart, to determine which type of airspace the flight will be carried out in. Flight in a controlled airspace, a traffic information zone (TIZ) and a traffic information area (TIA) is only to take place after a permission for the flight has been granted by the relevant air traffic controller and in accordance with the conditions set by the air traffic controller.

3. Activities shall not be carried out during darkness.

4. The pilot shall be familiar with the aircraft's function and control and shall have ensured that the flight can be carried out in a safe way.

5. A pilot-in-command shall be designated for each flight.

6. The operator shall ensure that the system is maintained in accordance with the manufacturer's instructions and that the system's status is inspected before a flight is carried out.

7. The pilot shall ensure that the system remains intact throughout the entire flight.

8. If the aircraft can be equipped such that automatic flight in accordance with a programmed flight route is possible, a separate manual control system shall however always be available so that control can be taken over to ensure that avoidance manoeuvres can be carried out.

9. Accidents or incidents which result in the injury of persons or animals or damage to property on the ground or in the air shall be reported to the Swedish Transport Agency.

10. Information of the flights shall be noted in a log book or equivalent.

The information shall consist of date, name of the pilot-in-command, the individual aircraft, take-off and landing areas, flight time, total flight time, type of activity and potential deviations.

Special provisions for UAS category 1A

Section 2 The following criteria, in addition to those stated in section 1, shall be met in order for a category 1A approval to be issued:

1. The operator shall set up a flight and safety area before a flight is carried out. The area shall have a safe distance to persons, animals and property which is sufficiently large to ensure persons, animals and property not participating in or a part of the flight are not harmed during the flight.

2. A flight shall take place at an altitude that ensures that the aircraft is well within the visual line of sight of the pilot. The surrounding airspace shall be monitored so that a flight can be terminated if any other aircraft approaches the area.

Special provisions for UAS category 1B

Section 3 The following criteria, in addition to those stated in section 1, shall be met in order for a category 1B approval to be issued:

1. The operator shall set up a flight and safety area before a flight is carried out. The area shall have a safety distance (at least 50 m) to persons, animals and other property which is sufficiently large to ensure that persons, animals and other property that not participate in the flight will be harmed during the flight.

2. A flight shall not take place at altitudes higher than 120 m (400 ft) above ground or water. The surrounding airspace shall be monitored by the operator so that a flight can be terminated if any other aircraft approaches the area.

3. Each UAS shall be equipped with a built-in fail-safe system which can in some way terminate the flight.

Section 4 If the aircraft develops a kinetic energy of more than 1000 J, but is specially designed to reduce the negative impact on persons and property in the event of a collision, an approval may be granted in special cases. The application shall contain information of the aircraft design and grounds for the reduced negative impact on persons and property in the event of a collision.

Chapter 4 Provisions for UAS category 2

Organisation

Section 1 An applicant for an UAS approval and a holder of a UAS approval shall be represented by an accountable manager who is responsible for the entire activity. The accountable manager shall be acceptable to the Swedish Transport Agency. In order to be acceptable, the accountable manager must in a satisfying way demonstrate qualifications to perform activities and fulfil responsibilities in the application.

Section 2 The accountable manager is responsible for ensuring that the company's organisation and dimensioning are adapted to the undertakings carried out by the company. The accountable manager has overall responsibility for flight safety, which includes responsibility for ensuring

that activities are performed in accordance with issued limitations and current regulations.

Section 3 Under the accountable manager, there shall be two organisationally co-ordinated responsibility functions, one for the flight operation activities, called a flight operations manager, and one for maintenance technical activities, called the technical manager. The flight operations manager and the technical manager shall be acceptable to the Swedish Transport Agency. In order to be acceptable, they must in a satisfying way demonstrate qualifications to perform activities and fulfil responsibilities in the application. They must have proper training and experience from the kind of activities that the operator shall carry out.

If flight activities are limited, the Swedish Transport Agency may permit the accountable manager to be the flight operations manager or technical manager, or that the flight operations manager and technical manager are the same person.

Section 4 The flight operations manager is responsible for the following:

1. Management and monitoring of the company's flight operation activities and that the company has the approvals required for the activities carried out.
2. That the company has set up instructions and safety procedures for all activities which the company performs and that these are followed.
3. Evaluation of required competence and continuing monitoring of theoretical and practical competence of the flight operation personnel, approval of flight operational personnel employed in the company and for carry out required training and documentation.
4. From an operational viewpoint, to accept and allocate flight assignments with respect to the competence of the flight operations personnel.
5. That there exist required documentation of the flight operation personnel's planning and execution of flight assignments.
6. To set up required systems for information, reporting and record keeping which apply to the flight operation activities.

Section 5 The technical manager is responsible for the following:

1. Management and monitoring of the company's own maintenance activities, contracting and monitoring of aircraft and aircraft equipment maintenance carried out by external maintenance providers.
2. That all functions, responsibilities and work instructions which relate to equipment technology, maintenance production and maintenance control that maintenance personnel require have been set up and are followed.
3. Evaluation of the required competence of the company's technical personnel and the execution of any required training.
4. Acquisition and handling of all aircraft and aircraft equipment and other equipment which is important for maintaining the standard of the company's own maintenance activities.

5. To set up required systems for information, reporting and record keeping which apply to maintenance activities.

Section 6 The approval is valid only if the operator has appointed an accountable manager, a flight operations manager and a technical manager. If any of these persons leave their position in the company, no activities may be carried out until a new manager has been appointed by the operator and accepted by the Swedish Transport Agency.

Section 7 A pilot shall be designated as pilot-in-command for each flight. The pilot-in-command can be replaced during the flight. Replacements shall take place in accordance with a duty list that has been prepared in advance, so that there is always one pilot-in-command on duty.

The pilot must have knowledge of the aviation system and of flight safety standards, in accordance with the syllabus in the Swedish Transport Agency´s regulation (LFS 2008:9), Annex 1, appendix 1, JAR- FCL 1.125 PPL(A) training course.

The pilot shall have completed training on the relevant UAS type and shall have successfully completed an approved skill test for the Swedish Transport Agency before a approval is issued.

Section 8 A pilots in a UAS system, Category 2, must be at least18 years of age.

Technical provisions

Section 9 The aircraft shall be equipped with a built-in fail-safe system which in some way can terminate the flight.

Section 10 If the aircraft is equipped for automatic flight according to a programmed flight route, it shall have a separate manual control system in order to ensure that avoidance manoeuvres can be carried out.

Section 11 There shall be a technical manual which describes the construction of the aircraft, its control systems and other systems and the practical operation of the system.

Section 12 Maintenance shall be based on the checklists in approved operation and maintenance manuals.

