SIERRA LEONE CIVIL AVIATION REGULATIONS

PART 6D—UNMANNED AIRCRAFT SYSTEMS

JULY 2025

PREAMBLE

WHEREAS, the Director-General shall have the power to perform such acts, including the conduct of investigations, to issue and amend orders, rules, regulations, and procedures pursuant to and in accordance with the Civil Aviation Act, 2023.

WHEREAS, the Director-General shall have the power to publish all reports, orders, decisions, rules, and regulations issued under the Civil Aviation Act, 2023, in such form and manner as may be best adapted for public information and use;

NOW THEREBY, the Director General, under its powers given by Article 17(1) and 17(2) (a) of the Civil Aviation Act, 2023, issues the following regulations, which supersede previous regulations on Unmanned Aircraft Systems.

1. SHORT TITLE

This regulation may be cited as Sierra Leone Civil Aviation Regulation "SLCAR Part 6D- Unmanned Aircraft Systems"

2. EFFECTIVE DATE

This Regulation shall come into force as of the 25th day of July 2025.

Ms Musayeroh Barrie
Director General

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SECTION 1

UNMANNED AIRCRAFT SYSTEM FOR DOMESTIC OPERATIONS

1. GENERAL PROVISIONS

1.1 Definitions

When the following terms are used in this regulation for operation of UAS, they shall have the following meanings:

(a) Aerial work. An aircraft operation in which an aircraft is used for specialized services such as agriculture, construction, photography, surveying, observation and patrol, search and rescue, aerial advertisement, etc.

(e) Aeroplane. A power-driven heavier-than-air aircraft, deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under given conditions of flight.

(f) Aircraft. Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

(g) Airspace observer. means a person who assists the remote pilot by performing unaided visual scanning of the airspace in which the unmanned aircraft is operating for any potential hazard in the air;

(h) Assemblies of People. means gatherings where persons are unable to move away due to the density of the people present

(e) Authority. The Sierra Leone Civil Aviation Authority

(f) Autonomous Operation' means an operation during which an unmanned aircraft operates without the remote pilot being able to intervene;

(g) Beyond Visual Line-of-Sight (BVLOS). A type of UAS operation which is not conducted in VLOS

(h) C2 Link. The data link between the remotely piloted aircraft and the remote pilot station for the purposes of managing the flight.

(i) Controlled airspace. An airspace of defined dimensions within which air traffic control service is provided in accordance with the airspace classification;

(j) Controlled ground area. Ground area where UAS is operated and within which UAS operator can ensure that only involved persons are present

(k) Dangerous goods. Articles or substances which are capable of posing a hazard to health, safety, property or the environment and which are listed as dangerous goods in the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Doc 9284), known as the 'Technical Instructions', or which are classified as such according to the Technical Instructions including in particular:

(i) explosives (mass explosion hazard, blast projection hazard, minor blast hazard, major fire hazard, blasting agents, extremely insensitive explosives);

(ii) gases (flammable gas, non-flammable gas, poisonous gas, oxygen, inhalation hazard);

(iii) flammable liquids (flammable liquids; combustible, fuel oil, gasoline);

(iv) flammable solids (flammable solids, spontaneously combustible solids, dangerous when wet);

(v) oxidising agents and organic peroxides;

(vi) toxic and infectious substances (poison, biohazard);

(vii) radioactive substances;

(viii) corrosive substances;

(l) Director General. Director General responsible for civil aviation in Sierra Leone

(m) Direct Remote Identification (DRI). A system that ensures the local broadcast of information about a UA in operation, including the marking of the unmanned aircraft, so that this information can be obtained without physical access to the UA

(n) Down-link. Direct or indirect communication link from the UA to receivers located elsewhere

(o) Extended Visual Line-of-Sight (EVLOS). Operation beyond the unaided visual range of the remote pilot, but where the remote pilot is supported by vision systems or by one or more visual (airspace) observers

(p) Follow me mode. A mode of operation of a UAS where the UA constantly follows the RP within a predetermined radius

(q) Geo-awareness. A function that, based on the data originated by a State, detects a potential breach of airspace limitations and alerts the RP so that s/he can take immediate and effective action to prevent that breach

(r) Geo-fencing. Function that helps the pilot or controls automatically the UA to prevent from entering into geographical zones which are declared restricted to this UA, for various reasons and not only safety

(s) Geographical zones: Portion of airspace established by the competent authority that facilitates, restricts or excludes UAS operations in order to address risks pertaining to safety, privacy, protection of personal data, security or the environment, arising from UAS operations

(t) Ground risk buffer. Is an area over the surface of the earth, which surrounds the operational volume and that is specified in order to minimise the risk to third parties on the surface in the event of the unmanned aircraft leaving the operational volume

(u) Handover. Act of passing piloting control from one remote pilot station to another

(v) Involved person. A person may be considered to be 'involved' when the following three conditions are met. The person:

(i) has given explicit consent to UAS operator or to remote pilot to be part of the UAS operation (even indirectly as a spectator or just accepting to be overflown by the UAS); and

(ii) has received from UAS operator or from the remote pilot clear instructions and safety precautions to follow in case the UAS exhibits any unplanned behaviour; and

(iii) is only focused on the operational activity so that the person can monitor at all times the position of the UA and, in case of a loss of control of the UA, can take action to avoid being hit.

(w) Maximum take-off mass' ('MTOM') means the maximum Unmanned Aircraft mass, including payload and fuel, as defined by the manufacturer or the builder, at which the Unmanned Aircraft can be operated;

(x) Model aircraft club or association. An organisation established for the purpose of conducting leisure flights, air displays, sporting activities, or competition activities using UAS.

(y) NOTAM. A notice distributed by means of telecommunication containing information concerning the establishment, condition, or change in any aeronautical facility, service, procedure, or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

(z) Operations manual. A manual containing procedures, instructions and guidance for use by operational personnel in the execution of their duties.

(aa) Operator. A person, organization, or enterprise operating or intending to operate UAS.

(bb) Payload. Instrument, mechanism, equipment, part, apparatus, appurtenance, or accessory, including communications equipment, that is installed in or attached to the aircraft and is not used or intended to be used in operating or controlling an aircraft in flight, and is not part of an airframe, engine, or propeller;

(cc) Privately built UAS' means a UAS assembled or manufactured for the builder's own use, not including UAS assembled from sets of parts placed on the market as a single ready-to-assemble kit;

(dd) Prohibited area. An airspace of defined dimensions, above the land areas or territorial waters of Sierra Leone, within which the flight of aircraft is prohibited.

(ee) Psychoactive substances. Alcohol, opioids, cannabinoids, sedatives and hypnotics, cocaine, other psychostimulants, hallucinogens, and volatile solvents, whereas coffee and tobacco are excluded.

(ff) Remote crew member. A person assigned by an operator with duties connected to the operation of an unmanned aircraft system during a flight duty period.

(gg) Remote flight crew member. A licensed flight crew member charged with duties essential to the operation of an unmanned aircraft system during a flight duty period.

(hh) Remote pilot. A person charged by the operator with duties essential to the operation of an unmanned aircraft and who manipulates the flight controls, as appropriate, during flight time.

(ii) Remote pilot-in-command. The remote pilot designated by the operator as being in command and charged with the safe conduct of a flight.

(jj) Restricted area. An airspace of defined dimensions, above the land areas or territorial waters of Sierra Leone, within which the flight of aircraft is restricted in accordance with certain specified conditions.

(kk) Uninvolved persons. Persons who are not participating in the UAS operation or who are not aware of the instructions and safety precautions given by the UAS operator

(ll) Unmanned aircraft (UA). An unmanned aircraft which is piloted from an unmanned station.

(mm) Unmanned aircraft system (UAS). An unmanned aircraft, its associated unmanned station(s), the required C2 Link(s) and any other components as specified in the type design.

(nn) Unmanned Aircraft observer. A trained and competent person designated by the operator who, by visual observation of the unmanned aircraft, assists the remote pilot in the safe conduct of the flight.

(oo) UAS operator certificate (UOC). A certificate authorizing an operator to carry out specified UAS operations.

(pp) Safety. The state in which risks associated with aviation activities, related to, or in direct support of the operation of aircraft, are reduced and controlled to an acceptable level.

(qq) Safety management system (SMS). A systematic approach to managing safety, including the necessary organizational structures, accountability, responsibilities, policies and procedures.

(rr) Segregated airspace: Airspace of specified dimensions allocated for exclusive use to a specific user(s).

(ss) Safety oversight. A function performed by a State to ensure that individuals and organizations performing an aviation activity comply with safety-related national laws and regulations.

(tt) Specific approval. A specific approval is an approval that is documented in the Operations Specifications for commercial air transport operations or in the list of specific approvals for non-commercial operations.

(uu) Visual line-of-sight (VLOS) operation. An operation in which the remote pilot is able to maintain continuous unaided visual contact with the unmanned aircraft, allowing the remote pilot to control the flight path of the unmanned aircraft in relation to other aircraft, people and obstacles to avoid collisions

(vv) Visual meteorological conditions (VMC): Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling, equal to or better than specified minima

1.2 Applicability

1.2.1 This regulation applies to

(a) the operation of unmanned aircraft systems as well as for personnel, including remote pilots and organisations involved in those operations

(b) Government (non-military) UAS flights.

(c) design and manufacture of UAS intended for civil operations and equipment installed on them.

(d) making UAS available on the market in Sierra Leone.

1.2.2 UAS may be operated for the following purposes:

(a) commercial operations, including commercial air transport and commercial aerial work;

(b) corporate operations, including aerial work;

(c) non-commercial operations including aerial work;

(d) private operations including aerial work;

(e) recreational operations of all aircraft including model and toy aircraft.

1.3 Falsification, Reproduction or Alteration

1.3.1 No person shall make or cause to be made:

(a) Any fraudulent or intentionally false record or report that is required to be made, kept, or used to show compliance with any Sierra Leone Civil Aviation requirement; or

(b) Any reproduction or alteration, for fraudulent purpose, of any certificate, record, or report under any Sierra Leone Civil Aviation requirement.

1.3.2 The perpetration by any person of an act prohibited under paragraph (a) of this section is a basis for any of the following:

(a) denial of an application for any remote pilot licence or other certificate under this regulation;

(b) suspension or revocation of any certificate issued by the SLCAA under this regulation and any other applicable civil aviation legislation

(c) sanctions in line with the enforcement provisions of the SLCAR Part 22, Civil Aviation Act, 2023, and any other applicable law.

2. Categories of UAS Operations

2.1 UAS operations shall be performed in the 'open', 'specific' or 'certified' category defined respectively in 3, 4, and 5 subject to the following conditions:

(a) UAS operations in the 'open' category shall not be subject to any prior operational authorisation, issued to the UAS operator before the operation takes place;

(b) UAS operations in the 'specific' category shall require an operational authorisation issued by the Authority under 9. or an authorisation received in accordance with 8.

(c) UAS operations in the 'certified' category shall require the airworthiness certification of the UAS, the certification of the operator, and, where applicable, the licensing of the remote pilot.

3. UAS operations in the 'Open' category

3.1 Operations shall be classified as UAS operations in the 'open' category only where the following requirements are met:

(a) the unmanned aircraft has a maximum take-off mass of less than 25 kg;

(b) the remote pilot ensures that the unmanned aircraft is kept at a safe distance from people and that it is not flown over assemblies of people;

(c) the remote pilot keeps the unmanned aircraft in VLOS at all times except when flying in follow-me mode or when using an unmanned aircraft observer as specified in IS 3.1(c);

(d) during flight, the unmanned aircraft is maintained within 120 metres from the closest point of the surface of the earth, except when overflying an obstacle, as specified in IS 3.1(c);

(e) be performed by a remote pilot who is familiar with manufacturer's instructions provided by the manufacturer of the UAS and who has completed an online training course and passed an online theoretical knowledge examination

(f) Such operations shall be conducted within segregated airspaces and away from any notified prohibited, restricted or danger areas unless expressly authorised by the Authority.

(g) during flight, the unmanned aircraft does not carry dangerous goods and does not drop any material;

3.2 Where one of the requirements laid down in 3.1 or IS 3.1(c) is not met, a UAS operator shall be required to obtain an operational authorisation in accordance with 9. from the Authority.

3.3 A UAS operator who does not obtain an operational authorisation in accordance with 9. or violates any of the requirements commits an offense and is liable to a fine, confiscation of the UAS, and imprisonment.

4. UAS operations in the 'specific' category

4.1 Where one of the requirements laid down in 3.1 is not met, a UAS operator shall be required to obtain an operational authorisation in accordance with 9. from the Authority

4.2 When applying to the Authority for an operational authorisation in accordance with 9. the operator shall perform a risk assessment in accordance with 8 and submit it together with the application, including adequate mitigating measures.

4.3 In accordance with the point laid down in IS 4.1, the Authority shall issue an operational authorisation, if it considers that the operational risks are adequately mitigated in accordance with 8.

4.4 The Authority shall specify whether the operational authorisation concerns:

(a) the approval of a single operation or a number of operations specified in time or location(s) or both. The operational authorisation shall include the associated precise list of mitigating measures;

(b) the approval of an UOC, in accordance with IS 5.

(c) a generic authorisation for non-military flights.

4.5 Where the UAS operator submits to the Authority an application based on a Pre-Defined Risk Assessment (PDRA) published or accepted by the Authority, the UAS operator shall not be

required to submit the risk assessment, but it is still required to submit evidence that the mitigating measures have been implemented with the required level of robustness.

4.6 An operational authorisation shall not be required for:

(a) UAS operators holding a UOC with appropriate privileges in accordance with IS 5.

(b) operations conducted in the framework of model aircraft clubs and associations that have received an authorisation in accordance with 9.

5. UAS operations in the 'certified' category

5.1 Operations shall be classified as UAS operations in the 'certified' category only where the following requirements are met:

(a) it has a characteristic dimension of 3 m or more, and is designed to be operated over assemblies of people;

(b) it is designed for transporting people;

(c) involving the carriage of dangerous goods and requiring a high level of robustness to mitigate the risks for third parties in case of accident;

5.2 In addition, UAS operations shall be classified as UAS operations in the 'certified' category where the Authority, based on the risk assessment provided for in 8, considers that the risk of the operation cannot be adequately mitigated without the airworthiness certification of the UAS and of the UAS operator and, where applicable, without the licensing of the remote pilot.

6. Rules and procedures for the operation of UAS

6.1 UAS operations in the 'open' category shall comply with the operational limitations set out in IS 3.1

6.2 UAS operations in the 'specific' category shall comply with the operational limitations set out in the operational authorisation in 9.

6.3. UAS operations in the 'certified' category shall be subject to the applicable operational requirements

7. Rules and procedures for the competency of remote pilots

7.1 Remote pilots operating UAS in the 'open' category shall comply with the competency requirements set in IS 3.1(c).

7.2 Remote pilots operating UAS in the 'specific' category shall comply at least with the following competencies:

(a) ability to apply operational procedures (normal, contingency and emergency procedures, flight planning, pre-flight and post-flight inspections);

(b) ability to manage aeronautical communication;

(c) manage the unmanned aircraft flight path and automation;

(d) leadership, teamwork and self-management;

(e) problem solving and decision-making;

(f) situational awareness;

(g) workload management;

(h) coordination or handover, as applicable.

7.3 Remote pilots operating in the framework of model aircraft clubs or associations shall comply with the minimum competency requirements defined in the authorisation granted in accordance with 10.

8. Rules for conducting an operational risk assessment

8.1 An operational risk assessment shall:

(a) describe the characteristics of the UAS operation;

(b) propose adequate operational safety objectives;

(c) identify the risks of the operation on the ground and in the air considering all of the below:

(i) the extent to which third parties or property on the ground could be endangered by the activity;

(ii) the complexity, performance and operational characteristics of the unmanned aircraft involved;

(iii) the purpose of the flight, the type of UAS, the probability of collision with other aircraft, and the class of airspace used;

(iv) the type, scale, and complexity of the UAS operation or activity, including, where relevant, the size and type of the traffic handled by the responsible organisation or person;

(v) the extent to which the persons affected by the risks involved in the UAS operation can assess and exercise control over those risks.

(d) identify a range of possible risk mitigating measures;

(e) determine the necessary level of robustness of the selected mitigating measures in such a way that the operation can be conducted safely.

8.2 The description of the UAS operation shall include at least the following:

(a) the nature of the activities performed;

(b) the operational environment and geographical area for the intended operation, in particular overflown population, orography, types of airspace, airspace volume where the operation will

take place, and which airspace volume is kept as necessary risk buffers, including the operational requirements for geographical zones;

(c) the complexity of the operation, in particular, which planning and execution, personnel competencies, experience and composition, required technical means are planned to conduct the operation;

(d) the technical features of the UAS, including its performance in view of the conditions of the planned operation and, where applicable, its registration number;

(e) the competence of the personnel for conducting the operation including their composition, role, responsibilities, training and recent experience.

8.3 The assessment shall propose a target level of safety, which shall be equivalent to the safety level in manned aviation, in view of the specific characteristics of UAS operation.

8.4 The identification of the risks shall include the determination of all of the below:

(a) the unmitigated ground risk of the operation taking into account the type of operation and the conditions under which the operation takes place, including at least the following criteria:

(i) VLOS or BVLOS;

(ii) population density of the overflown areas;

(iii) flying over an assembly of people;

(iv) the dimension characteristics of the unmanned aircraft;

(b) the unmitigated air risk of the operation taking into account all of the below:

(i) the exact airspace volume where the operation will take place, extended by a volume of airspace necessary for contingency procedures;

(ii) the class of the airspace;

(iii) the impact on other air traffic and air traffic management (ATM) and in particular: — the altitude of the operation;

(1) controlled versus uncontrolled airspace;

(2) aerodrome versus non-aerodrome environment;

(3) airspace over urban versus rural environment;

(4) separation from other traffic.

8.5 The identification of the possible mitigation measures necessary to meet the proposed target level of safety shall consider the following possibilities:

(a) containment measures for people on the ground;

(b) strategic operational limitations to the UAS operation, in particular:

(i) restricting the geographical volumes where the operation takes place;

(ii) restricting the duration or schedule of the time slot in which the operation takes place;

(c) strategic mitigation by common flight rules or common airspace structure and services;

(d) capability to cope with possible adverse operating conditions;

(e) organisation factors such as operational and maintenance procedures elaborated by the UAS operator and maintenance procedures compliant with the manufacturer's user manual;

(f) the level of competency and expertise of the personnel involved in the safety of the flight;

(g) the risk of human error in the application of the operational procedures;

(h) the design features and performance of the UAS in particular:

(i) the availability of means to mitigate risks of collision;

(ii) the availability of systems limiting the energy at impact or the frangibility of the unmanned aircraft;

(iii)the design of the UAS to recognised standards and the fail-safe design.

8.6 The robustness of the proposed mitigating measures shall be assessed in order to determine whether they are commensurate with the safety objectives and risks of the intended operation, particularly to make sure that every stage of the operation is safe

9. Authorising operations in the 'specific' category

9.1 The Authority shall evaluate the risk assessment and the robustness of the mitigating measures that the UAS operator proposes to keep the UAS operation safe in all phases of flight.

9.2 The Authority shall grant an operational authorisation when:

(a) the evaluation performed pursuant to paragraph 8 concludes that:

(i) the operational safety objectives take account of the risks of the operation;

(ii) the combination of mitigation measures concerning the operational conditions to perform the operations, the competence of the personnel involved and the technical features of the unmanned aircraft, are adequate and sufficiently robust to keep the operation safe in view of the identified ground and air risks;

(b) the UAS operator has provided to the Authority a statement confirming that the intended operation complies with any applicable laws relating to it, in particular with regard to privacy, data protection, liability, insurance, security and environmental protection.

9.3 When the operation is not deemed sufficiently safe, the Authority shall inform the applicant accordingly, giving reasons for its refusal to issue the operational authorisation.

9.4 The operational authorisation granted by the Authority shall detail:

(a) the scope of the authorisation;

(b) the 'specific' conditions that shall apply:

(i) to the UAS operation and the operational limitations;

(ii) to the required competency of the UAS operator and, where applicable, of the remote pilots;

(iii) to the technical features of the UAS, including the certification of the UAS, if applicable;

(c) the following information:

(i) the registration number of the UAS operator and the technical features of the UAS;

(ii) a reference to the operational risk assessment developed by the UAS operator;

(iii) the operational limitations and conditions of the operation;

(iv) the mitigation measures that the UAS operator has to apply;

(v) the location(s) where the operation is authorised to take place and any other locations in accordance with 9;

(vi) all documents and records relevant for the type of operation

(vii) the certificate of airworthiness or restricted certificate of airworthiness and noise certificate, where such certificates have been issued;

10. UAS operations in the framework of model aircraft clubs and associations

10.1 Upon request by a model aircraft club or association, the Authority may issue an authorisation for UAS operations in the framework of model aircraft clubs and associations.

10.2 The authorisation referred to in 10.1 shall be issued in accordance with any of the following:

(a) relevant national rules;

(b) established procedures, organisational structure and management system of the model aircraft club or association, ensuring that:

(i) remote pilots operating in the framework of model aircraft clubs or associations are informed of the conditions and limitations defined in the authorisation issued by the competent authority;

(ii) remote pilots operating in the framework of model aircraft clubs or associations are assisted in achieving the minimum competency required to operate the UAS safely and in accordance with the conditions and limitations defined in the authorisation;

(iii) the model aircraft club or association takes appropriate action when informed that a remote pilot operating in the framework of model aircraft clubs or associations does not comply with the conditions and limitations defined in the authorisation, and, if necessary, inform the Authority;

(iv) the model aircraft club or association provides, upon request from the Authority, documentation required for oversight and monitoring purposes.

10.3 The authorisation referred to in 10.1 shall specify the conditions under which operations in the framework of the model aircraft clubs or associations may be conducted and shall be limited to the territory of Sierra Leone.

10.4 The members of model aircraft clubs and associations shall register themselves in accordance with 14.

11. UAS GEOGRAPHICAL ZONES

11.1 General

11.1.1 A person shall not operate an UA:

(a) in prohibited areas;

(b) in restricted areas;

(c) danger areas; or

(d) in or around areas specified in IS 11.1.1, except in accordance with the conditions of the restrictions or by permission granted by the Authority.

(e) any other area notified by the Authority, except with the written permission of and in accordance with any conditions imposed by the Authority.

11.1.2 The Director General, in coordination with military authorities and involved municipalities, may define UAS geographical zones for safety, security, privacy, or environmental reasons.

11.1.3 When defining UAS geographical zones, the Director General may:

(a) prohibit certain or all UAS operations; request particular conditions for certain or all UAS operations or require a prior flight authorisation for certain or all UAS operations

(b) subject UAS operations to specified environmental standards;

(c) allow access to certain UAS classes only;

(d) allow access only to UAS equipped with certain technical features, in particular remote identification systems or geo awareness systems

11.1.4 Based on a risk assessment by the UAS operator, the Authority may designate certain geographical zones in which UAS operations are exempt from one or more of the ‘open’ category requirements.

11.1.5 The Authority shall publish defined UAS geographical zones and the information on the UAS geographical zones, including their period of validity, in a common, unique digital format for geo awareness purposes.

11.2 Minimum distance from aerodromes

11.2.1 The remote pilot in the open category shall not operate an UA closer than 4 km from the perimeter of:

(a) an uncontrolled aerodrome, unless the operation is carried out pursuant to geographical zones initiated by the aerodrome operator

(b) a controlled aerodrome, unless operated pursuant to a clearance or other form of agreement from the relevant air traffic control (ATC) unit.

11.2.2 Point 11.2.1 shall not apply to operations in the open category carried out:

(a) outside the aerodrome perimeter; and

(b) in a volume airspace physically separated from the aerodrome by a natural or artificial barrier capable of stopping the flight of the UA.

11.2.3 Aerodrome operators may apply to establish a geographical zones around the aerodrome, based on 11.2.2, to fly UA below the Obstacle Limitation Surfaces (OLS)

11.3 Controlled airspace

11.3.1 No UAS may be operated in controlled airspace, except:

(a) near aerodromes in compliance with 11.2; or

(b) by the holder of an operational authorisation or UOC and according to procedures in the operator's Operations Manual.

11.3.2 The Director General may approve UAS operations in controlled airspace only if satisfied by the risk assessment and evidence of implementation of related mitigation measures, including in particular:

(a) personnel competence;

(b) procedures agreed between the UAS operator and the concerned ATC unit(s), including navigation and surveillance functionality;

(c) altitude reference system;

(d) radio communications compliant with 11.8

(e) functioning strobe light or lights, installed in such a way that such strobe lights are visible from both below and above the UA at all azimuth angles;

(f) In the instance of a fixed-wing UA, navigation lights and

(g) Detailed contingency and emergency procedures, which as a minimum shall include:

(i) diverting the UA flight when considered necessary by the ATC Unit;

(ii) terminating the UA flight detailing the time to act, required equipment and expected landing place or crash area;

(iii) loss of C2 Link and subsequent expected behaviour of the UA; and

(iv) procedures relating to a loss of communication between the ATC and the UAS remote crew.

11.4 Operations in the Vicinity of Property, Structures and Buildings

11.4.1 No UA shall be flown within a lateral distance of 50 m from any structure or building, unless:

(a) the operation has been approved by the Director General through the operational authorisation in 9 or the UOC; or

(b) permission has been obtained from the owner or administrator of such structure or building.

11.4.2 An operator conducting an operation as in 11.4.1 shall taka all the necessary measures to ensure safety of all persons on the ground accessing such building or in the vicinity of such structure.

11.5 Operations in the Vicinity of Public Roads

11.5.1 No person shall operate an UA over a public road, along the length of a public road or at a distance of less than 50 m from a public road unless:

(a) the operation has been approved by the Director General through the operational authorisation in 9 or the UOC; or

(b) in the case of operations over a public road, such road has been closed for public use; and

(c) reasonable care has been taken to ensure the safety of road users and pedestrians in the event of loss of control of the UA.

11.6 Operation Over and Near People

11.6.1 If an uninvolved person enters the range of the UAS operation, the remote pilot should, where necessary, adjust the operation to ensure the safety of the uninvolved person and discontinue the operation if the safety of the UAS operation is not ensured.

11.6.2 A minimum horizontal distance from the person that is passing the area could be estimated as follows:

(a) no less than 30 m;

(b) no less than the height (‘1:1 rule’, i.e. if the UA is flying at a height of 30 m, the distance of the UA from the uninvolved person should be at least 30 m), and

(c) no less than the height (‘1:1 rule’, i.e. if the UA is flying at a height of 30 m, the distance of the UA from the uninvolved person should be at least 30 m), and

This minimum horizontal distance is intended to protect people on the ground, but can be extended to property and animals.

11.7 Height Restrictions

11.7.1 No UA shall be operated at heights above 400 ft AGL in VLOS or EVLOS.

11.8 Radio Communication Requirement

11.8.1 No UA shall be operated at heights above 400 ft AGL in BVLOS unless the RP has a functioning air-band radio at her/his disposal, tuned to the frequency or frequencies applicable to the ATS unit providing services or controlling such area or airspace or to aircraft in such area or airspace.

11.8.2 The air-band radio shall have the required output and be configured in such a way that the range, strength of signal and quality of communication extends beyond the furthest likely position of the UA from the RP.

11.8.3 For BVLOS operations, the RP shall, using the identification of the UA as a call-sign, make the radio calls required by the procedures agreed by the UAS operator with the relevant ATS Units, indicating the altitude, location and intended operation of the UA in that area and at such intervals as are required to ensure adequate separation from other aircraft is maintained.

11.8.4 The procedures in 11.8.3 shall consider electronic identification functionality installed on the UA.

11.8.5 For approved UA operations in controlled airspace, the RP shall maintain radio contact, using the identification of the UA as a call-sign, with the relevant ATC unit, and acknowledge and execute such instructions as the ATC may give at any time during the operation of the UA.

12. SECURITY

12.1 Aerodrome Operations

The aerodrome operator shall incorporate measures for UAS operations into their written airport security programme that are suitable to fulfil the requirements of the national civil aviation security programme for UAS operations in the certified category.

12.2 UAS Operators

The UAS operator shall establish, implement, and maintain a written UAS operator security programme, and an associated training programme, that meets the requirements of the national civil aviation security programme for UAS operations in the certified category.

12.3 Camera Usage

12.3.1 No person shall operate a UA equipped with cameras that exceed 4K resolution or 12 megapixels without prior registration and approval by the Authority.

12.3.2 No person shall use a UA to do any of the following:

(a) conduct surveillance of:

(i) A person without the person's consent; and

(ii) Private property without the consent of the owner.

(b) Photograph or film an individual, without the individual's consent, for the purpose of publishing or otherwise publicly disseminating the photograph or film. This requirement shall not apply to news gathering, or events or places to which the general public is invited.

12.3.3 Infrared or other similar thermal imaging technology equipment fitted on a UA shall only be used for:

(a) Scientific investigation;

(b) Scientific research;

(c) Mapping and evaluating the earth's surface, including terrain and surface water bodies and other features;

(d) Investigation or evaluation of crops, livestock, or farming operations;

(e) Investigation of forests and forest management;

(f) Other similar investigations of vegetation or wildlife;

(g) Border patrol and anti-smuggling

12.3.4 No person shall operate a UA:

(a) where cameras, imaging devices or other sensors capture information, pictures or videos extending beyond the prescribed area of approved operation.

(b) subject to sub-regulation (a) where cameras, imaging devices or other sensors capture information, pictures or videos within the approved area of operations, such information shall not be reproduced, processed, shared, distributed or published contrary to the Laws of Sierra Leone.

12.4 Reporting Acts of Unlawful Interference

The remote pilot-in-command shall submit, without delay, following an act of unlawful interference, a report of such an act to the Authority.

13. DANGEROUS GOODS

13.1 General

Transport of dangerous goods as cargo on board UA shall not be permitted unless the Authority has issued a specific approval.