Section 13 Only original replacement parts or fully equivalent products shall be used when defective components are replaced.

Section 14 The operator shall ensure that the system is maintained in accordance with the manufacturer’s instructions and that the system’s condition has been inspected before a flight is carried out. The pilot shall also ensure that the system is intact during the entire flight.

Section 15 When the operational limitations set in the approval are partially dependent on the aircraft's design, the aircraft is, if possible, shall be designed in such a way that minimize the negative effects of a collision or accidents on persons and property. For example, the aircraft may have a blunt design which absorbs or distributes the energy in a collision and may have a shielded propulsion system.

Flight operations provisions

Operation and maintenance manuals

Section 16 The company shall set up a manual which provides guidance for the company's personnel. The manual shall contain instructions on how preparation, maintenance and flight shall be carried out. The manual shall describe the activities which are carried out and shall be continuously maintained up to date. The company is responsible for ensuring that the manual content does not contravene the Swedish Transport Agency's regulations. The personnel affected and the Swedish Transport Agency shall immediately receive any supplements or changes.

Section 17 The operation and maintenance manual shall, in addition to what is prescribed in section 16 above, contain at minimum the following information:

1. The company's organisation illustrated by an organisational chart and detailed instructions which specify the responsibilities of the flight operations manager and other operational personnel
2. Description of the company with associated operational limitations
3. Instructions and checklists for preparation of flight assignments
4. Instructions and checklists for flight assignments
5. Maintenance instructions and associated checklists
6. A risk analysis adapted to the company in which all significant failure situations are analysed and are handled via corrective measures and instruction for abnormal situations.

Operational limitations

Section 18 The operational limitations which shall be followed are dependent on the unmanned aircraft's design, technical complexity and operational mode. The Swedish Transport Agency may, when an expected raised safety risk is determined, introduce compensating limitations for specific UAS or for their intended areas of usage.

1. Flights shall not take place above crowds, groups of animals, in or above built-up areas or in any other way that may risk injury to persons or animals or damage to property due to a crash or uncontrolled flight.

2. The operator shall set up a flight and safety area before a flight is carried out. The area shall have a safety distance to persons, animals, craft and other property which is sufficiently large to ensure that any persons,

animals and other property that not participate in the flight will be harmed during the flight. The area shall have a safety distance of at least 50 m, but adjusted to the type of aircraft and type of operation.

3. Flights shall take place at distances such that the aircraft is always well within the visual line of sight of the pilot. The flight shall take place within the aircraft's operational range. Topography and obstacles, atmospheric effects on radio communication, interference of the frequency used, weather effects etc. are to be taken into consideration.

4. The flight shall not take place at altitudes higher than 120 m (400 ft) above the ground or water.

5. Flights in a controlled airspace, a traffic information zone (TIZ) and a traffic information area (TIA) may only take place after permission for the flight has been granted by the air traffic controller in charge and in accordance with the conditions set by the air traffic controller.

Planning

Section 19 Before a flight is carried out, the flight shall be planned and prepared using sources such as aeronautical pilotage charts, to determine which type of airspace the flight will be carried out in. The flight shall otherwise be planned using other required information and documentation such as AIP, AIP Supplement, NOTAM, and information from, for example, the county administrative board, the police authority or the municipality, so that the flight can be carried out in a safe way within the conditions specified in the approval and according to operational instructions.

Section 20 When planning a flight, the weather shall be assessed based on suitable documentation such as forecasts, current weather or other suitable information, to determine whether the planned flight can be carried out in accordance with the system's technical and operational limitations.

Section 21 The flight shall be planned so that the safety area within the intended terrain and surroundings provide sufficient distance to people, animals and property**.**

Section 22 If special frequencies have been assigned to UAS radio communication, these shall be used. The frequencies used shall otherwise be approved by The Swedish Post and Telecom Agency (PTS). If the used frequency may experience interference, the operation area shall be scanned for interfering frequencies before a flight is carried out.

Flight

Section 23 The weather in which flights are to take place shall be such that aircraft can be operated in a safe way in all phases of the flight and such that the aircraft is within the pilot's visual line of sight.

Section 24 The flight shall be terminated if the weather deteriorates during the flight to the extent that the aircraft's function and operation cannot be maintained or if the conditions specified in section 23 cannot be met.

Section 25 The aircraft shall give way to all other aircraft.

Section 26 The pilot-in-command shall ensure that the operation is terminated if any unauthorised persons enter the safety area. The internal procedures shall be followed if unauthorised persons enter the safety area.

Section 27 Aircraft used for night flights shall be equipped with anti-collision lights and navigation lights, alternatively with lighting that illuminates the aircraft's sides so that the aircraft's attitude and travel direction can be seen clearly. The pilot-in-command shall hold a certificate of night theory VFR and must have satisfactory colour vision in accordance with the Swedish Transport Agency's regulation (LFS 2008:9) Annex 1, JAR-FCL 1.125.

Reporting

Section 28 The accountable manager is responsible for ensuring that the following is reported to the Swedish Transport Agency:

1. Accidents or incidents which result in injury of persons or animals or damage to property on the ground and in the air,
2. Deviations from the conditions specified in an issued approval or from operational instructions which involve risks specified in point 1.

Section 29 Information of the flights shall be noted in a log book or equivalent. The information shall contain date, name of the pilot-in-command, the individual aircraft, take-off and landing areas, flight time, total flight time, type of operation and potential deviations.

Chapter 5 Provisions for UAS category 3

Flight operations provisions

Organisation

Section 1 An applicant for an UAS approval and a holder of a UAS approval shall be represented by an accountable manager who is responsible for the entire activity. The accountable manager shall be acceptable to the Swedish Transport Agency. In order to be acceptable, the accountable manager must in a satisfying way demonstrate qualifications to perform activities and fulfil responsibilities in the application.

Section 2 The accountable manager is responsible for ensuring that the company's organisation and dimensioning are adapted to the undertakings carried out by the company. The accountable manager has overall

responsibility for flight safety, which includes responsibility for ensuring that activities are operated in accordance with issued limitations and current regulations.

Section 3 Under the accountable manager, there shall be two organisationally co-ordinated responsibility functions, one for the flight operation activities, called a flight operations manager, and one for maintenance technical activities, called the technical manager. The flight operations manager and the technical manager shall be acceptable to the Swedish Transport Agency. In order to be acceptable, they must in a satisfying way demonstrate qualifications to perform activities and fulfil responsibilities in the application. They must have proper training and experience from the kind of activities that the operator shall carry out.

If flight activities are limited, the Swedish Transport Agency may permit the accountable manager to be the flight operations manager or technical manager, or that the flight operations manager and technical manager are the same person.