13.2 Operators with a Specific approval for the transport of Dangerous Goods as cargo

The UAS Operator that has been issued with specific approval for the transport of dangerous goods by the Authority shall:

(a) establish a dangerous goods training programme that meets the requirements of SLCAR Part 18, the ICAO Technical Instructions, Part 1, Chapter 4 (Doc 9284). Details of the dangerous goods training programme shall be included in the operator's operations manuals;

(b) establish dangerous goods policies and procedures in its operations manual to meet, at a minimum, the requirements of SLCAR Part 18, and the ICAO Technical Instructions (Doc 9284);

(i) identify and reject undeclared or misdeclared dangerous goods, including COMAT classified as dangerous goods;

(ii) report to the Authority any:

(1) occasions when undeclared or misdeclared dangerous goods are discovered in cargo or mail;

(2) dangerous goods accidents and incidents;

(iii) report to the Authority any occasions when dangerous goods are discovered to have been carried;

(1) when not loaded, segregated, separated or secured in accordance with ICAO Technical Instructions, Part 7, Chapter 2;

(2) without information having been provided to the remote pilot-in-command;

(iv) accept, handle, store, transport, load and unload dangerous goods, including COMAT classified as dangerous goods as cargo on board an UA;

(v) provide the remote pilot-in-command with accurate information concerning dangerous goods that are to be carried as cargo in the format required in SLCAR Part 18 and the ICAO Technical Instructions; and

(vi) notify emergency services at the scene of an incident or accident of the information provided to the remote pilot on the NOTOC.

13.3 Provision of Information

The UAS operator shall ensure that all personnel, including third-party personnel, involved in the acceptance, handling, loading and unloading of cargo are informed of the operator's specific approval and limitations with regard to the transport of dangerous goods.

14. DECLARATION AND REGISTRATION OF UAS OPERATORS

14.1 Declaration of UAS

14.1.1 All UAS shall be declared to customs upon arrival at the port of entry.

14.1.2 The declaration shall include the following details:

(a) make, model, weight, serial number

(b) Intended use (commercial, recreational, research, etc.)

(c) make, model, weight, and serial number

(d) contact information for the importer or consignee

(e) Ownership details

(f) Country of origin and manufacture

(g) Importer or consignee contact information

14.1.3 The UAS shall only be released upon proof of notification to the Authority.

14.2 Registration of UAS

14.2.1 Unless exempted, all UA intended for in use in Sierra Leone shall be registered with the Authority.

14.2.2 All foreign operators intending to operate unmanned aircraft (UA) in Sierra Leone shall register their UA through a local agent approved by the Authority.

14.2.3 Unless otherwise exempted under these regulations, no unmanned aircraft (UA) shall be operated in Sierra Leone under the open or specific category without prior authorisation from the Authority.

14.2.4 The owner of an unmanned aircraft whose design is subject to certification shall register the unmanned aircraft.

14.2.5 The Director General shall issue a unique digital registration number for UAS operators and for the UAS that require registration, allowing their individual identification.

14.2.6 The certificate of registration of the UAS Operator shall not be transferable.

14.2.7 An application for a certificate of registration shall be:

(a) made on the prescribed form; and

(b) accompanied by the prescribed fee.

14.2.8 An UA subject to airworthiness certification cannot be registered in more than one State at a time.

14.2.9 The UAS operators shall display their registration marks on every UA.

14.3 De-registration

The Authority may de-register or cancel the registration of a UAS under the following circumstances—

(a) upon application of the UAS owner;

(b) upon destruction of the UAS or its permanent withdrawal from use,

(c) in the interest of national security or

(d) in any other circumstance that the Authority deems fit.

15. UA SALES OR RE-SALES

15.1 This regulation shall apply to sales or re-sales of UAS in Sierra Leone.

15.2 No UA shall be sold within Sierra Leone unless the seller has written approval from the Director General in accordance with this regulation.

15.3 The UAS importer shall provide to the UAS operators, upon sale, transfer, or use of the UA, current operating instructions and an information notice as specified in IS 3.1(c).

16. UAS PILOT LICENCE (UPL)

16.1 Applicability

16.1.1 No person shall act as pilot of an UA in the open or specific category of UAS operations without a valid UAS Pilot Licence (UPL), except when operating:

(a) An UAS put on the market as toy aircraft;

(b) A privately built UAS with a maximum take-off mass of less than 250g;

(c) under the direct supervision of a remote pilot or receiving flight instruction;

(d) undergoing a skill test.

16.1.2 No person shall act as pilot of a UA involved in domestic operations in the certified category without a valid Unmanned Pilot Licence (UPL), except when undergoing a skill test or receiving flight instruction.

16.1.3 Remote pilots operating UAS in the ‘open’ category shall comply with the competency requirements set in IS 3.1(c).

16.1.4 Remote pilots operating UAS in the ‘specific’ category shall comply with the competency requirements set out in the operational authorisation by the Authority based on IS 4 or as defined by the UOC.

16.1.5 Remote pilots in the open category of UAS operations, shall have at least the following competencies:

(a) ability to apply operational procedures (normal, contingency and emergency procedures, flight planning, pre-flight and post-flight inspections);

(b) manage the UA flight path and automation;

(c) problem solving and decision-making;

(d) situational awareness;

16.1.6 In addition to 16.1.4, remote pilots in the specific category of UAS operations, shall have at least the following competencies:

(a) ability to manage aeronautical communication;

(b) leadership, teamwork and self-management;

(c) problem solving and decision-making;

(d) workload management;

(e) coordination or handover, as applicable.

16.2 Minimum Age and Fitness of Remote Pilots

16.2.1 The minimum age for remote pilots operating a UAS in the open and specific category shall be 18 years

16.2.2 Without prejudice to 16.2.1, the UAS operator shall assess the medical fitness of remote pilots to operate in the open and specific category, based on industry standards.

16.2.3 No Remote pilots, observer or UAS Maintenance Technician (UMT) shall:

(a) consume alcohol less than 8 hours prior to reporting for duty;

(b) commence a duty period while the concentration of alcohol in any specimen of blood taken from any part of his or her body is more than 0.02 grams per 100 millilitres;

(c) consume alcohol or any psychoactive substance during the duty period or whilst on standby for duty; or

(d) commence duty period while under the influence of alcohol or any psychoactive substance having a narcotic effect.

16.2.4 Remote pilots in the certified category of UAS operations shall hold at least a valid Class 3 medical certificate when their working environment is an RPS stationary during the flight.

16.2.5 Remote pilots in the certified category of UAS operations shall hold a valid Class 1 medical certificate, when their working environment is an RPS located on a moving platform during the flight.

16.2.6 Remote pilots operating in the framework of model aircraft clubs or associations shall comply with the minimum competency requirements defined in the authorisation granted in accordance with 9.

16.3 Theoretical Knowledge examination

16.3.1 The Theoretical Knowledge (TK) examination applicable to the aircraft category of licence and to the rating sought shall be passed within ninety (90) days preceding the skill test.

16.3.2 The TK examination shall be conducted at a Qualified Entity (QE) recognised by the SLCAA for the purpose, except as provided for in SLCAR Part 1.

16.3.3 Remote pilots operating in the framework of model aircraft clubs or associations shall comply with the minimum competency requirements defined in the authorisation granted in accordance with 9.

16.3.4 Approval shall be obtained from the Director General before any foreign theoretical training or theoretical knowledge examination is undertaken if such training or knowledge is to be accredited towards a Sierra Leonean UPL.

16.4 Skill test

16.4.1 The Practical Skill (PS) test for a UPL shall be conducted within sixty (60) days of completing the flight training by an examiner

16.4.2 The skill test shall be conducted with an aircraft of the same category for which the licence is sought.

16.4.3 The skill test shall include the applicable competencies for additional endorsements if one or more of these endorsements is sought.

16.4.4 Approval shall be obtained from the Director General before any foreign flight training is undertaken if such training is to be accredited towards a Sierra Leonean UPL.

16.5 Application for a unmanned pilot licence

16.5.1 An application for an UPL shall be made to the Director General on the appropriate form within 30 days of completing the practical skill test.

16.5.2 The application may be filed by an individual or through a Qualified Entity (QE) recognised by the Authority.

16.5.3 An application for an UPL shall include the following information:

(a) details of any flight crew licence, air traffic control licence or flight service licence that the applicant holds (including details of ratings, endorsements and qualifications);

(b) details of any military qualification the applicant holds that is equivalent to a licence mentioned in paragraph 16.5.1

(c) details of any aeronautical experience of the applicant

(d) details of any of the following examinations the applicant has passed (other than any examination passed in gaining a licence mentioned in paragraph (a) or (b):

(i) Medical assessment certificate if applicable

(ii) Proof of the ability to speak the English language at proficiency level 4 or higher, as prescribed in Part 1 of the SLCARs

(iii) Evidence of having passed the theoretical knowledge examination referred to in this Part;

(iv) Evidence of the completion of any practical training course in UAS operation that the applicant has undertaken and evidence of having passed the skill test; and

(v) In addition, in case of intending to operate in the specific or certified category inside controlled airspace, a restricted Certificate of Proficiency in Radiotelephony (Aeronautical).

16.6 Cancellation of UPL

16.6.1 The Director General may cancel an UPL by written notice to the holder of the licence, if:

(a) The holder has be given a show cause notice under regulation 16.4 in relation to it;

(b) there are reasonable grounds for believing that the holder:

(i) has operated a UA in contravention of this section or of a condition of the licence; or

(ii) has operated the UA negligently or carelessly; or

(iii) in operating the UA, has recklessly endangered human life or property.

16.6.2 If the Director General has given a show cause notice under 16.4 to the holder of an UPL and decides not to cancel the licence:

(a) the holder shall be inform in writing of the decision; and

(b) if the holder's licence shall be suspended under that regulation, revoke the suspension.

16.7 Revalidation check

16.7.1 A UPL shall be valid for three (3) years from the date of issue.

16.7.2 To extend validity of the UPL and ratings for subsequent 3 years, the applicant shall:

(a) have logged at least 10 hours of flight with the relevant aircraft category per year; and

(b) pass a revalidation check conducted by an examiner complying with 16.4.1 in the sixty (60)-day period before the expiry date of the validity period.

16.7.3 The revalidation check shall be conducted with an unmanned aircraft of the same category for which the licence is held.

16.7.4 If a revalidation check is completed more than sixty (60) days before expiry or within two (02) years after the expiry of an UPL, the UPL shall be re-issued from the date of the check for a three (03) year period.

16.8 Pilot logbook

16.8.1 The holder of an UPL shall maintain in a pilot logbook a record of all his or her flight time, instrument time, simulation time and instruction time.

16.8.2 Where electronic logbooks are used, a backup shall be provided and the electronic data shall be printed on pdf at least every ninety (90) days and the printed pages filed separately, with clear indication of the dates.

16.8.3 The pilot shall retain all pilot logbooks for at least five (5) years from the date that person no longer holds a valid UPL, unless this responsibility is taken by a UAS operator or provider of Digital Logbook Service (DLS).

16.8.4 The holder of an UPL shall make the logbook available for inspection upon a reasonable request by an authorised officer, inspector or any other person authorised by the Authority.

16.9 UAS Training Organisations

16.9.1 Training for TK and/or PS for UPL and related training shall be delivered by an UAS Training Organisation (UTO) complying with the requirements in IS 16.9.1 and approved by the Authority.

17. UAS INITIAL AIRWORTHINESS

17.1 UAS exempted from airworthiness certification

17.1.1 UAS used in operations open and specific categories shall comply with the airworthiness technical requirements and rules and procedures of the UA

17.2 UAS subject to airworthiness certification

17.2.1 The design, production, and maintenance of UAS shall be certified if the UAS meets any of the following conditions:

(a) it has a characteristic maximum dimension of 3 m or more and is designed to be operated over assemblies of people;

(b) it is designed for transporting people;

(c) it is designed to transport dangerous goods and requires a high level of robustness to mitigate the risks for third parties in case of an accident unless the container is crashproof.

17.2.2 A UAS subject to airworthiness certification shall comply with the applicable requirements set out in SLCAR Part 8A.

18. MAINTENANCE

18.1 Continued UAS Maintenance

18.1.1 The UAS operator in the open or specific category shall maintain the UAS for continued equipment maintenance through actions or inspections, in compliance with the instructions provided by the manufacturer.

18.1.2 The applicant or holder of a UOC shall submit to the Director General a maintenance programme, including as a minimum:

(a) UAS Maintenance Technician (UMT) competency

(b) organisation of the maintenance activities and related responsibilities

(c) accomplishment and control of DG directives

(d) monitoring of maintenance activities including monitoring that all maintenance is carried out by a suitably qualified UMT

(e) monitoring that all contracted maintenance is carried out in accordance with the contract, including subcontractors used by the maintenance contractor

(f) UA weighing

(g) calibration of maintenance tools

(h) maintenance programme for each UA, including:

(i) Limited components

(ii) Periodic inspections.

(iii) Repairs

(iv) Replacement of parts

(v) Specific installed equipment and modifications of the aircraft

(vi) Defect reports

(vii) UAS maintenance record system, retention and access

18.2 UAS Maintenance staff

18.2.1 The maintenance of a UAS or any component thereof shall be carried out by the following persons:

(a) The remote pilot or any other personnel designated by the UAS operator in the open category;

(b) UMT trained and qualified by the UAS operator in the specific category

(c) In case of UOC holder, by persons holding of a valid UMT Approval.

18.3 Issuance of an UMT Approval

18.3.1 An applicant for the issuance or renewal of an UMT Approval shall:

(a) be not less than 18 years of age;

(b) be a Sierra Leonean citizen or in possession of a valid permanent residence permit or valid temporary work permit with a letter of employment; and

(c) shall have successfully completed appropriate training, provided by a maintenance training organisation or QE approved by the competent authority in the country where the training organisation is located; or

(d) demonstrate the ability to perform maintenance functions to the Director General where no training for the particular UAS is neither offered nor available.

18.3.2 An application for the issuance of a UMT Approval shall be made to the Director General in the appropriate form and accompanied by the appropriate prescribed fee.

18.3.3 The Director General shall issue a UMT Approval if the applicant complies with the requirements prescribed in SLCAR Part 1.

18.3.4 The holder of a UMT Approval shall not exercise privileges other than the specific privileges for which the Approval is issued.

18.3.5 An UMT Approval shall be valid for a period of one (01) year.

18.4 UMT Log Book

18.4.1 Any person responsible for the maintenance of a UAS operated by a UOC holder shall maintain a personal logbook and shall record therein all work carried out on a UAS and its components.

18.4.2 The form of and information to be contained in a logbook in 18.4.1, and the manner in which such logbook shall be maintained shall be defined by the UOC holder in the maintenance programme.

18.4.3 No alterations to a logbook shall be made once it is signed off by a designated person.

IS 3.1(c) UAS OPERATIONS IN THE 'OPEN' CATEGORY

1. General provisions

(a) This category of UAS 'open' operations is on the basis of operational limitations, requirements for the remote pilot and technical requirements for UAS.

(b) Where the UAS operation involves the flight of the unmanned aircraft starting from a natural elevation in the terrain or over terrain with natural elevations, the unmanned aircraft shall be maintained within 120 metres from the closest point of the surface of the earth. The measurement of distances shall be adapted accordingly to the geographical characteristics of the terrain, such as plains, hills, mountains.

(c) When flying an unmanned aircraft within a horizontal distance of 50 metres from an artificial obstacle taller than 105 metres, the maximum height of the UAS operation may be increased up to 15 metres above the height of the obstacle at the request of the entity responsible for the obstacle.

(d) By way of derogation from point (b), unmanned sailplanes with a MTOM, including payload, of less than 10 kg, may be flown at a distance in excess of 120 metres from the closest point of the surface of the earth, provided that the unmanned sailplane is not flown at a height greater than 120 metres above the remote pilot at any time.

2. UAS operations in Open Category

UAS operations in the open category shall comply with all of the following conditions:

(a) be conducted in an area where the remote pilot reasonably expects that no uninvolved person will be endangered within the range where the unmanned aircraft is flown during the entire time of the UAS operation;

(b) be conducted at a safe horizontal distance of at least 150 metres from residential, commercial, industrial or recreational areas;

(c) be performed by a remote pilot who is familiar with manufacturer's instructions provided by the manufacturer of the UAS; and has completed an online training course followed by completing successfully an online theoretical knowledge examination provided by an entity acceptable to the Authority.

(d) be performed with an unmanned aircraft that:

(i) has an MTOM, including payload, of less than 25 kg, in the case of a privately built UAS; or

(ii) is marked and complies with the requirements of that open category and is operated with active and updated direct remote identification system and geo-awareness function

3. Responsibilities of the UAS operator

The UAS operator shall comply with all of the following:

(a) develop operational procedures adapted to the type of operation and the risk involved;

(b) ensure that all operations effectively use and support the efficient use of radio spectrum in order to avoid harmful interference;

(c) designate a remote pilot for each flight;

(d) ensure that remote pilots and all other personnel performing a task in support of the operations are familiar with manufacturer's instructions provided by the manufacturer of the UAS, and:

(i) have appropriate competency of the intended UAS operations to perform their tasks in 2 or, for personnel other than the remote pilot, have completed an on-the-job-training course developed by the operator;

(ii) are fully familiar with the UAS operator's procedures;

(iii) are provided with the information relevant to the intended UAS operation concerning any geographical zones published by the Authority in accordance with 12;

(e) update the information into the geo-awareness system when applicable according to the intended location of operation;

(f) ensure in the case of an UAS operation that all involved persons present in the area of the operation have been informed of the risks and have explicitly agreed to participate

4. Responsibilities of the remote pilot

(a) Before starting an UAS operation, the remote pilot shall:

(i) not perform duties under the influence of psychoactive substances or alcohol or when it is unfit to perform its tasks due to injury, fatigue, medication, sickness or other causes;

(ii) have the appropriate competency of the intended UAS operations in accordance with 2 to perform its task and carry a proof of competency while operating the UAS,

(iii)obtain updated information relevant to the intended UAS operation about any geographical zone published by the Authority;

(iv) observe the operating environment, check the presence of obstacles and, check the presence of any uninvolved person;

(v) ensure that the UAS is in a condition to safely complete the intended flight, and if applicable, check if the direct remote identification is active and up-to-date;

(vi) if the UAS is fitted with an additional payload, verify that its mass does not exceed neither the MTOM defined by the manufacturer or the MTOM limit of its class.

(b) During the flight, the remote pilot shall:

(i) not perform duties under the influence of psychoactive substances or alcohol or when it is unfit to perform its tasks due to injury, fatigue, medication, sickness or other causes;

(ii) keep the unmanned aircraft in VLOS and maintain a thorough visual scan of the airspace surrounding the unmanned aircraft in order to avoid any risk of collision with any manned aircraft. The remote pilot shall discontinue the flight if the operation poses a risk to other aircraft, people, animals, environment or property;

(iii) comply with the operational limitations in geographical zones defined in accordance with 12;

(iv) have the ability to maintain control of the unmanned aircraft, except in the case of a lost link or when operating a free-flight unmanned aircraft;

(v) operate the UAS in accordance with manufacturer's instructions provided by the manufacturer, including any applicable limitations;

(vi) comply with the operator's procedures when available;

(vii) when operating at night, ensure that a green flashing light on the unmanned aircraft is activated.

(c) During the flight, remote pilots and UAS operators shall not fly close to or inside areas where an emergency response effort is ongoing unless they have permission to do so from the responsible emergency response services.

(d) For the purposes of point (b)(ii), remote pilots may be assisted by an unmanned aircraft observer. In such case, clear and effective communication shall be established between the remote pilot and the unmanned aircraft observer.

(e) After an UAS flight, the RP shall:

(i) compile the flight log book to keep it up-to-date and in a legible manner under responsibility of the Remote Pilot in Command (RPIC);

(ii) make all entries immediately after completion of the UAS flight;

(iii) compile and forward accident or incident report to the Authority

5. Duration and validity of the remote pilot online theoretical competency and certificates of remote pilot competency

(a) The remote pilot online theoretical competency, and the certificate of remote pilot competency, shall be valid for five years.

(b) The revalidation of the remote pilot online theoretical competency and of the certificate of remote pilot competency is, within its validity period, subject to:

(i) demonstration of competencies or

(ii) the completion of a refresher training addressing respectively the theoretical knowledge subjects provided by the competent aviation training organisation.

(c) In order to revalidate the remote pilot online theoretical competency or the certificate of remote pilot competency upon its expiration, the remote pilot shall comply with point (b) (ii).

IS 4 UAS OPERATIONS IN THE 'SPECIFIC' CATEGORY

1. General provisions

(a) The UAS operator shall provide the competent authority with an operational risk assessment for the intended operation in accordance with chapter 8 unless the operator holds a light UAS operator certificate (LUC) with the appropriate privileges, in accordance with IS 5

(b) The UAS operator shall regularly evaluate the adequacy of the mitigation measures taken and update them where necessary

2. Application for an operational authorisation

(a) Before starting an UAS operation in the 'specific' category the UAS operator shall obtain an operational authorisation from the Authority

(b) The UAS operator shall submit an application for an updated operational authorisation if there are any significant changes to the operation or to the mitigation measures listed in the operational authorisation.

(c) The application for an operational authorisation shall be based on the risk assessment referred to in 8 and shall include in addition the following information:

(i) the registration number of the UAS operator;

(ii) the name of the accountable manager or the name of the UAS operator in the case of a natural person;

(iii) the operational risk assessment;

(iv) the list of mitigation measures proposed by the UAS operator, with sufficient information for the competent authority to assess the adequacy of the mitigation means to address the risks;

(v) an operations manual when required by the risk and complexity of the operation;

(vi) a confirmation that an appropriate insurance cover will be in place at the start of the UAS operations.

3. Responsibilities of the UAS operator

(a) The UAS operator shall comply with all of the following:

(i) establish procedures and limitations adapted to the type of the intended operation and the risk involved, including:

(1) operational procedures to ensure the safety of the operations;

(2) procedures to ensure that security requirements applicable to the area of operations are complied with in the intended operation;

(3) measures to protect against unlawful interference and unauthorised access;

(4) procedures to ensure that all operations on the protection of natural persons with regard to the processing of personal data and on the free movement of such data. guidelines for its remote pilots to plan UAS operations in a manner that minimises nuisances, including noise and other emissions-related nuisances, to people and animals

(ii) designate a remote pilot for each flight or, in the case of autonomous operations, ensure that during all phases of the flight, responsibilities and tasks are properly allocated in accordance with the procedures established in (i)

(iii) ensure that all operations effectively use and support the efficient use of radio spectrum in order to avoid harmful interference;

(iv) ensure that before conducting operations, remote pilots comply with all of the following conditions:

(1) have the competency to perform their tasks in line with the applicable training identified by the operational authorisation or as defined by the UOC;

(2) follow remote pilot training which shall be competency based and include the competencies set out in Chapter 4

(3) follow remote pilot training, as defined in the operational authorisation, for operations requiring such authorisation, it shall be conducted in cooperation with an entity designated by the competent authority;

(4) follow remote pilot training for operations under declaration that shall be conducted in accordance with the mitigation measures defined by the standard scenario;

(5) have been informed about the UAS operator's operations manual, if required by the risk assessment and procedures established in (i);

(6) obtain updated information relevant to the intended operation about any geographical zones

(v) ensure that personnel in charge of duties essential to the UAS operation, other than the remote pilot itself, comply with all of the following conditions:

(1) have completed the on-the-job-training developed by the operator;

(2) have been informed about the UAS operator's operations manual, if required by the risk assessment, and about the procedures established in (i)(3) have obtained updated information relevant to the intended operation about any geographical zones defined in 12;

(vi) carry out each operation within the limitations, conditions, and mitigation measures defined in the declaration or specified in the operational authorisation;

(vii) keep and maintain an up-to-date record of:

(1) all the relevant qualifications and training courses completed by the remote pilot and the other personnel in charge of duties essential to the UAS operation and by the maintenance staff, for at least 3 years after those persons have ceased employment with the organisation or have changed their position in the organisation;

(2) the maintenance activities conducted on the UAS for a minimum of 3 years;

(3) the information on UAS operations, including any unusual technical or operational occurrences and other data as required by the declaration or by the operational authorisation for a minimum of 3 years;

(viii) use UAS which, as a minimum, are designed in such a manner that a possible failure will not lead the UAS to fly outside the operation volume or to cause a fatality. In addition, Man Machine interfaces shall be such to minimise the risk of pilot error and shall not cause unreasonable fatigue;

(ix) maintain the UAS in a suitable condition for safe operation by:

(1) as a minimum, defining maintenance instructions and employing an adequately trained and qualified maintenance staff; and

(2) (iii) using an unmanned aircraft which is designed to minimise noise and other emissions, taking into account the type of the intended operations and geographical areas where the aircraft noise and other emissions are of concern.

(x) establish and keep an up-to-date list of the designated remote pilots for each flight;

(xi) establish and keep an up-to-date list of the maintenance staff employed by the operator to carry out maintenance activities; and

(xii) ensure that each individual unmanned aircraft is installed with:

(1) at least one green flashing light for the purpose of visibility of the unmanned aircraft at night, and

(2) an active and up-to-date remote identification system.

4. Responsibilities of the remote pilot

(a) The remote pilot shall:

(i) not perform duties under the influence of psychoactive substances or alcohol or when it is unfit to perform its tasks due to injury, fatigue, medication, sickness or other causes;

(ii) have the appropriate remote pilot competency as defined in the operational authorisation and carry a proof of competency while operating the UAS..

(iii) be familiar with manufacturer's instructions provided by the manufacturer of the UAS.

(b) Before starting an UAS operation, the remote pilot shall comply with all of the following:

(i) obtain updated information relevant to the intended operation about any geographical zones defined in 12;

(ii) ensure that the operating environment is compatible with the authorised or declared limitations and conditions;

(iii) ensure that the UAS is in a safe condition to complete the intended flight safely, and if applicable, check if the direct remote identification is active and up-to-date;

(iv) ensure that the information about the operation has been made available to the relevant air traffic service (ATS) unit, other airspace users and relevant stakeholders, as required by the operational authorisation.

(c) During the flight, the remote pilot shall:

(i) comply with the authorised or declared limitations and conditions;

(ii) avoid any risk of collision with any manned aircraft and discontinue a flight when continuing it may pose a risk to other aircraft, people, animals, environment or property;

(iii) comply with the operational limitations in geographical zones comply with the operator's procedures;

(iv) not fly close to or inside areas where an emergency response effort is ongoing unless they have permission to do so from the responsible emergency response services.

5. Transferability of an operational authorisation

An operational authorisation shall not be transferable

6. Duration and validity of an operational authorisation

(a) The Authority shall specify the duration of the operational authorisation in the authorisation itself

(b) Notwithstanding point (a), the operational authorisation remains valid as long as the UAS operator remains compliant with the relevant requirements of this Regulation and with the conditions defined in the operational authorisation.

(c) Upon revocation or surrender of the operational authorisation the UAS operator shall within seven (07) days of the date revocation, surrender such document to the Director General.

IS 5 UAS OPERATIONS IN THE 'CERTIFIED' CATEGORY

1. General requirements for an UOC

(a) A legal person is eligible to apply for an UOC under this Part

(b) An application for the issuance of an UOC or renewal or an amendment to an existing UOC shall be submitted to the Authority and shall contain all of the following information:

(i) a description of the UAS operator's management system, including its organisational structure and safety management system;

(ii) the name(s) of the responsible UAS operator's personnel, including the person responsible for authorising operations with UASs;

(iii) a statement that all the documentation submitted to the competent authority has been verified by the applicant and found to comply with the applicable requirements.

(iv) the appropriate prescribed fee;

(v) a copy of the certificate of registration of the UAS operator;

(vi) a copy of the certificate of registration each airworthiness certified UA to be operated;

(vii) identification, of each UA to be operated, non-airworthiness certified;

(viii) a copy of Operations Manual as described

(ix) a copy of the maintenance programme required by 18.6.1; and

(c) If the requirements of this IS are met, an UOC holder may be granted the privileges,

1. Responsibilities of the UOC holder

The UOC holder shall:

(a) comply with the requirements of points 2 and 3 of IS 3.1(c)

(b) comply with the scope and privileges defined in the terms of approval;

(c) establish and maintain a system for exercising operational control over any operation conducted under the terms of its UOC;

(d) carry out an operational risk assessment of the intended operation in accordance with chapter 8,

(e) keep records of the following items in a manner that ensures protection from damage, alteration and theft for a period at least 3 years for operations conducted using:

(i) the operational risk assessment, when required according to point (d), and its supporting documentation;

(ii) mitigation measures taken; and

(iii) the qualifications and experience of personnel involved in the UAS operation, compliance monitoring and safety management;

(f) keep personnel records referred to in point (e)(iii) as long as the person works for the organisation and shall be retained until 3 years after the person has left the organisation.

3. Safety management system

(a) An UAS operator who applies of holds an UOC shall establish, implement and maintain a safety management system (SMS) corresponding to the size of the organisation, to the nature and complexity of its activities, considering the hazards and associated risks inherent in these activities.