Section 4 The flight operations manager is responsible for the following:

1. Management and monitoring of the company's flight operation activities and that the company has the approvals required for the activities carried out.
2. That the company has set up instructions and safety procedures for all activities which the company performs and that these are followed.
3. Evaluation of required competence and continuing monitoring of theoretical and practical competence of the flight operation personnel, approval of flight operational personnel employed in the company and for carry out required training and documentation.
4. From an operational viewpoint, to accept and allocate flight assignments with respect to the competence of the flight operation personnel.
5. That there exist required documentation of the flight operations personnel's planning and execution of flight assignments.
6. To set up required systems for information, reporting and record keeping which apply to the flight operation activities.

Section 5 The technical manager is responsible for the following:

1. Management and monitoring of the company's own maintenance activities, contracting and monitoring of aircraft and aircraft equipment maintenance carried out by external maintenance providers.
2. That all functions, responsibilities and work instructions which relate to equipment technology, maintenance production and maintenance control that maintenance personnel require have been set up and are followed.
3. Evaluation of the required competence of the company's technical personnel and the execution of any required training.
4. Acquisition and handling of all aircraft and aircraft equipment and other equipment which is important for maintaining the standard of the company's own maintenance activities.

5. To set up required systems for information, reporting and record keeping which apply to maintenance activities.

Section 6 The approval is valid only if the operator has appointed an accountable manager, a flight operations manager and a technical manager. If any of these persons leave their position in the company, no activities may be carried out until a new manager has been appointed by the operator and accepted by the Swedish Transport Agency.

Pilot-in-command, pilot and other operational personnel

Section 7 The flight operations manager shall set up and update a program for theoretic and practical training of operational personnel for each UAS type or version that the company uses. The program is to ensure that each person receives satisfactory training and training in the flight assignments and other work assignments which he or she is to carry out.

Section 8 Procedures for flight operations and for cooperation at the control station shall be included in the company's operation manual. The procedures shall be implemented via the practical flight training carried out within the company.

Section 9 Those who handle aircraft dispatch and retrieval equipment, along with observers, preparation personnel, operation planners and other operational personnel who do not participate in the flights shall be trained for the assignments they are responsible for. The training may be provided by the UAS operator, the manufacturer or any other person who is appointed by the company.

Section 10 A pilot shall be designated as pilot-in-command for each flight. The pilot-in-command may be replaced during the flight. Replacements shall take place in accordance with a duty list that has been prepared in advance, so that there always is one pilot-in-command on duty.

Section 11 Information on the flights shall be noted in a log book or equivalent. The information shall contain date, name of the pilot and pilot-in-command, the registration marks for the individual aircraft, take-off and landing areas, flight time, total flight time, type of operation, applicable flight rules and potential deviations. Log books shall be kept for at least twelve months.

Section 12 For issues such as flight times and duty periods for pilots and pilots in command, clearly specified limitations shall be set. The purpose of the limitations is to ensure that the pilots' and pilot-in-command's rest periods are sufficient and that flight safety is not compromised by tiredness due to a single flight, several consecutive flights or by accumulated tiredness from previous flight duties or other duty periods. Limitations shall be approved by the Swedish Transport Agency.

The pilot-in-command's obligations

Section 13 The pilot-in-command is responsible for the operation of the UAS aircraft during the period of time from when the engine starts or the aircraft begins to move, until the engine stops or the aircraft has stopped on the land or water. The pilot-in-command is also responsible for ensuring that the prepared safety procedures are followed.

Section 14 The pilot-in-command is responsible for ensuring that UAS aircraft is used in accordance with the manual prepared for the type, including checklists and other instructions.

Section 15 The pilot-in-command is responsible for ensuring that a flight plan is prepared before flight when this is required.

Section 16 The pilot-in-command shall notify the air traffic controller that an emergency situation exists if the fuel onboard is less than the ultimate fuel reserve or if the remaining battery capacity of an electrically driven UAS is too low. The pilot-in-command shall also notify that an emergency situation exists if the steering and control communications link to the aircraft is broken.

Section 17 The pilot-in-command is responsible for ensuring that information of the flight is noted in a log book or in accordance with section 11 above. System faults that arise shall be noted in the log book or equivalent document and shall be reported in the prescribed way after each flight.

The pilot-in-command's route and aerodrome knowledge for IFR flights

Section 18 The flight operation manager may appoint a pilot-in-command for a specific route or a part of a route, only when the pilot has the competence specified below.

Section 19 The pilot-in-command shall have satisfactory knowledge of:

1. The route and the aerodromes or landing sites that are to be used and of

a) minimum flight altitudes,

b) any special meteorological conditions,

c) the procedures of the Weather Service's, The Communications Service's and air traffic control's aids, and

d) navigational aids available in association with the route to be flown, and

2. the procedures that shall be applied when flying over built-up areas and in areas where there is heavy air traffic,

3. the layout of the aerodromes which are intended to be used, including the presence of any obstacles, lighting and approach aids, established

operational limitations and flying procedures for arrival, departure, holding and instrument flight conditions.

Section 20 If the intention is to land the aircraft at an aerodrome, the pilot-in-command shall prepare and plan the intended landing at the aerodrome before the flight is initiated. The Pilot-in-command shall ensure that the take-off and landing site is safe and adequately dimensioned and equipped, free from obstacles and has adequate surface conditions, with regard to the type of operation, the size of the aircraft, the aircraft's performance and external conditions.

Competence requirements

Section 21 A UAS pilot shall have completed UAS training approved by the Swedish Transport Agency or have carried out the theoretical training for a commercial pilot licence (CPL) and achieved an approved result. An approved IR rating is required for IFR flight.

Section 22 A pilot shall have completed training and achieved an approved result for the type of UAS system he or she shall fly. The training may, to a certain extent, be carried out in a simulator.

Section 23 The pilot shall continually maintain his or hers system competence updated.

Medical requirements

Section 24 A UAS pilot shall, at least, hold a current medical certificate class 3 according to the Swedish Transport Agency's regulation (LFS 2008:2).

Age requirements

Section 25 A category 3 system pilot must be at least 21 years of age. A category 3 system pilot may not be older than 67 years of age.

Operation manual

Section 26 The company shall set up an operation manual which provides guidance for the company's operational personnel. The manual shall describe how preparation and flight are to be carried out. The company is responsible for ensuring that the operation manual's content does not contravene the Swedish Transport Agency's regulations. Manual changes shall readily be notified to the appropriate personnel and the Swedish Transport Agency. The manual will be assessed by the Swedish Transport Agency before an approval is issued, and when oversight is carried out.