(b) The UAS operator shall comply with all the following:

(i) nominate an accountable manager (AM) with authority for ensuring that within the organisation all activities are performed in accordance with the applicable standards and that the organisation is continuously in compliance with the requirements of the management system and the procedures identified in the operations manual

(ii) define clear lines of responsibility and accountability throughout the organisation;

(iii) establish and maintain a safety policy and related corresponding safety objectives;

(iv) appoint key safety personnel to execute the safety policy;

(v) establish and maintain a safety risk management process including the identification of safety hazards associated with the activities of the UAS operator, as well as their evaluation and the management of associated risks, including taking action to mitigate those risks and verify the effectiveness of the action;

(vi) promote safety in the organisation through:

(1) training and education;

(2) communication;

(vii) document all SMS key processes for making personnel aware of their responsibilities and of the procedure for amending this documentation; key processes include:

(1) safety reporting and internal investigations;

(2) operational control;

(3) communication on safety;

(4) training on SMS and safety promotion;

(5) compliance monitoring;

(6) proactive and predictive safety risk management;

(7) management of change;

(8) interface between organisations;

(9) use of sub-contractors, partners and service providers;

(viii) include a function, independent from operational activities such as operational control, flight operations, maintenance and crew training, to monitor the compliance and adequacy of the fulfilment of the relevant requirements of this Part 18, including a system to provide feedback of findings to the AM to ensure effective implementation of corrective measures as necessary;

(ix) include a function, independent from operational activities such as operational control, flight operations, maintenance and crew training, to ensure that safety risks inherent to a service or product delivered through subcontractors are assessed and mitigated under the operator's SMS.

(x) The functions in (viii) and (ix) shall have direct access to the AM on matters affecting safety or regulatory compliance.

(c) In addition to (b) the safety management system shall include:

(i) a procedure for corrective action, to ensure existing problems that have been identified within the system are corrected;

(ii) procedures for proactive and predictive safety management to ensure that potential causes of problems that have been identified within the system are remedied;

(iii) an internal audit programme to audit the organisation for conformity with its safety policy; and

(iv) procedures for management review to ensure the continuing suitability and effectiveness of the internal quality assurance of the safety management system

(d) The safety management procedures shall ensure that the safety policy and such procedures are understood, implemented and maintained at all levels of the organisation.

(e) The procedures for corrective action shall specify how:

(i) existing problems are corrected;

(ii) corrective action is reviewed to ensure the action is effective;

(iii) procedures are amended as a result of corrective action; and

(iv) management will review the effectiveness of any corrective action taken.

(f) The internal audit programme shall:

(i) specify the frequency and location of the audits considering the nature of the activity to be audited;

(ii) ensure that audits are performed by trained auditing personnel who are independent of those having direct responsibility for the activity being audited;

(iii) ensure that the results of audits are reported to the personnel responsible for the activity being audited and the manager responsible for internal audits;

(iv) require corrective action to be taken by the personnel responsible for the activity being audited if problems are found by the audit; and

(v) ensure that there are follow up audits to review the effectiveness of any corrective action taken.

(ii) The procedure for management review shall:

(i) specify the frequency of management reviews of the safety management system taking into account the need for the continuing effectiveness of the system;

(ii) identify the responsible manager who shall review the safety management system; and

(iii) ensure that the results of the review are evaluated and recorded.

4. Security Management

(a) The holder of an UOC issued under this IS shall:

(i) conduct background checks on all personnel recruited for deployment, handling, transportation and storage of any UAS;

(ii) conduct criminal record checks every two (02) years on all personnel employed in the deployment, handling, and storage of UAS;

(iii) ensure that UAS not in use are stored in a secure manner to prevent and detect unauthorised interference or use;

(iv) ensure that the UAS is protected from acts of unlawful interference;

(v) ensure that the UAS is stored and prepared for flight in a manner that will prevent and detect tampering and ensure the integrity of vital systems;

(vi) designate a security officer (SECO) responsible for the implementation, application and supervision of the security controls; and

(vii) ensure that all personnel employed in the deployment, handling, and storage of UAS have received security awareness training as prescribed in SLCAR Part 17.

(b) The holder of an UOC shall include in the Operations Manual referred to in 5 the security aspects of the UAS operations as prescribed in this regulation.

5. Operations Manual

(a) An UOC holder shall develop for approval by the Director General, an Operations Manual containing all the information required to demonstrate how such operator will ensure compliance with the regulations and how safety standards will be applied and achieved during such operations.

(b) An UOC holder shall set out in the operations manual the type and scope of operations, including:

(i) a statement signed by the AM that confirms that the organisation will at all times work in accordance with this regulation and with the approved UOC manual. When the AM is not the Chief Executive Officer (CEO) of the organisation, the CEO shall countersign the statement;

(ii) a description of the UAS operator's management system, including its organisational structure and SMS;

(iii) the name(s) of the responsible UAS operator's personnel, including the person responsible for authorising operations with UASs;

(iv) the way in which each type of UAS and operation will be safely conducted.

(c) The Operations Manual, or system of manuals, should reflect all operational and regulatory compliance activities and obligations which the UOC holder is obliged to meet, such that the content is commensurate with the size and scope of the operation.

(d) The UAS operator shall distribute the relevant parts of the UOC manual to all its personnel in accordance with their functions and duties.

(e) The structure and contents of the Operations Manual shall be as prescribed in IS 4.2.4.1.

(f) The UOC manual shall be amended as necessary to retain an up-to-date description of the UOC holder's organisation, and copies of amendments shall be provided to the SLCAA.

(g) The operator shall submit to the Director General for approval a change management procedure and, based on such procedure all major changes requiring prior approval.

(h) The operator shall make any changes to the operations manual available to all persons engaged in the operation, deployment, handling, security, transportation and storage of any UAS operated by such UOC holder and ensure that they are made aware, and where necessary trained in accordance with any relevant aspect relating to such amendment.

(i) If any activity is carried out by partner organisations or subcontractors or contracted to a service provider, the UAS operator shall include in the UOC manual procedures on how the UOC holder shall manage the relationship with those partner organisations or subcontractors.

6. Terms of approval of the UOC holder

(a) The DG shall issue an UOC after it is satisfied that the UAS operator complies with the requirements in this regulation.

(b) The UOC shall include:

(i) the UAS operator identification;

(ii) the UAS operator's privileges in 7;

(iii) authorised type(s) of UAS operation;

(iv) the authorised area, zone or class of airspace for operations, if applicable;

(v) any special limitations or conditions, if applicable;

7. Privileges of the UOC holder

When satisfied with the documentation provided by the UAS operator applying for a UOC, the Director General:

(a) shall specify the terms and conditions of the privileges granted to the UAS operator in the terms of approval attached to the UOC;

(b) may, within the terms of approval, grant to an UOC holder the privilege to authorise its own operations without applying for an operational authorisation based on chapter 9;

(c) The UOC holder may in addition:

(i) Conduct UAS operations in the open category in compliance with IS 3.1;

(ii) apply for operational authorisation chapter 9 for intended UAS operations going beyond the scope of its privileges.

8. Changes in the UOC management system

After an UOC is issued, the following changes require prior approval by the Director General:

(a) any change to the ownership of the organisation;

(b) any change in the terms of approval of the UAS operator;

(c) any significant change to the elements of the UOC holder's management system as required;

(d) any other major change defined in the change management procedure

9. Documents and records

(a) An UOC holder shall establish a system of record-keeping that allows adequate storage and reliable traceability of all activities developed, covering in particular:

(i) Lines of responsibility and accountability;

(ii) Safety Policy;

(iii) Approved UAS operations and related safety risk assessments and evidence of implemented mitigations;

(iv) Identification of aviation safety hazards encountered by the activities of the operator, assessment and mitigation of the associated risks, including taking actions and verifying their effectiveness; and

(v) Regulatory compliance, safety, security and privacy management records.

(b) Records in (a) shall be stored for at least 5 years on a physical support or digitally, in a manner that ensures protection from damage, alteration and theft.

(c) In addition, an UOC holder shall establish a system for keeping records of personnel training, qualification, competence and experience.

(d) Personnel records in (c) shall be kept as long as the person works for the organisation and shall be retained until 3 years after the person has left the organisation.

(e) The format of the records shall be specified in the UOC holder's Operations Manual.

10. Transferability of an UOC

Except for the change to the ownership of the organisation, approved by the Director General in 8, an UOC is not transferable.

11. Duration and validity of an UOC

(a) An UOC shall be issued for an unlimited duration.

(b) It shall remain valid subject to:

(i) the UOC holder's continuous compliance with the relevant requirements of this regulation and with its terms of approval; and of the Member State that issued the certificate; and

(ii) he UOC is not being surrendered or cancelled;

(iii)results of the continuous oversight programme established by the SLCAA

(c) Upon cancellation or surrender of an UOC, the UOC holder shall provide an acknowledgment in digital format that must be returned to the SLCAA without delay and, within seven (07) days of the date cancellation, surrender such document to the Director General.

IS 16.9.1 UAS TRAINING ORGANISATION

1. UAS Training Organizations (UTO) approval

(a) An entity that intends to be approved by the Authority for the provision of TK and PS training for the UPL shall apply to the Authority, declaring that it meets the requirements in this regulation using the application form in prescribed by the Authority and attaching to the application an electronic copy of the UTO Operations Manual, including training.

(b) By signing the application, the entity in (a) acknowledges that the organisation shall at all times be subject to continuous safety oversight by the Authority, including planned audits or inspections.

(c) Remote pilot examinations, assessments or verification of competencies shall be conducted by the Authority or by a QE accredited by the Authority for the purpose.

2. Prevention of conflicts of interest

The UTO approved by the Authority shall guarantee a clear separation between any RP assessment and any other operational activities to guarantee the independence of the evaluation.

3. Professional competence

The UTO approved by the Authority shall have:

(a) the capacity to adequately carry out the technical and administrative activities related to the entire training process, including the adequacy of personnel and the use of adequate facilities and equipment for the task; and

(b) an accountable manager, with the responsibility of guaranteeing that all tasks are carried out in accordance with the information and procedures indicated in the following rules of this regulation.

4. Training and assessment

(a) The instructor or instructors responsible for practical skills training and practical skills shall comply with paragraph 17.4 and in particular they shall:

(i) have the necessary competence to carry out respective tasks;

(ii) be impartial and shall not participate in evaluations if they consider that their objectivity may be affected;

(iii) have solid training experience in theoretical and practical knowledge, and satisfactory knowledge of the requirements for the PS training tasks they carry out, as well as adequate experience of those processes;

(iv) have the ability to manage statements, records and reports demonstrating that relevant training activities for practical skills have been carried out and to draw conclusions from such activities; and

(v) not disclose any information provided by the operator or remote pilot to any person other than the SLCAA of a QE accredited by Authority at their request.

(b) TK training shall comprise as a minimum.

(c) Practical training shall be conducted in an environment representative of the conditions of the intended operation.

(d) All flight training shall be conducted with an aircraft of the same category for which the licence is sought.

(e) All PS training activities shall be covered by insurance

(f) The UTO approved by the Authority shall prepare a training report after completing the practical skill training, which must include, as a minimum:

(i) the identification data of the remote pilot student;

(ii) the identity of the instructors who have delivered practical training;

(iii) identification of the aircraft category and ratings or endorsements for which the practical skill training has been carried out;

(iv) the total number of training flights and flight hours;

(v) list of actions or manoeuvres which the remote student pilot has satisfactorily carried out;

(vi) a general assessment of the achieved practical skill.

(g) The training report in (c) shall:

(i) be duly signed and dated by the Head of Training of the UTO;

(ii) be registered and made available to the Authority for inspection upon request; and

(iii) kept by the UTO for at least three years after the PS training has been completed

5. Training elements

(a) The UTO approved by the SLCAA shall include in the operations manual covering the elements of training, including the following:

(i) the designated instructor(s) conducting the training for UPL practical skill competencies, in particular:

(1) description of the competence of the corresponding personnel;

(2) the roles and responsibilities of staff; and

(3) an organisation chart showing the associated chains of responsibility;

(ii) The procedures and processes used for the training on practical skill competencies, including the training programme covering the practical competency relevant to the intended aircraft category, UPL rating and UAS operation;

(iii) a description of the UAS and any other equipment, tools and environment used for training; and

(iv) a template for the training report.

(b) In addition, Part C of the UTO operations manual shall describe the coordination procedures with the QE responsible for examinations, assessments or verification of competencies of candidate UAS pilots.

6. UTO certification and terms of approval

(a) The Authority shall issue the certificate approving the UTO when satisfied that the UTO has demonstrated compliance with the elements required in this regulation including course syllabi, and, where applicable, procedures for training flights with student pilots or training on simulators.

(b) The Authority shall issue terms of approval to the UTO, specifying whether the organisation has the privilege to deliver training for:

(i) Theoretical knowledge of remote pilots in the open category;

(ii) Theoretical knowledge of remote pilots in the specific category;

(iii) Practical training of remote pilots in the open category for one or more aircraft categories;

(iv) Practical training of remote pilots in the specific category for one or more aircraft categories and ratings or endorsements.

(c) UTO shall not have the privilege of training for VPL or RPL and related ratings and endorsements.

(d) A Training Organisation approved (ATO) under SLCAR Part 1B may have the privilege to train for VPL, RPL, and also UPL, without separate approval.

(e) The UTO instructors, full or part-time, shall hold a valid endorsement issued by the Authority or by a QE accredited by the Authority, with privileges commensurate to the training delivered by the UTO.

IS 11.1.1 RESTRICTED AND PROHIBITED ZONES FOR UAS OPERATIONS

	TYPE	LOCATION
No.	**STRATEGIC PUBLIC/ KEY GOVERNMENT FACILITIES**	
1	Office of the President, State House	State Avenue, O.A. U. Drive Tower Hill
2	Office of the Vice President	▪ State Avenue, O.A. U. Drive Tower Hill
3	Presidential Lodge	▪ Hill Station
4	Vice Presidential Lodge	▪ Spur Road
5	House of Parliament	▪ State Avenue, O.A.U. Drive Tower Hill
6	Electoral Commission — Sierra Leone (EC-SL)	▪ Tower Hill, Freetown
7	Ministry of Foreign Affairs & International Cooperation	▪ Tower Hill, Freetown
8	Law Court Building	▪ 5 Regions & 16 Districts
9	All EC-SL Regional & District offices	• State Avenue
10	Anti- Corruption Commission	▪ Gloucester Street
11	National Civil Registration Authority	▪ Wallace Johnson
	SECURITY AND DEFENCE	
12	Office of National Security (ONS)	▪ State Avenue, O.A. U. Drive Tower Hill- free town
13	Ministry of Internal Affairs	▪ Gloucester Street
14	Department of Immigration	▪ Gloucester Street - Freetown
15	Sierra Leone Police Head Quarters	▪ George Street

16	Republic of Sierra Leone Armed Force Headquarters (RSLAF HQ) / RSLAF Military Base	Cockerel West, Wilkinson Road
17	Ministry of Defence	▪ State Avenue, D.A. U. Drive, Tower Hill.
18	SLP Operation Support Division HQ	▪ Brookfields
19	OSD Operations Base-	▪ Jui
20	Sierra Leone Correction Service HQ	▪ Pademba Road
21	Sierra Leone Female Correction Centre	▪ New England Ville
22	National Fire Force (NFF)	▪ A.J. Momoh Street
23	National Disaster Management Agency.	• Sir Samuel Lewis Road
24	All Correctional centers at regional and district level Security Unit (CISU)	Regional Headquarter Towns • District Headquarter Towns
25	Military Installations/ Arms and Ammunition Dumps - Joint Logistic Unit (JLU)	Murray town
	ENERGY SECTOR / RESOURCES	
26	General Transmission Kingtom Power Station (GTKPS)	▪ Kingtom
27	Electricity Distribution and Supply Agencies (EDSA)	• Siaka Steven Street — Freetown
1 28	Electricity Distribution and Supply Agencies (EDSA)	Falcon Bridge — Freetown
29	Black Hall Road Power Transmission Site	Blackball Road — Freetown
30	Bo — Kenema Power Station (BKPS)	• Tinkonko Road — Bo: Kakua Chieffiloiqi
31	All EDSA Transformer Sites	▪ Nationwide

32	Oil Marketing Company (OMC) Installations	▪ Nationwide
	WATER RESOURCES	
33	Guma Dam and Water Treatment Plant	• Mile 13 — Mambo Peninsular Road, Freetown
34	Gurna Valley Water Company (GVWC)	Guma Building — Lamina Sankoh Street: Freetown
35	Peninsular Catchment Area .	Peninsular Road
36	Bumbuna -Hydro Electric Power (H.E P)	Magburaka — Tonkolili District: Kalasongia Chiefdom
37	Dodo Hydro Electric Power Site	• Kenema -Dodo- Chiefdom — Kenema District
38	Bankasoka — Hydro Electric Power Site	▪ Port- Loko District — Maforki Chiefdom — Part -Loko
	TRANSPORT AND AVIATION	
39	Sierra Leone Ports Authority	• Cline -Town Freetown
40	Freetown International Airport (FNA)	▪ Lungi- Kaffu Bullom Chiefdom
41	Sierra Leone Civil Aviation Authority (SLCAA)	▪ Siaka Steven Street- Freetown
42	Sierra Leone Road Transport Authority (SLRA)	• Ferry Junction — Public Works Department Junction
43	Sierra Leone Maritime Authority (SLMA)	• Government Wharf
44	Queen Elizabeth II Quay	• Cline Town
	HEALTH CARE SYSTEM AND SANITATION SERVICE	
45	Ministry of Health & Sanitation	• Zonta- bye Pass Road — Youyi Building
46	Connaught Hospital	▪ Light- Foot Boston Street

47	Princess Christian Maternity Hospital (PCMH)	▪ Fourth- Bay Road — Freetown
48	Ola During Children Hospital (OCDH)	Fourth- Bay Road — Freetown
49	All Regional Government Hospitals	• Bo- Mission Road • Kenema — Combema Road • Makeni - Makama Road
50	Pharmacy Board of Sierra Leone	▪ New — England Ville
51	Rokupa Government Hospital	▪ Wellington
52	Infectious Diseases Hospital	▪ Lakka
53	Centre for Public Health Reference Laboratory (CPHRL)	▪ Lakka
54	Kissy Psychiatric Hospital / Kissy Mental Hospital	▪ Kissy / Craze / Rage yard
55	Satellite Hospitals	▪ Macauley Street and Kingharman Road
56	Chinese Friendship Hospital	• Jui ▪
57	Choithram Hospital	▪ Hill- Station
58	Emergency Trauma Hospital	▪ Goderich
	INFORMATION. COMMUNICATION TECNOLOGY SERVICES	
59	Ministry of Information & Communication (MIC)	• Youyi Building
60	Sierra Leone Broadcasting Corporation (SLBC)	• New- England Ville
61.	Leicester Peak Repeater	▪ Leicester Village
62	National Telecommunication Communication (NATCOM)	Hill Station
63	All Private Mobile and Internet Companies	• Orange Sierra Leone — Hill Station • Africell - Hill Station • Qcell - Kingharman Road

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SECTION 2

REMOTELY PILOTED AIRCRAFT SYSTEM FOR INTERNATIONAL OPERATIONS

1. GENERAL PROVISIONS

1.1 Definitions

When the following terms are used in this regulation for operation of RPAS, they shall have the following meanings:

(b) Accident. An occurrence associated with the operation of an unmanned aircraft which takes place between the time the aircraft is ready to move with the purpose of flight until such time as it comes to rest at the end of the flight and the primary propulsion system is shut down, in which:

(i) a person is fatally or seriously injured as a result of:

(1) being in the aircraft, or

(2) direct contact with any part of the aircraft, including parts which have become detached from the aircraft, or direct exposure to jet blast,

(3) except when the injuries are from natural causes, self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew; or

(ii) the aircraft sustains damage or structural failure which:

(1) adversely affects the structural strength, performance or flight characteristics of the aircraft, and

(2) would normally require major repair or replacement of the affected component,

(3) except for engine failure or damage, when the damage is limited to a single engine (including its cowlings or accessories), to propellers, wing tips, antennas, probes, vanes, tires, brakes, wheels, fairings, panels, landing gear doors, windscreens, the aircraft skin (such as small dents or puncture holes), or for minor damages to main rotor blades, tail rotor blades, landing gear, and those resulting from hail or bird strike (including holes in the radome); or

(iii) the aircraft is missing or is completely inaccessible.

(c) Aerial work. An aircraft operation in which an aircraft is used for specialized services such as agriculture, construction, photography, surveying, observation and patrol, search and rescue, aerial advertisement, etc.

(d) Aerodrome. A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface

(e) Aerodrome operating minima. The limits of usability of an aerodrome for:

(i) take-off, expressed in terms of runway visual range and/or visibility and, if necessary, cloud conditions;

(ii) landing in 2D instrument approach operations, expressed in terms of visibility and/or runway visual range minimum descent altitude/height (MDA/H) and, if necessary, cloud conditions; and

(iii) landing in 3D instrument approach operations, expressed in terms of visibility and/or runway visual range and decision altitude/height (DA/H) as appropriate to the type and/or category of the operation.

(i) Aeroplane. A power-driven heavier-than-air aircraft, deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under given conditions of flight.

(j) Aircraft. Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

(k) Aircraft operating manual. A manual, acceptable to the Authority, containing normal, abnormal and emergency procedures, checklists, limitations, performance information, details of the aircraft systems and other material relevant to the operation of the aircraft.

(l) Alternate aerodrome. An aerodrome to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or to land at the aerodrome of intended landing where the necessary services and facilities are available, where aircraft performance requirements can be met and which is operational at the expected time of use. Alternate aerodromes include the following:

(i) **Take-off alternate.** An alternate aerodrome at which an aircraft would be able to land should this become necessary shortly after take-off and it is not possible to use the aerodrome of departure.

(ii) **En-route alternate.** An alternate aerodrome at which an aircraft would be able to land in the event that a diversion becomes necessary while en-route.

(iii) **Destination alternate.** An alternate aerodrome at which an aircraft would be able to land should it become either impossible or inadvisable to land at the aerodrome of intended landing.

(ww) Authority. The Sierra Leone civil Aviation Authority

(xx) C2 Link. The data link between the remotely piloted aircraft and the remote pilot station for the purposes of managing the flight.

(yy) C2 Link communications service provider (C2CSP). An entity which provides a portion of, or all of, the C2 Link service for operation of an RPAS.

(zz) C2 Link interruption. Any temporary situation where the C2 Link is unavailable, discontinuous, introduces too much delay, or has inadequate integrity; but where the lost C2 Link decision time has not been exceeded.

(aaa) COMAT. Operator material carried on an operator's aircraft for the operator's own purposes.

(bbb) Configuration deviation list (CDL). A list established by the organization responsible for the type design with the approval of the State of Design which identifies any external parts of an aircraft type which may be missing at the commencement of a flight, and which contains, where necessary, any information on associated operating limitations and performance correction.

(ccc) Continuing airworthiness. The set of processes by which an aircraft, remote pilot station, engine, propeller or part complies with the applicable airworthiness requirements and remains in a condition for safe operation throughout its operating life.

(ddd) Continuing airworthiness records. Records which are related to the continuing airworthiness status of an aircraft, remote pilot station, engine, propeller or associated part.

(eee) Controlled airspace. An airspace of defined dimensions within which air traffic control service is provided in accordance with the airspace classification;

(fff) Dangerous goods. Articles or substances which are capable of posing a risk to health, safety, property or the environment and which are shown in the list of dangerous goods in the Technical Instructions or which are classified according to those Instructions.

(ggg) Defined point after take-off (DPATO). The point, within the take-off and initial climb phase, before which the helicopter's ability to continue the flight safely, with one engine inoperative, is not assured and a forced landing may be required.

(hhh) Defined point before landing (DPBL). The point, within the approach and landing phase, after which the helicopter's ability to continue the flight safely, with one engine inoperative, is not assured and a forced landing may be required.

(iii)Detect and avoid. The capability to see, sense or detect conflicting traffic or other hazards and take the appropriate action.

(jjj) Duty. Any task that flight or cabin crew members are required by the operator to perform, including, for example, flight duty, administrative work, training, positioning and standby when it is likely to induce fatigue.

(kkk) Duty period. A period which starts when a flight or cabin crew member is required by an operator to report for or to commence a duty and ends when that person is free from all duties.

(lll)Fatigue. A physiological state of reduced mental or physical performance capability resulting from sleep loss, extended wakefulness, circadian phase, and/or workload (mental and/or physical activity) that can impair a person's alertness and ability to perform safety-related operational duties.

(mmm) Fatigue risk management system (FRMS). A data-driven means of continuously monitoring and managing fatigue-related safety risks, based upon scientific principles and knowledge as well as operational experience that aims to ensure relevant personnel are performing at adequate levels of alertness.

(nnn) Flight data analysis. A process of analysing recorded flight data in order to improve the safety of flight operations.

(ooo) Flight duty period. A period which commences when a flight or cabin crew member is required to report for duty that includes a flight or a series of flights and which finishes when the aircraft finally comes to rest and the engines are shut down at the end of the last flight on which he/she is a crew member.

(ppp) Flight manual. A manual, associated with the certificate of airworthiness, containing limitations within which the aircraft is to be considered airworthy, and instructions and information necessary to the flight crew members for the safe operation of the aircraft.

(qqq) Flight operations officer/flight dispatcher. A person designated by the operator to engage in the control and supervision of flight operations, whether licensed or not, suitably competent in accordance with SLCAR Part 1 (Personnel Licensing), who supports, briefs and/or assists the remote pilot-in-command in the safe conduct of the flight.

(rrr) Flight plan. Specified information provided to air traffic services units, relative to an intended flight or portion of a flight of an aircraft.

(sss) Flight safety documents system. A set of interrelated documentation established by the operator, compiling and organizing information necessary for flight and ground operations, and comprising, as a minimum, the operations manual and the operator's maintenance control manual.

(ttt) Flight simulation training device. Any one of the following three types of apparatus in which flight conditions are simulated on the ground:

(i) A flight simulator**,** which provides an accurate representation of the flight deck of a particular aircraft type to the extent that the mechanical, electrical, electronic, etc. aircraft systems control functions, the normal environment of flight crew members, and the performance and flight characteristics of that type of aircraft are realistically simulated;

(ii) A flight procedures trainer**,** which provides a realistic flight deck environment, and which simulates instrument responses, simple control functions of mechanical, electrical, electronic, etc. aircraft systems, and the performance and flight characteristics of aircraft of a particular class;

(iii) A basic instrument flight trainer, which is equipped with appropriate instruments, and which simulates the flight deck environment of an aircraft in flight in instrument flight conditions.

(uuu) Flight termination system. A system intended to terminate flight and minimize the possibility of injury or damage to persons, property or other aircraft.

(vvv) Flight time – remotely piloted aircraft systems. The total time from the moment a C2 Link is established between the remote pilot station (RPS) and the remotely piloted aircraft (RPA) for the purpose of taking off or from the moment the remote pilot receives control following a handover until the moment the remote pilot completes handover or the C2 Link between the RPS and RPA is terminated at the end of the flight.

(www) Ground handling. Services necessary for an aircraft's arrival at, and departure from, an airport, other than air traffic services.

(xxx) Handover. The act of passing piloting control from one remote pilot station to another.

(yyy) Helicopter. A heavier-than-air aircraft supported in flight chiefly by the reactions of the air on one or more power-driven rotors on substantially vertical axes.

(zzz) Helideck. A heliport located on a floating or fixed offshore structure.

(aaaa) Heliport. An aerodrome or a defined area on a structure intended to be used wholly or in part for the arrival, departure and surface movement of helicopters.

(bbbb) Human performance. Human capabilities and limitations which have an impact on the safety and efficiency of aeronautical operations.

(cccc) Incident. An occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation.

(dddd) Isolated aerodrome. A destination aerodrome for which there is no destination alternate aerodrome suitable for a given aeroplane type.

(eeee) Lost C2 Link decision time. The maximum length of time permitted before declaring a lost C2 Link state during which the C2 Link performance is not sufficient to allow the remote pilot to actively manage the flight in a safe and timely manner appropriate to the airspace and operational conditions.

(ffff) Lost C2 Link state. The state of the RPAS in which the C2 Link performance has degraded, as a result of a C2 Link interruption that is longer than the lost C2 Link decision time, to a point where it is not sufficient to allow the remote pilot to actively manage the flight in a safe and timely manner.

(gggg) Maintenance. The performance of tasks on an aircraft, remote pilot station, engine, propeller or associated part required to ensure the continuing airworthiness of an aircraft, remote pilot station, engine, propeller or associated part including any one or combination of overhaul, inspection, replacement, defect rectification, and embodiment of a modification or repair.

(hhhh) Master minimum equipment list (MMEL). A list established for a particular aircraft type by the organization responsible for the type design with the approval of the State of Design containing items, one or more of which is permitted to be unserviceable at the commencement of a flight. The MMEL may be associated with special operating conditions, limitations or procedures.

(iiii) Minimum equipment list (MEL). A list which provides for the operation of aircraft, subject to specified conditions, with particular equipment inoperative, prepared by an operator in conformity with, or more restrictive than, the MMEL established for the aircraft type.

(jjjj) Movement area. That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, consisting of the manoeuvring area and the apron(s).

(kkkk) NOTAM. A notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

(llll) Operational control. The exercise of authority over the initiation, continuation, diversion or termination of a flight in the interest of the safety of the aircraft and the regularity and efficiency of the flight.

(mmmm) Operations in performance Class 1. Operations with performance such that, in the event of a critical engine failure, performance is available to enable the helicopter to safely continue the flight to an appropriate landing area, unless the failure occurs prior to reaching the take-off decision point (TDP) or after passing the landing decision point (LDP), in which cases the helicopter must be able to land within the rejected take-off or landing area.

(nnnn) Operations in performance Class 2. Operations with performance such that, in the event of critical engine failure, performance is available to enable the helicopter to safely continue the flight to an appropriate landing area, except when the failure occurs early during the take-off manoeuvre or late in the landing manoeuvre, in which cases a forced landing may be required.

(oooo) Operations in performance Class 3. Operations with performance such that, in the event of an engine failure at any time during the flight, a forced landing will be required.

(pppp) Operations manual. A manual containing procedures, instructions and guidance for use by operational personnel in the execution of their duties.

(qqqq) Operations specifications. The authorizations, including specific approvals, conditions and limitations associated with the air operator certificate and subject to the conditions in the operations manual.

(rrrr) Operator. A person, organization or enterprise operating or intending to operate RPAS.