Section 27 The operation manual shall, in addition to that prescribed in section 26 above, at a minimum contain the following information:

1. the company's organisation illustrated via an organisational chart,
2. the responsibilities of the flight operations manager and other operational personnel,
3. description of the company's activities,
4. copy of the company's approval documents and special conditions,
5. administrative procedures,
6. program which includes internal training within the company,
7. overall equipment requirements for UAS
8. operational limitations including safety procedures and instructions relating to each type of operation,
9. instructions and checklists for flight preparation, including instructions for the calculation of fuel and oil reserves, refuelling of aircraft,
10. normal, abnormal and emergency procedures including checklists,
11. instructions for determining minimum flight altitudes for IFR flight,
12. route manual for IFR flight which contains information for each relevant route on radio communication, navigational aids, air traffic services, search and rescue services, aerodromes and approach procedures,
13. a risk analysis adapted to the company in which all significant failure situations are analysed and handled via corrective measures.

Flight preparations

Airworthiness

Section 28 The following airworthiness requirements shall be met:

1. A flight shall not begin before the pilot-in-command has ensured that the system is airworthy and that the flight can be carried out without technical inspection states/inspection intervals being exceeded. This shall be noted in the log book together with additional information in accordance with section 11.
2. The pilot-in-command shall, using current loading instructions, ensure before each flight that weight and balance limitations are complied with.

Flight planning

Section 29 The pilot-in-command shall ensure that the aids that are required for a safe flight are available before a flight begins.

Section 30 The pilot-in-command shall ensure that all operational documentation and information is relevant and applicable to both the planning and execution of a flight. The pilot-in-command shall have knowledge of the operational limitations in the airspace and at the aerodromes where the flight is intended to be carried out and the weather minima which apply during the flight.

Section 31 Flight planning in association with VFR flight assignments may be adapted to the nature of the operation and shall be described in the company's operation manual. The description shall include the planning of minimum fuel or energy requirements for a flight from the aerodrome, for a flight to the intended landing aerodrome or landing site, including prescribed reserves.

Section 32 Flight planning for non-local flights in accordance with section 33 and 34, shall be described in the company's operation manual**.**

Flight plan

Section 33 A flight plan shall be prepared for all non-local flights which are ferry or positioning flights. The flight plan shall contain the information specified in Appendix 4 of the Swedish Transport Agency regulations (LFS 2007:47) on aerial work with airplanes and shall be available at the control station. The flight plan shall be approved and signed by the pilot-in-command and shall be stored for a minimum of 3 months.

Section 34 The flight plan shall contain information that shows that the flight will be carried out with a UAS.

Weather conditions

Section 35 Non-local VFR flights may only commence take-off if weather reports or a combination of weather reports and weather forecasts show that the weather conditions along the route or at least the part of the route which shall be flown under VFR will at the relevant point in time be such that the flight can be carried out in accordance with these regulations.

Section 36 IFR flights may only commence take-off if available meteorological information shows that the weather conditions during the flight can be expected to be such that the limitations in the Swedish Transport Agency regulations and general advice (LFS 2007:50) on all-weather operations for aircraft can be observed.

Fuel and battery capacity

Section 37 A flight may only commence take-off if there is a high level of certainty that the aircraft has the fuel or battery capacity that are required for completion of the flight, which includes taking into consideration winds and other meteorological conditions that can be experienced along the route that might delay the flight. Sufficient fuel or battery capacity shall be available

1. for the planned operation including positioning flights in association with this,

2. to reach alternative aerodromes, and

3. to cover additional consumption which may result from the conditions specified in section 38 below arising during the flight.

Section 38 The below specified conditions shall be taken into consideration when setting fuel and energy levels:

1. weather requirements for carrying out the assignment that may affect fuel and energy requirements,

2. the reliability of the weather forecasts,

3. the risks of involuntary changes being made to the flight plan due to air traffic control conditions,

4. the risk that landing at the target aerodromes and planned alternative aerodromes may be delayed due to circumstances such as high traffic loads, snow or ice on the runways, the risk being indicated by previous experience or available reports.

Execution of the flight

Section 39 The pilot shall continually be able to monitor the aircraft's function and status. The pilot shall always be able to take control of the aircraft. Furthermore, the pilot shall in every situation have the ability to control the aircraft by giving commands. Every UAS shall be equipped with a built in fail-safe system which in the case of total malfunction of the normal communication and/or control system can abort the flight.

Weather analysis

Section 40 IFR flights may only continue towards the target landing site if the latest available meteorological information shows that the weather conditions at the target landing site at the estimated time of arrival, will be equal to or better than the operational limitations for the relevant approach procedure specified in the Swedish Transport Agency regulations and general advice (LFS 2007:50) on all-weather operations for aircraft. If the planning includes an alternative landing site, the same requirements applies for that alternative.

Section 41 VFR flights may only be continued towards the operational area or towards the target landing site, if the latest available meteorological information and weather observations made during the flight show that the weather conditions along the route or available alternative routes is such that the aircraft can operate safely and in accordance with the visual flight rules in Rules of the Air, BCL-T (1990:14). Transition to IFR flight may take place if the aircraft and flight crew are qualified for this and ATS has issued an IFR clearance.

Reporting

Section 42 The accountable manager shall report the following to the Swedish Transport Agency:

1. Accidents or incidents which have resulted in the injury of persons or animals or damage to property on the ground and/or in the air.

2. Deviations from conditions specified in issued approval or from operational instructions which involve a risk of the injury or damage to those specified in point 1.

Equipment requirements

Section 43 The UAS system shall be equipped with the instruments and the equipment required for that type of UAS and the area of operation. The system shall at least be able provide information on:

1. altitude,
2. speed,
3. position/course,
4. fuel amount/battery level, and
5. failure indications.

For IFR flights, the following additional equipment shall also be available:

a) pressure altimeter,

b) clock,

c) attitude instruments such as variometer, turn indicator, artificial gyro horizon and directional gyro or other instruments that show equivalent information.

d) equipment that indicates how the current instrument landing system is followed and any deviations from it.

Section 44 The system must be protected from unauthorised control of the system and from misleading signals. Atmospheric interference and phenomena (i.e. solar flares) which may have a negative affect on the aircraft's function shall be taken into consideration.

Function for detection of meteorological conditions

Section 45 There shall be a function built into the system that can detect whether VMC or IMC is prevailing.

Transponder equipment and equipment used for avoidance of collisions to other aircraft

Section 46 If a flight is to take place in areas or at aerodromes where such equipment is mandatory, the aircraft shall be equipped with an automatic secondary radar transponder in accordance with the Swedish Transport

Agency regulations (LFS 2007:26) on airborne collision avoidance system and transponders.