(ssss) Operator's maintenance control manual. A document which describes the operator's procedures necessary to ensure that all scheduled and unscheduled maintenance is performed on the operator's aircraft on time and in a controlled and satisfactory manner.

(tttt) Point of no return. The last possible geographic point at which an aircraft can proceed to the destination aerodrome as well as to an available en-route alternate aerodrome for a given flight.

(uuuu) Psychoactive substances. Alcohol, opioids, cannabinoids, sedatives and hypnotics, cocaine, other psychostimulants, hallucinogens, and volatile solvents, whereas coffee and tobacco are excluded.

(vvvv) Remote co-pilot. A licensed remote pilot serving in any piloting capacity other than as a remote pilot-in-command but excluding a remote pilot who is in the remote pilot station for the sole purpose of receiving flight instruction.

(wwww) Remote crew member. A person assigned by an operator with duties connected to the operation of a remote piloted aircraft system during a flight duty period.

(xxxx) Remote flight crew member. A licensed flight crew member charged with duties essential to the operation of a remote piloted aircraft system during a flight duty period.

(yyyy) Remote pilot. A person charged by the operator with duties essential to the operation of an remotely piloted aircraft and who manipulates the flight controls, as appropriate, during flight time.

(zzzz) Remote pilot-in-command. The remote pilot designated by the operator as being in command and charged with the safe conduct of a flight.

(aaaaa) Remote Pilot station (RPS). The component of the remotely piloted aircraft system containing the equipment used to pilot the remotely piloted aircraft.

(bbbbb) Remotely piloted aircraft (RPA). An unmanned aircraft which is piloted from a remote pilot station.

(ccccc) Remotely piloted aircraft system (RPAS). A remotely piloted aircraft, its associated remote pilot station(s), the required C2 Link(s) and any other components as specified in the type design.

(ddddd) Rest period. A continuous and defined period of time, subsequent to and/or prior to duty, during which flight or cabin crew members are free of all duties.

(eeeee) RPA observer. A trained and competent person designated by the operator who, by visual observation of the remotely piloted aircraft, assists the remote pilot in the safe conduct of the flight.

(fffff) RPAS operator certificate (ROC). A certificate authorizing an operator to carry out specified RPAS operations.

(ggggg) RPAS-recorder system (RPAS-RS). The recorder system installed in the remotely piloted aircraft system for the purpose of complementing accident/incident investigation. RPAS recorder systems consists of the following:

(i) An RPA-recorder system (RPA-RS). Any type of recorder system installed in the remotely piloted aircraft for the purpose of complementing accident/incident investigation.

(ii) An RPS-recorder system (RPS-RS). Any type of recorder system installed in the RPS for the purpose of complementing accident/incident investigation.

(hhhhh) Runway visual range (RVR). The range over which the pilot of an aircraft on the centre line of a runway can see the runway surface markings or the lights delineating the runway or identifying its centre line.

(iiiii) Safety. The state in which risks associated with aviation activities, related to, or in direct support of the operation of aircraft, are reduced and controlled to an acceptable level.

(jjjjj) Safety management system (SMS). A systematic approach to managing safety, including the necessary organizational structures, accountability, responsibilities, policies and procedures.

(kkkkk) **Segregated airspace:** Airspace of specified dimensions allocated for exclusive use to a specific user(s).

(llll) **Shielded operation:** means an operation of an aircraft within 100 m of, and below the top of, a natural or man-made object.

(mmmmm) **Safety oversight.** A function performed by the Authority to ensure that individuals and organizations performing an aviation activity comply with safety-related national laws and regulations.

(nnnnn) **Serious incident.** An incident involving circumstances indicating that there was a high probability of an accident and associated with the operation of a remotely piloted aircraft, takes place between the time the aircraft is ready to move with the purpose of flight until such time as it comes to rest at the end of the flight and the primary propulsion system is shut down.

(ooooo) **Service level agreement (SLA).** The agreement between the C2CSP and the operator covering the safety, performance, service area and security of the C2 Link provision as required for the RPAS operator's intended operations.

(ppppp) **Specific approval.** A specific approval is an approval which is documented in the Operations Specifications for commercial air transport operations or in the list of specific approvals for non-commercial operations.

(qqqqq) **State of Registry.** The State on whose register the aircraft is entered.

(rrrrr) **State of the Aerodrome.** The State in whose territory the aerodrome is located.

(sssss) **State of the Operator.** The State in which the operator's principal place of business is located or, if there is no such place of business, the operator's permanent residence.

(ttttt) **State of the RPS service provider.** The State where the RPS service provider has its primary place of business.

(uuuuu) **Surveillance.** The State activities through which the State proactively verifies through inspections and audits that aviation licence, certificate, authorization or approval holders continue to meet the established requirements and function at the level of competency and safety required by the State.

(vvvvv) **Switchover.** The act of transferring the active data link path between the RPS and the RPA from one of the links or networks that constitutes the C2 Link to another link or network that constitutes the C2 Link.

(wwwww) **Synthetic vision system (SVS).** A system to display data-derived synthetic images of the external scene from the perspective of the flight deck.

(xxxxx) Visual line-of-sight (VLOS) operation. An operation in which the remote pilot or RPA observer maintains direct unaided visual contact with the remotely piloted aircraft.

(yyyyy) Visual meteorological conditions (VMC): Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling, equal to or better than specified minima

2. APPLICABILITY

This regulation shall be applicable to the operation of RPAS certificated in accordance with SLCAR Part 8A by operators authorized to conduct international RPAS operations.

3. GENERAL AND OPERATOR RESPONSIBILITIES

3.1 Compliance with Laws, Regulations and Procedures

3.1.1 The operator shall ensure that all those involved in the RPAS operation know that they must comply with the laws, regulations and procedures of those States in which:

(a) the RPA is being operated; and

(b) the RPS are located.

3.1.2 The operator shall ensure that all remote pilots are familiar with the laws, regulations and procedures, pertinent to the performance of their duties, prescribed for the areas to be traversed, the aerodromes to be used and the air navigation facilities relating thereto. The operator shall ensure that other members of the remote flight crew are familiar with such of these laws, regulations and procedures as are pertinent to the performance of their respective duties in the operation of the RPAS.

3.1.3 The operator or a designated representative shall have responsibility for operational control.

3.1.4 Responsibility for operational control shall be delegated only to the remote pilot-in-command and to a flight operations officer/flight dispatcher if the operator's approved method of control and supervision of flight operations requires the use of flight operations officer/flight dispatcher personnel.

3.1.5 If an emergency situation which endangers the safety of the RPA or persons becomes known first to the flight operations officer/flight dispatcher, action by that person in accordance with 4.7.2 shall include, where necessary, notification to the appropriate authorities of the nature of the situation without delay, and requests for assistance if required.

3.1.6 If an emergency situation that endangers the safety of the RPA or persons necessitates the taking of action that involves a violation of local regulations or procedures, the remote pilot-in-command

shall notify the Authority without delay. If required by the State in which the incident occurs, the remote pilot-in-command shall submit a report on any such violation to the appropriate authority of such State; in that event, the remote pilot-in-command shall also submit a copy of it to the State of the Operator and the State of the RPS service provider, if different. Such reports shall be submitted as soon as possible and normally within ten days.

3.1.7 Operators shall ensure that remote pilots-in-command have all the essential information concerning the search and rescue services in the area over which the RPA will be flown available at the RPS.

3.1.8 Operators shall ensure that remote flight crew members demonstrate the ability to speak and understand the language used for radiotelephony communications as specified in SLCAR Part 1A.

3.2 Compliance by a Foreign Operator with Laws, Regulations and Procedures

3.2.1 When the Authority identifies a case of non-compliance or suspected non-compliance of a foreign operator with laws, regulations and procedures applicable within Sierra Leone, or a similar serious safety issue with that operator, the Authority shall immediately notify the operator and, if the issue warrants it, the State of the Operator. Where the State of the Operator and the State of Registry are different, such notification shall also be made to the State of Registry, if the issue falls within the responsibilities of that State and warrants a notification.

3.2.2 In the case of notification to States as specified in 3.2.1, if the issue and its resolution warrant it, the State(s) in which the operation is conducted shall engage in consultations with the State of the Operator and the State of Registry, as applicable, concerning the safety standards maintained by the operator.

3.3 Safety Management

3.3.1 The operator shall implement a safety management system (SMS) that incorporates the framework and principles defined in SLCAR Part 19, and in this regulation.

3.3.2 The operator of an RPAS shall establish and maintain a flight data analysis programme (FDAP) as part of its safety management system, which includes the flight data, including C2 Link data, required to be recorded at the RPS, the RPA and any other data designated by the State of the Operator.

3.3.3 The FDAP shall contain adequate safeguards to protect the source(s) of the data in accordance with SLCAR Part 19.

3.3.4 The use of audio or images of persons by an RPA recorder system (RPA-RS) or an RPS recorder systems (RPS-RS) shall not be allowed for purposes other than the investigation of an accident or incident as per Annex 13, except where the recordings or transcripts are:

(a) related to a safety-related event identified in the context of a safety management system; are restricted to the relevant portions of a de-identified transcript of the recording; and are subject to the protections accorded by SLCAR Part-19;

(b) sought for use in criminal proceedings not related to an event involving an accident or incident investigation; and are subject to the protections accorded by SLCAR Part-19; or

(c) used for inspections of recorder systems.

3.3.5 The use of recordings made by RPA-RS and RPS-RS and that are not addressed by 3.3.4, as well as transcripts of such recordings, shall not be allowed for purposes other than the investigation of an accident or incident as per Annex 13, except where the recordings or transcripts are subject to the protections accorded by SLCAR Part-19 and are:

(a) used by the operator for airworthiness or maintenance purposes;

(b) used by the operator in the operation of a flight data analysis programme required in this regulation;

(c) sought for use in proceedings not related to an event involving an accident or incident investigation;

(d) de-identified; or

(e) disclosed under secure procedures.

3.3.6 The operator shall establish a flight safety documents system as part of its safety management system for the use and guidance of operational personnel.

3.4 Use of Psychoactive Substances

No person shall perform duties under the influence of psychoactive substances as contained in the provision in SLCAR Part 1, 1.2.7 and SLCAR Part 2, 2.5.

3.5 Registration

3.5.1 RPA used for international operations shall be registered in accordance with the provisions in SLCAR Part-7.

3.5.2 RPS Identification

3.5.2.1 The operator shall include within the operations manual the following details for all RPS that it operates:

(a) the individual or legal entity holding ownership of each RPS;

(b) the RPS manufacturer and manufacturer's designation for the RPS;

(c) the serial number of each RPS;

(d) indication of the type, model, and variant of each RPA an RPS is capable of controlling; and

(e) other relevant data as required by applicable legislation.

3.6 Safety-Critical Services

3.6.1 The operator shall verify that the provider of safety-critical services has an organizational structure, documented procedures, resources and personnel sufficient to ensure the safe provision of services.

3.6.2 Safety-critical services shall include, but are not limited to:

(a) provision of geographical data and airspace limitations;

(b) collection and forwarding of occurrence data;

(c) the training of remote pilots;

(d) communication services supporting the C2 Link;

(e) provision of services through RPS located anywhere in the world; and

f) provision of services related to flight planning and management including related safety risk assessments.

3.6.3 Safe Operation of the C2 Link

3.6.3.1 The State of the Operator shall be responsible for the oversight of the C2 Link service provision, whether any of the C2 Link components are under the control of the RPAS operator or a C2 Link communications service provider (C2CSP).

3.6.3.1 The operator shall be responsible for the safe operation of all C2 Link components when the operator exercises direct control over the entire C2 Link(s). Such responsibilities shall be detailed in a service level agreement (SLA) internal to the operator.

3.6.3.3 The operator shall establish an SLA with the C2CSP prior to commencing operations when a portion of, or all of, the C2 Link(s) is under the operational control of a C2CSP.

3.6.3.4 The SLA shall be approved by the Authority.

3.6.3.5 The SLA shall contain at least:

(a) legal identification of the party(ies);

(b) scope of the provided service, including hours of service and service area;

(c) performance requirements of the C2 Link provision, including the QoSR which is commensurate with the C2 Link specification required, under normal conditions, for the operator's intended operations;

(d) security measures and management, including security requirements for the C2 Link provision;

(e) procedures for planned outages and contingencies, including reporting requirements;

(f) safety management responsibilities and processes related to safety risk management and safety assurance, including safety risk assessment and mitigation, safety performance monitoring and measurement, safety reporting, and safety analysis;

(g) arrangements to facilitate oversight of the C2 Link service provision by the Authority; and

(h) the C2CSP emergency response plan (ERP) including how they would address service losses and how they would be restored.

3.6.3.6 The C2CSP shall establish and document processes to perform C2CSP monitoring of the QoSD as part of their routine operations, with the objective of ensuring that the C2 Link service provision meets the applicable requirements, including the C2 Link QoSR specified in the SLA.

3.6.3.7 The operator shall be responsible for monitoring that the C2 Link service provision QoSD meets the QoSR, including its security, and shall:

(a) document any observed anomalies; and

(b) report any observed anomalies to the C2CSP, in accordance with the SLA.

3.6.3.8 The operator shall notify the Authority of:

(a) all C2 Link provision degradations with regards to the SLA that occur during operations; and

(b) degradations that cannot be resolved by direct interaction between the operator and the C2CSP, when the C2CSP is not the operator.

3.6.4 Safe Operation of the RPS

3.6.4.1 The operator shall be responsible for the safe operation of all RS involved in the operation.

3.6.4.2 Each RPS used shall be installed at the intended operational location by personnel who have the required level of expertise and competence for the task, as determined by the type certificate holder.

3.6.4.3 During installation of the RPS, the installer shall verify that it meets applicable airworthiness and operational requirements and that it provides proper connection with the specified RPA type(s).

3.6.4.4 When one or more of the RPS involved in the operation are under the control of a service provider, this service provider shall be under the safety oversight of the Authority.

3.6.4.5 When one or more of the RPS involved in the operation are under the control of a service provider, this service provider shall only allocate tasks to:

(a) remote flight crews which are properly trained and competent;

(b) remote pilots holding a valid remote pilot licence (RPL) issued or rendered valid by the Authority, complemented by appropriate ratings; and

(c) remote flight crews which are medically fit.

3.6.4.5.1 The safety, security and performance of the RPS service provided shall be acceptable to the Authority.

3.6.4.5.2 If the RPS is operated by an RPS S service provider, the safety and security aspects of the RPS shall be addressed in an SLA between the RPAS operator and the RPS S service provider.

3.6.4.5.3 Any SLA with an RPS S service provider shall include the continuing airworthiness records.

4. FLIGHT OPERATIONS

4.1 Operating Facilities

4.1.1 The operator shall ensure that a flight will not be commenced unless it has been ascertained by every reasonable means available that the ground and/or water facilities including communication facilities and navigation aids available and directly required for the safe operation of the RPAS are adequate for the type of operation under which the flight is to be conducted and are adequately operated for this purpose.

4.1.2 The operator shall ensure that any inadequacy of facilities observed in the course of operations is reported to the authority responsible for the facilities, without undue delay.