Section 47 A UAS aircraft shall be equipped with a system that can detect other aircraft. The system shall be designed in a way that the UAS aircraft can maintain safe separation and make way in accordance with Rules of the Air, BCL-T (1990:14).

Section 48 If the UAS aircraft is equipped with a system for collision avoidance, which has the same principal function as other types of systems for collision avoidance (e.g. ACAS), these shall be compatible so that resolution advisories from the systems are coordinated.

Flights during darkness

Section 49 Aircraft used during darkness, in addition to the equipment specified as being required for the intended operation, shall also be equipped with the following equipment:

1. Navigation lights as prescribed in EASA Certification Specifications or in BCL-M 2.1 (LFS 1986:23), Design provisions, aeronautical products and in Rules of the Air, BCL-T (1990:14),
2. A system according to section 47 that also detects navigation lights, and its colours. This is applicable if the system according to section 47 only can detect other aircraft optically.

Flights during icing conditions

Section 50 Aircraft used during weather conditions where ice formation is reported or may occur shall be equipped with ice formation protection. Such aircraft shall, in accordance with the flight manual, be specially approved for flight during icing conditions.

Section 51 Flights in accordance with section 50 above may only be performed by pilots who have completed relevant training approved by the UAS manufacturer or the operator.

Flights in specific airspace

Section 52 Aircraft operated in airspace where reduced vertical separation minimum (RVSM) is required, shall comply with the requirements in the Swedish Transport Agency regulations and general advice (LFS 2007:25) on flights with reduced vertical separation minimum (RVSM).

Section 53 Aircraft operated in airspaces where basic flight area navigation (B-RNAV) is required, shall comply with the requirements in the Swedish

Transport Agency regulations on area navigation, BCL-D 1.21 (LFS 1998:8) area navigation (RNAV).

Communication and navigation equipment

Section 54 If specific frequencies have been allocated for radio communication in the UAS system, these shall be used. In addition to this, the frequencies to be used shall be approved by The Swedish Post and Telecom Agency (PTS).

Section 55 The UAS system shall be equipped with navigation equipment which can show the aircraft's exact position. The equipment used shall be approved by the Swedish Transport Agency for the intended specific area of use.

Section 56 The navigation equipment shall provide information based on updated mapping data and communicable with the air traffic controller.

Communication with air traffic control

Section 57 Aircraft operated in airspace that requires two-way radio communication, shall monitor the frequency of the relevant air traffic control.

Exemptions can be granted by the relevant air traffic control:

a) for air traffic at controlled aerodromes and

b) for occasional flights into or out of a control zone.

Section 58 The first call to an air traffic control unit shall contain the word 'unmanned' to ensure that the air traffic controller is aware of the fact that the flight is a UAS flight.

Section 59 The UAS shall, via its pilot-in-command, be able to comply with instructions or requests from the air traffic controller within the same period of time a pilot of a manned aircraft responds to such requests or instructions.

Section 60 The pilot shall have a stand-alone communication equipment as an alternative to the standard equipment, so that the pilot can contact the air traffic controller if the standard equipment communication is lost.

Operational procedures for operations at approved aerodromes

Section 61 UAS operations at approved aerodromes shall be carried out in accordance with the aerodrome operation manual, in which there shall be procedures describing how UAS operations may be carried out together with other aircraft in a safe way.

Section 62 If taxiing can not be carried out according to the aerodrome's normal rules and procedures, the taxiing shall be assisted by ground personnel, who shall be in direct contact with the air traffic controller and the UAS pilot.

Airworthiness certification

Section 63 An application for a project approval shall be submitted for newly developed systems in accordance with the Swedish Transport Agency's Regulation BCL-M 1.6 (LFS 1979:2).

Section 64 The flight test permit is submitted in accordance with the Swedish Transport Agency's Regulation BCL-M 1.6 (LFS 1979:2).

Section 65 Where there are no certification specifications for a specific type of UAS, the certification specifications used for equivalent manned aircraft shall be adapted to the UAS and shall be used in accordance with the Swedish Transport Agency's Regulation BCL-M 2.1 (LFS 1986:23). The proposed certification specifications shall be approved by the Swedish Transport Agency.

Section 66 Organisations which intend to manufacture UAS shall hold a approval as specified in Swedish Transport Agency's Regulation BCL-M 3.1 (LFS 2000:46).

Maintenance provisions

General

Section 67 A company shall have access to a maintenance organisation to the extent required to ensure that the system used in the company can be maintained in an airworthy and system-operational state.

Section 68 The extent of the maintenance activities within a company may vary depending on whether an agreement has been signed with an external maintenance organisation or licensed aircraft engineer. However, the primary maintenance personnel for a UAS type used in flight activities may not be split, and shall in its entirety either be in the aviation company or at an external maintenance organisation.

Maintenance responsibility functions

Section 69 Requirements relating to maintenance responsibility functions within a company are established based on an evaluation of each particular case, of the nature and scope of flight operations, aircraft, equipment and on an evaluation of agreements with external maintenance organisations or licensed aircraft engineers.

All functions of responsibility can be held by a technical manager who is an employee of the company or a technical manager that is linked to the company by an agreement, with the support of an external maintenance organisation or licensed aircraft engineer when required.

All required responsibility functions can also be held by an external maintenance organisation which is qualified and suitable for the task and which, through an agreement, has the full technical and administrative responsibility for the maintenance activities. Those who hold these responsibilities in the maintenance organisation shall be named.

Section 70 If an employee holds a responsibility function such as technical manager in a company as specified in the second paragraph of section 69 above, an agreement may be entered with an external maintenance organisation on ongoing maintenance technical support.

Section 71 If an external individual or a maintenance organisation holds the technical manager responsibility function in a company as specified by the second and third paragraph in section 69 above, a written agreement is to be set up between the parties.

Section 72 When the technical manager responsibility function in a company is held by an external maintenance organisation, the accountable manager is responsible for ensuring that:

1. all parties follow the procedures which the maintenance organisation specifies in the agreement,
2. the management of the maintenance work which is carried out by the company's own personnel is to be fully delegated to the management of the organisation responsible for maintenance,
3. the company is not to engage any other maintenance organisation or any other person to carry out maintenance or modification of aircraft and aircraft equipment, without this first being approved by the technical manager,
4. the organisation responsible for maintenance comply with the reporting system for aircraft and aircraft equipment usage and ocurred disruptions which has been assigned, and
5. the organisation responsible for maintenance immediately will be provided with all information that relates to the aircraft and aircraft equipment that the operator receives as owner or holder of the aircraft or equipment.

Authorisation

Section 73 A company's maintenance organisation, a maintenance organisation or licensed aircraft or system engineer linked to a company through an agreement as specified in the second paragraph of section 69 shall have an authorisation to carry out maintenance on the aircraft and components used in the company and have full technical and administrative responsibility for maintenance activities.

Section 74 The type of authorisation described in section 73 above shall be specified in the special conditions appended to the company's approval.

Section 75 The Swedish Transport Agency may, following an assessment, extend the authorisation of a company's maintenance organisation to include the following:

1. Manufacture of specified replacement parts (i.e. rudder lines, hoses and pipes for hydraulic and pneumatic systems) which are required in ongoing work.
2. Periodic maintenance of aircraft and aircraft equipment of the same type and model which is owned or held by company external parties and used or has been used in own aviation activities.

Subcontractors

Section 76 A company's maintenance organisation has the right to engage the following types of subcontractors for general sub-contract work, without a special permit for this being required.

1. The manufacturer of the aircraft and aircraft equipment which the general sub-contract work relates to that has been authorized by the Swedish Transport Agency, and subcontractors who have been assigned by such manufacturers,
2. Aircraft maintenance facilities which have been approved by the Swedish Transport Agency or authorized maintenance organisations within the aviation company which have been authorized by the Swedish Transport Agency for the relevant general sub-contract work,
3. Maintenance facilities in the country other than those specified in point 2 above, under the condition that a separate special control function can assume control responsibility for the sub-supplier's work.

Section 77 A technical agreement shall be set up where subcontractors, in the form of external authorized aircraft maintenance facicilities or maintenance organisations, are engaged as an integrated part of the company's maintenance organisation to carry out qualified maintenance work. The agreement shall be approved by the Swedish Transport Agency. The scope of the undertaking and the conditions which both parties shall observe shall be specified in the agreement.

Section 78 The company is responsible for the source and condition of exchange parts, replacement parts, standard materials and raw materials and for ensuring that these comply with the requirements in BCL-M 3.2 (LFS 1984:4), Maintenance and modification of aircraft and aircraft equipment.

Section 79 Only state owned testing institutions, state authorized testing institutions or private testing institutes which are generally acknowledged in the market must be contracted as subcontractors for materials, aircraft and aircraft equipment testing and the checking of measurement equipment.

Special standards and maintenance requirements

Section 80 The specified standards and maintenance requirements in section 81 – 99 shall be met, in addition to the general standards and maintenance requirements found in the Swedish Transport Agency's Regulation BCL-M 3.2 (LFS 1984:4), Maintenance and modification of aircraft and aircraft equipment.

Technical personnel

Section 81 The technical manager is responsible for ensuring that all personnel in the maintenance technical activity have the competence required for the work assignments they are responsible for and that the number of people in the different work management, direct production and monitoring functions are sufficient.

The technical manager has the same responsibility if the work is carried out at any other site than at own maintenance facility, if the work takes place within the framework of the own maintenance organisation and by own personnel.

Delegation of responsibility for subordinate function managers shall be in accordance with company instructions.

Section 82 A company's access to licensed aircraft and system engineers shall be sufficient to meet the requirements of inspection personnel responsible for this at the normal base location and where relevant, at another base location.

Section 83 The technical manager and, where appropriate, responsible function managers are to provide the technical personnel with information, instructions and training relating to divisions of responsibility, work objects, work documentation, work methods and aids required to achieve reliable work results. The technical manager or the responsible function managers are responsible for ensuring that issued instructions are followed.

Premises and equipment

Section 84 There shall be appropriate premises for maintenance on the types of aircraft and equipment used by the company at the ordinary base location, at the company's own maintenance facility and at any external maintenance facility. The premises must be such that the maintenance of aircraft and aircraft equipment can be carried out in a satisfactory way. This assumes that there is access to office and workshop premises, including acceptable heating, working lights and cleanliness. This also assumes that there is access to required tools, testing and process control equipment, to the required energy sources and other general workshop equipment.

Section 85 If the operators maintenance activities include special workshops, these are to comply with the requirements specified in the Swedish Transport Agency's Regulation BCL-M 3.3 (LFS 2000:47), Aircraft Maintenance Facilities.

Section 86 An operator shall have at its disposal the required and appropriate storage premises for replacement materials. The premises shall facilitate storage at suitable temperatures and humidity and provide the required protection from dust and other substances that can have a harmful effect. Equipment and materials which are stored whilst awaiting maintenance shall be able to be stored separately from material that has been approved after maintenance has been completed.

Work documentation

Section 87 There shall be a documentation of all maintenance work carried out on each type of UAS used in the company. The documentation shall either be compiled in a special maintenance manual which, in addition, shall contain a table of content, a revision block and a distribution list or shall be included as a special section in the maintenance organisation exposition in accordance with section 110 – 114 below.

Section 88 The work documentation of maintenance activities shall at least include the following:

1. A clear description of the type including relevant equipment.
2. A specification of the type specific maintenance requirement which includes daily, periodic and special inspections, time between overhauls of aircraft, engines, propellers, rotors and other components and the interval, operation and storage times for these.
3. A list of the procedures which shall be applied to type specific maintenance, including information on procedure source, such as material manufacturer's maintenance procedures including specific repair procedures, other user maintenance procedures and maintenance procedures that have been prepared based on own experience.

The special maintenance manual or the special section of the maintenance organisation exposition shall contain a specific inspection lists for different types of inspections.

Work methods

Section 89 Procedures shall be available to the extent required for general standardised production methods such as riveting, gluing, heat treatment and surface treatment and for work methods required to be used in any manufacture.

Section 90 When welding, brazing or soldering aircraft and aircraft equipment, the regulations in the Swedish Transport Agency's Regulation

BCL-M 3.3 (LFS 2000:47), Aircraft maintenance facility work methods and competence apply.

Section 91 The operator shall have procedures for storage of required replacement and consumption materials and for aviation quality raw materials for the relevant UAS type operation and maintenance.

The procedures shall specify protective measures for storage and transport, marking, general maximum storage times, planned replacement part supplies and how aircraft and aircraft equipment and other materials shall be held separated.

Section 92 Procedures for sampling during operation shall be found to the extent required to follow up on materials and system status.

Section 93 All maintenance work, with the exception of daily inspections or equivalent inspections, shall to the extent possible be carried out at the company's ordinary maintenance base. There shall be procedures for implementing and reporting supplementary measures if it has been necessary to carry out qualified maintenance work under other conditions. Irrespective of where the maintenance work was carried out, the technical manager is responsible for ensuring that the following conditions for carrying out the work are present:

1. trained personnel,
2. work documentation,
3. tools and equipment,
4. suitable premises, and
5. replacement and exchange materials.

Section 94 Procedures shall be available for the follow-up and reviewing of required aircraft documents as prescribed in the Swedish Transport Agency's Regulation BCL-M 1.1 (LFS 1978:5), Airworthiness, environmental protection and documentation requirements.

Inspections by authorized personnel in the organisation

Section 95 The company may, instead of the prescribed daily inspection (or equivalent) carried out by certified aircraft or system engineer, allow an authorised employee in the company to carry out specific system inspections. The scope of such inspections shall be regulated by special inspection lists. Inspections may be carried out at locations other than the normal maintenance base. The inspections may only be carried at the normal base location when the authorised licensed aircraft engineer or system technician is not on duty.

Section 96 The technical manager shall determine the number of inspections which an authorised employee may carry out in succession throughout a specific time period and record this in the special maintenance manual or in

the special section of the maintenance organisation exposition or in equivalent instructions.

Section 97 A certificate of inspection authorisation is to be issued by the company's technical manager. The technical manager is responsible for setting up and applying the training plans, examination forms, required instructions and inspection lists with specified authorities. The instructions and inspection lists are to be found in the relevant work documentation for the UAS type for the maintenance activity (see section 87 and 88 above). The inspection lists shall be available to personnel during flights. The training plan shall also contain regulations on the in-service training which is required.

Section 98 A certificate of inspection authorisation is to contain information on the company's name, the name of the person authorised, certificate number, the validity for a UAS type and types of inspections and period of validity. A certificate can be issued individually or collectively. If a certificate is issued collectively, any individual authorities shall be specified. The certificate shall also state that it is issued by the technical manager and that it only applies when the holder acts as an employee of the company.

Section 99 The technical manager shall set up and maintain a list of issued authorisation certificates that includes the names of those authorised and certificate numbers.

Control system

Section 100 The company shall apply a control system to the maintenance of UAS which is adapted to the type and scope of the activity. This system can, in its most comprehensive form, be included in production and quality control.

Production control

Section 101 Production controls shall include all controls and testing prescribed in the maintenance organisation exposition and, where appropriate, a function control flight.

Section 102 Inspection work that is not carried out by certifying staff or by authorised employees as specified in section 95 - 99 above, or by any other authorised person in accordance with section 111 point 11 below, shall be carried out in accordance with the production control as prescribed in the maintenance organisation exposition.

Section 103 Overhauls shall be in accordance with the production control and associated testing, prescribed in the maintenance organisation exposition.

Section 104 Repair and modification work and required part manufacture shall be made in accordance with the production control prescribed for each individual case.

Quality control

Section 105 It shall be described in the maintenance organisation exposition how a systematic review shall be carried out such that an acceptable maintenance standard is maintained. The following shall be reviewed:

1. qualification requirements for maintenance technical personnel,
2. standard of workshop premises and workshop equipment,
3. completeness and applicability of work and control documentation,
4. appropriateness of work methods and working processes,
5. the standard of maintenance work carried out in maintenance facilities and at external locations,
6. acceptability of aircraft, aircraft equipment and raw materials for aircraft from subcontractor,
7. the standard storage and transport of materials,
8. reliability of the measuring instruments used in production and control activities, and
9. application of system for continuous reliability maintenance of material components.

Control instructions

Section 106 Required instructions for control activities as specified in section 100 above shall primarily consist of:

1. scope and procedures for inspections in association with the production department's type specific maintenance work,
2. scope and procedures for inspections in quality control review activities,
3. procedures for inspections carried out on receipt of raw materials and materials from subcontractors and external maintenance facility,
4. control of stores, including the stored material's identification, lay up, conservation and storage times,
5. reviews of applied special control methods, the control of special work and the equipment required for this,
6. procedures for function control flights, and
7. periodic control and marking of the measurement and test equipment used in control activities and maintenance work, and of this type of equipment which is used in production.

Technical reporting

Section 107 The company shall report material technical status and completed maintenance work either through a special technical bookkeeping system or technical journals.

Section 108 A technical bookkeeping system shall ensure that personnel are notified of the system's maintenance and function status before takeoff and that personnel, after completed flights, submit a written report on remarks and failures noted during flights.

Section 109 A technical bookkeeping system shall primarily include:

1. set report forms for reporting aircraft, engine, propeller or rotor and affected components' technical status in issues relating to cumulative operating times, calendar times, completed maintenance and introduced modifications,
2. required instructions for personnel responsible for maintenance and control for noting remarks in the report forms (see also section 95 - 99 above), and
3. procedures for report processing.

The maintenance organisation exposition

Section 110 The company shall set up a maintenance organisation exposition or equivalent instructions. The contents shall govern maintenance activities and shall be kept up to date so that it reflects activities and current regulations. The manual shall describe quality control used in the company in accordance with the Swedish Transport Agency regulations and general advice (LFS 2007:19) on quality control of flight safety work in aerial work activities.

The manual or the instructions shall be systematically set up and have a table of contents, revision blocks and a distribution list.

Section 111 The maintenance organisation exposition shall be adapted to the company's organisation, to ensure reliable control of maintenance activities. It can be set up in accordance with the following:

1. The maintenance organisation's scope and the distribution of maintenance work at own maintenance technical activity, named external maintenance parties and the technical division of responsibility in its agreements with these.
2. Organisation of own maintenance technical activities illustrated via an organisational chart with the personnel responsible being named in accordance with section 69 – 72 above. The organisation description shall show the relationship between the company's technical and operational functions and the company management.
3. Instructions for the technical manager and for other responsibility functions in accordance with section 5, section 69 – 72, and section 80 - 83.

4. Instructions for engaging subcontractors who are not bound by an agreement as specified in section 76 - 79 above.

5. Owned or hired ground areas with premises and other facilities for own maintenance technical activities in accordance with Section 84 - 86 above, shown in plans with scale. The plans shall show the premises for parking aircraft, other workshop premises with permanent equipment and storage and office premises.

6. Instructions for procuring and handling required publications and regulations.

7. Specifications of current maintenance procedures for each UAS type which is used in the company or references to specify current UAS type special maintenance manual in accordance with section 87 - 88 above.

8. Reference list of current instructions for general work methods and instructions for the work methods specified in section 89 – 99 above.

9. Where appropriate, a description of applied control system and a list of current control instructions in accordance with section 100 – 106 above.

10. Instructions for reporting maintenance work in accordance with the regulations in BCL-M 3.2, Maintenance and modification of aircraft and aircraft equipment, and where appropriate, reporting of technical bookkeeping system in accordance with section 107 – 109 above.

11. A list of personnel who have been authorised to sign documents which confirm the completion of maintenance work and/or completed controls of this. The list shall state the area of authority of the person concerned, their identity, control stamp number or equivalent (signature). The register shall also include personnel with special competence, such as welding and soldering (see BCL-M 3.3, Aircraft maintenance facility, Appendix 3).

12. Guidelines for internal training of technical personnel.

13. Where appropriate, a list of special maintenance technical procedure instructions and instructions for coordinating maintenance technical and flight operational personnel activities.

Section 112 When the company's maintenance organisation is based on an agreement between the company and an external maintenance organisation (see second and third paragraph of section 69), the company's maintenance organisation exposition shall contain what is required to clarify the scope of the agreement to the company's own personnel. It shall also contain other procedures which the company and the maintenance organisation jointly has considered to be required for the technical manager to satisfactorily fulfil his functions.

Section 113 In case of forms of maintenance technical responsibility functions, other than those specified in section 112 above and for the letting of aircraft, it is possible to set up maintenance instructions instead of a maintenance organisation exposition. The maintenance instructions shall contain the parts in section 111 required to control the maintenance activities in a reliable way.

Section 114 The maintenance organisation exposition or maintenance instructions shall be included in the documentation the Swedish Transport Agency uses to determine whether a first approval can be issued. The company is subsequently to notify of any significant changes in activities.

Chapter 6 Exceptions

Section 1 The Swedish Transport Agency may grant exceptions from these provisions.

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1. This statute comes into force on 1 December 2009.
2. Approval for UAS activities as previously announced by the Swedish Transport Agency or its predecessor is still valid.

On behalf of the Swedish Transport Agency

STAFFAN WIDLERT

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(Civil Aviation Department)

Utgivare: Kristina Nilsson, Transportstyrelsen, Norrköping ISSN 2000-1975

Appendix 1 Instructions for application regarding approval for category 1A and 1B UAS operations

When applying for approval for category 1A and 1B operations, the applicant shall submit the information specified below.

- The operator's name and company name, personal identity number or corporate identification number, address, telephone number, and e-mail address.
- The name of the pilot and a description of the pilot's experience of flying with the type of UAS.
- A copy of the insurance certificate must be attached. If this is not possible, it may be submitted after the approval has been issued. In that case a confirmation is required from the Swedish Transport Agency that the certificate has been received and approved before operations may commence.
- Type of UAS aircraft, manufacturer, weight, dimensions, speed, propulsion system and control system.
- Photographs or exploded view of the aircraft.
- The aircraft's fail-safe system is also to be described if the application applies to UAS category 1B.
- For approval of category 1B, where the estimated kinetic energy is greater than 1000 J, the application in this case must be supplemented by a description and justification for the manner in which the aircraft's design helps reduce the negative impact on people and property in the event of collision.

The approval number which the aircraft shall be marked with will be sent to the applicant when the application is approved.

Application forms and information on the application are available on the Swedish Transport Agency's web site.

The application shall be sent to the Swedish Transport Agency, Civil Aviation Department, 601 73 Norrköping, Sweden.

Appendix 2 Instructions for application regarding approval for category 2 UAS operations

When applying for approval for category 2 operations, the applicant shall submit the information specified below.

The application consists of two parts:
1. general information,
2. operation and maintenance manual

1. General information shall contain the following:

- The applicant's name or company, postal address, telephone number and e-mail address.
- Personal identity number or corporate identification number and a certificate of incorporation, depending on the type of organization.
- Description of the organisation and management which is considered required for the intended activities and the CV's of the accountable manager, flight operations manager, technical manager and pilot.
- Description of intended activity.
- Description of UAS. This includes information on type of aircraft (model/manufacturer), dimensions and other technical specifications, type of control system and how chapter 4, Section 9 – 15 in this regulation are intended to be complied with.
- A copy of the insurance certificate must be attached. If this is not possible, it may be submitted after the approval has been issued. In that case, a confirmation is required from the Swedish Transport Agency that the certificate has been received and approved before operations may commence.

2. The operation and maintenance manuals shall contain the information specified in chapter 4 section 16 – 17 in this regulation. It shall otherwise contain a description of how chapter 4 section 18 – 29 in this regulation are intended complied with within the organisation.

The approval number with which the aircraft shall be marked, will be sent to the applicant when the application is approved.

Application forms and information on the application are available on the Swedish Transport Agency's web site.

The application shall be sent to the Swedish Transport Agency, Civil Aviation Department, 601 73 Norrköping, Sweden.

Appendix 3 Instructions for application regarding approval for category 3 UAS

The application consists of three parts:

1. general information
2. flight operational organisation
3. technical maintenance organisation

An application shall include the following information and documents:

Part 1.

- The applicant's name or company, postal address, telephone number and e-mail address.
- Description of the organisation and management which is considered required for the intended activities and the CV's of the accountable manager, flight operations manager, and technical manager.
- The type and scope of the intended activity and intended types and numbers of UAS.
- Principal place of business and premises and facilities for the administrative, flight operations and maintenance activities.

Part 2.

- Draft operations manual according to chapter 5 section 26-27.
- The number of flight operations personnel.
- Registration numbers for the UAS that will be used in the organisation.
- Insurance or other security for the types of UAS that will be used.

Part 3.

- Maintenance organisation exposition or equivalent instructions.
- Number of aircraft and systems engineers in the organization.
- Contracts (if any) with third party or maintenance organizations according to chapter 5 section 101-104.
- Technical agreements (if any) with sub-contractors according to chapter 5 section 106.

If the applicant is a private person, a birth certificate and registration certificate shall be attached to the application.

If the applicant is a corporation, a registration certificate and a copy of Articles of Association shall be attached to the application.

If the applicant is a general partnership, an extract from the commercial register and birth certificate of the members shall be attached to the application.

A birth certificate may not be older than 6 months. A certificate of registration and the extract from the register will show conditions at the time of application.

The application shall be sent to the Swedish Transport Agency, Civil Aviation Department, 601 73 Norrköping, Sweden.

Appendix 4 Instructions for application regarding a renewed approval for UAS operations

The application must state that the operator intends to continue with previously approved activities and have the approval renewed. Name and company name, personal identity number or corporate identification number, full address, telephone number and e-mail address should be reported. The application must be accompanied by a report describing the past year's activities. The logbook can serve as a basis for the report. The report should reflect total flight time for each individual aircraft and pilot, type of operation and possible malfunctions and anomalies including corrective actions.

The application for a renewed approval for UAS activity shall be sent to the Swedish Transport Agency, Civil Aviation Department, 601 73 Norrköping, Sweden.