4.1.3 The operator shall, as part of its safety management system, assess the level of rescue and firefighting service (RFFS) protection available at any aerodrome intended to be specified in the operational flight plan in order to ensure that an acceptable level of protection is available for the RPA intended to be used.

4.1.4 Information related to the level of RFFS protection that is deemed acceptable by the operator shall be contained in the operations manual.

4.2 Operational Certification and Supervision

4.2.1 RPAS operator certificate (ROC)

4.2.1.1 The operator shall not engage in international RPAS operations unless in possession of a valid RPAS operator certificate (ROC) issued by the Authority.

4.2.1.3 The ROC shall authorize the operator to conduct RPAS operations in accordance with the operations specifications.

4.2.1.4 The issue of an ROC by the Authority shall be dependent upon the operator demonstrating an adequate organization, a method of identifying, assessing, and mitigating the risks associated with flight operations, training, ground handling and maintenance requirements, consistent with the nature and extent of the operations specified.

4.2.1.6 The continued validity of an ROC shall be subject to the operator:

(a) maintaining the requirements of 4.2.1.4 under the supervision of the Authority, and

(b) granting access to any facilities, documents, records and equipment as required for the Authority to perform oversight.

4.2.2 Contracted services

4.2.2.1 When the operator contracts any safety or security related services in support of its operations to a third party that is not certified (in accordance with this Section) by the Authority to carry out such an activity, the contracted third party shall comply with all of the RPAS operator's procedures, including those for safety and security management, as approved by the Authority.

4.2.2.2 The operator shall ensure that the authorities of the State where the contracted services are provided are given access to the premises, facilities, equipment and documents of the contracted organization to the extent required for determining continued compliance with the applicable standards specified in this regulation and SLCAR Part-19

4.2.2.3 The operator shall ensure that contracted service providers grant access to the premises, facilities, equipment and documents of the contracted organization, to the authorities of the State where the contracted services are provided, to the extent required for determining continued compliance with the applicable Standards specified in this regulation and SLCAR Part-19.

4.2.3 Surveillance of operations conducted by a foreign operator

4.2.3.1 The Authority shall recognize as valid an ROC issued by another Contracting State, provided that the requirements under which the certificate was issued are at least equal to the applicable Standards specified in this regulation and SLCAR Part-19.

4.2.3.2 If the operator intends to have an operating base from which operational control is exercised in a State other than Sierra Leone, the operator shall notify the State in which the operating base will be located.

4.2.4 Operations manual

4.2.4.1 The operator shall provide, for the use and guidance of operations personnel concerned, an operations manual in accordance with IS 4.2.4.1. The operations manual shall be amended or

revised as is necessary to ensure that the information contained therein is kept up to date. All such amendments or revisions shall be issued to all personnel that are required to use this manual.

4.2.4.2 The operator shall provide a copy of the operations manual together with all amendments and/or revisions, for review and approval by the Authority.

4.2.5 Operating instructions — general

4.2.5.1 The operator shall ensure that all operations personnel are properly instructed in their particular duties and responsibilities and the relationship of such duties to the operation as a whole.

4.2.5.2 An RPA shall not be taxied on the movement area of an aerodrome unless the person at the controls:

(a) has been duly authorized by the operator or a designated agent;

(b) is fully competent to taxi the RPA;

(c) is qualified to use the radiotelephone; and

(d) has received instruction from a competent person in respect of aerodrome layout, routes, signs, marking, lights, air traffic control (ATC) instructions, phraseology and procedures, and is able to conform to the operational standards required for safe movement at the aerodrome.

4.2.6 In-flight simulation of abnormal and emergency situations

4.2.6.1 The operator shall ensure that when cargo is being carried, no emergency or abnormal situations are simulated.

4.2.6.2 The operator shall ensure that in-flight training of simulated emergency and abnormal situations is only conducted following careful consideration and mitigation of the risks to third parties.

4.2.7 Checklists

The checklists provided in accordance with 6.1.3 shall be used by remote flight crews prior to, during and after all phases of operations, and in emergencies, to ensure compliance with the operating procedures contained in the flight manual or other documents associated with the certificate of airworthiness and otherwise in the operations manual. The design and utilization of checklists shall observe Human Factors principles.

4.2.8 Minimum flight altitudes

4.2.8.1 The operator shall specify the method by which it is intended to determine minimum flight altitudes for operations conducted over routes for which minimum flight altitudes have not been established by the State being overflown or the responsible State, and shall include this method in the operations manual. The minimum flight altitudes determined in accordance with the above method shall not be lower than specified in SLCAR Part-2

4.2.9 Aerodrome operating minima

4.2.9.1 The operator shall establish aerodrome operating minima for each aerodrome to be used in operations and the method of determination of such minima shall be approve by the Authority. Such minima shall not be lower than any that may be established for such aerodrome, except when specifically approved by the Authority.

4.2.9.2 The operator in establishing the aerodrome operating minima, which will apply to any RPAS operation, shall take full account of:

(a) the type, performance and handling characteristics of the RPA and any conditions or limitations stated in the flight manual;

(b) the composition of the remote flight crew, their competence and experience;

(c) the dimensions and characteristics of the runways, heliports or landing location, which may be selected for use;

(d) the adequacy and performance of the approach and automatic landing capabilities of the RPAS;

(e) the equipment available to the remote pilot-in-command for the purpose of navigation and/or control of the flight path during the approach to landing and the missed approach;

(f) the obstacles in the approach and missed approach areas and the obstacle clearance altitude/height for the instrument approach procedures;

(g) the means used to determine and report meteorological conditions;

(h) the obstacles in the climb-out areas and necessary clearance margins;

(i) the conditions prescribed in the operations specifications; and

(j) any minima that may be promulgated by the State of the Aerodrome.

4.2.9.3 The Authority shall issue a specific approval for operations that involve the use of an automatic landing capability, irrespective of the prevailing weather conditions.

4.2.9.3.1 For landing in low visibility, if the design of the RPAS enables this to be conducted visually, the Authority shall issue a specific approval for instrument approach operations in low visibility which shall only be conducted when RVR information is provided.

4.2.9.4 The Authority shall issue a specific approval for operations that involve the use of an automatic take-off capability, irrespective of the prevailing weather conditions.

4.2.9.4.1 For take-off in low visibility, if the design of the RPAS enables this to be conducted visually, the Authority shall issue a specific approval for the minimum take-off RVR.

4.2.9.5 The operating minima for 3D instrument approach RPAS operations using instrument approach procedures where the landing is conducted visually, shall be determined by establishing a decision altitude (DA) or decision height (DH) and the minimum visibility or RVR.

4.2.10 Threshold crossing height for automatic landing or 3D instrument approach operations

The operator shall establish operational procedures designed to ensure that an RPA being used to conduct automatic landings or 3D instrument approach operations crosses the threshold by a safe margin, with the RPA in the landing configuration and attitude.

4.2.11 Fuel and oil records

4.2.11.1 The operator shall maintain fuel records to enable the State of the Operator to ascertain that, for each flight, the requirements of 4.3.6 and 4.3.7.1 have been complied with.

4.2.11.2 If an engine relies on oil for lubrication, the operator shall maintain oil records to enable the State of the Operator to ascertain that trends for oil consumption are such that an RPA has sufficient oil to complete each flight.

4.2.11.3 Fuel and oil records shall be retained by the operator for a period of three months following the conclusion of the flight.

4.2.12 Remote crew

4.2.12.1 The operator shall designate a remote pilot to act as remote pilot-in command for each flight.

4.2.12.2 The operator shall only designate one remote pilot to act as remote pilot-in-command for an RPA, at any given time.

4.2.12.3 The operator shall only permit the remote pilot-in-command to control one RPA, at any given time.

4.2.12.4 The operator may designate more than one remote pilot-in-command for an RPA over the course of an RPAS flight.

4.3 Flight Preparation

4.3.1 A flight shall not be commenced until flight preparation forms have been completed certifying that the remote pilot-in-command is satisfied that:

(a) the RPA is airworthy and the appropriate certificates (i.e. airworthiness, registration) are on board the RPA;

(b) the instruments and equipment installed in the RPAS are appropriate, taking into account the expected flight conditions and airspace requirements;

(c) the RPS(s) used for the flight is (are) serviceable and compatible with the RPA used;

(d) a C2 Link(s) is (are) expected to be available for the duration of the flight and meets the performance criteria;

(e) the C2 Link QoSR for each phase of flight is described in flight documents and is provided to the remote pilot by the operator.

(f) a maintenance release as prescribed in 8.8 has been issued in respect of the RPA;

(g) the mass of the RPA and centre of gravity location are such that the flight can be conducted safely, taking into account the flight conditions expected;

(h) any load carried is properly distributed and safely secured;

(i) the RPA operating limitations, contained in the flight manual, or its equivalent, will not be exceeded;

(j) the Standards of 4.3.3 relating to operational flight planning have been complied with; and

(k) a special authorization, as required by Article 8 of the *Convention on International Civil Aviation*, has been obtained in accordance with SLCAR Part 2.

4.3.2 Completed flight preparation forms shall be kept by the operator for a period of three months following the conclusion of the flight.

4.3.3 Operational flight planning

4.3.3.1 An operational flight plan shall be completed for every intended flight. The operational flight plan shall be approved and signed by the first remote pilot-in-command responsible for the flight of the RPA and, where applicable, signed by the flight operations officer/flight dispatcher, and a copy shall be filed with the operator or a designated agent, or, if these procedures are not possible, it shall be left with the aerodrome authority or on record in a suitable place at the point of departure.

4.3.3.2 Whenever there is a change of the remote pilot-in-command, the remote pilot-in-command taking control of the RPA shall approve the operational flight plan before accepting command for the subsequent segments of the flight.

4.3.3.3 The operations manual must describe the content and use of the operational flight plan.

4.3.3.4 The approval(s) of the operational flight plan shall be recorded in a manner acceptable to the State of the Operator and retained for a period of three months following the conclusion of the flight.

4.3.3.5 The operator shall specify flight planning procedures to provide for the safe conduct of the flight based on considerations of RPAS performance, other operating limitations and relevant expected conditions on the route to be followed and at the aerodromes, including alternate aerodromes, concerned.

4.3.3.6 Flight planning procedures, including considerations for inflight emergency situations, shall be included in the operations manual.

4.3.3.7 The operator shall ensure that the remote pilot is provided with information regarding factors that could affect the quality of the C2 Link for each segment of the operation, and appropriate mitigations to minimize the impact of a degraded C2 Link.

4.3.3.8 The operator shall establish procedures in the operations manual to ensure a seamless operation throughout the duration of the flight including the different phases of the flight such as take-off, climb, en-route, approach, and landing carried out by remote pilots responsible for each phase of flight.

4.3.4 Alternate aerodromes

4.3.4.1 For an aerodrome to be selected as an alternate the available information shall indicate that, at the estimated time of use, the C2 Link required to effect a landing will be available.

4.3.4.2 *Take-off alternate aerodrome*

4.3.4.2.1 A take-off alternate aerodrome shall be selected and specified in the flight plan if either the meteorological conditions at the aerodrome of departure are below the operator's established aerodrome landing minima for that operation or if it would not be possible to return to the aerodrome of departure for other reasons.

4.3.4.2.2 The take-off alternate aerodrome shall be located at a distance and within a flight time from the aerodrome of departure that is readily attainable with regard to the RPA's calculated performance and endurance.

4.3.4.2.3 For an aerodrome to be selected as a take-off alternate the available information shall indicate that, at the estimated time of use, the conditions will be at or above the operator's established aerodrome operating minima for that operation.

4.3.4.3 *Destination alternate aerodromes*

4.3.4.3.1 For a flight to be conducted in accordance with instrument flight rules, at least one destination alternate aerodrome shall be selected and specified in the operational and ATS flight plans, unless:

(a) the duration of the flight from the departure aerodrome, or from the point of in-flight re-planning, to the destination aerodrome is such that, taking into account all meteorological conditions and operational information relevant to the flight, at the estimated time of use, a reasonable certainty exists that:

(i) the approach and landing may be made without reliance on an instrument approach procedure; and

(ii) for remotely piloted aeroplanes, separate runways are usable at the estimated time of use of the destination aerodrome with at least one runway having an operational instrument approach procedure; or

(b) the aerodrome is isolated. Operations into isolated aerodromes do not require the selection of a destination alternate aerodrome(s) and shall be planned in accordance with 4.3.6.4 (d) (iv);

(i) for each flight into an isolated aerodrome a point of no return shall be determined; and

(ii) a flight to be conducted to an isolated aerodrome shall not be continued past the point of no return unless a current assessment of meteorological conditions, traffic and other operational conditions indicate that a safe landing can be made at the estimated time of use.

4.3.4.3.2 Two destination alternate aerodromes shall be selected and specified in the operational and ATS flight plans when, for the destination aerodrome:

(a) meteorological conditions at the estimated time of use will be below the operator's established aerodrome operating minima for that operation; or

(b) meteorological information is not available.

4.3.4.3.3 When an offshore alternate heliport is specified, it shall be specified subject to the following:

(a) if the departure point is onshore, the offshore alternate heliport shall be used only after a point of no return. Prior to a point of no return, onshore alternate heliports shall be used;

(b) mechanical reliability of critical control systems and critical components shall be considered and taken into account when determining the suitability of the alternate heliport(s);

(c) one engine inoperative performance capability shall be attainable prior to arrival at the alternate heliport;

(d) to the extent possible, helideck availability shall be guaranteed; and

(e) weather information must be reliable and accurate.

4.3.4.3.4 Notwithstanding the provisions in 4.3.4.3.1 and 4.3.4.33.2.2.2, the Authority may, based on the results of a specific safety risk assessment conducted by the operator which demonstrates how an equivalent level of safety will be maintained, approve operational variations to alternate aerodrome selection criteria. The specific safety risk assessment shall include at least the:

(a) capabilities of the operator;

(b) overall capability of the RPAS;

(c) available aerodrome technologies, capabilities and infrastructure;

(d) quality and reliability of meteorological information;

(e) identified hazards and safety risks associated with each alternate aerodrome variation; and

(f) specific mitigation measures.

4.3.5 Meteorological conditions

4.3.5.1 A flight to be conducted shall not:

(a) take off from the departure aerodrome unless the meteorological conditions, at the time of use, are at or above the operator's established aerodrome operating minima for that operation; and

(b) take off or continue beyond the point of in-flight re-planning unless at the aerodrome of intended landing or at each alternate aerodrome to be selected in compliance with 3.2.2, current meteorological reports or a combination of current reports and forecasts indicate that the meteorological conditions will be, at the estimated time of use, at or above the operator's established aerodrome operating minima for that operation.

4.3.5.2 To ensure that an adequate margin of safety is observed in determining whether or not an approach and landing can be safely carried out at each alternate aerodrome, the operator shall specify appropriate incremental values for height of cloud base and visibility, acceptable to the Authority, to be added to the operator's established aerodrome operating minima.

4.3.5.3 The Authority shall approve a margin of time established by the operator for the estimated time of use of an aerodrome.

4.3.6 Fuel requirements

4.3.6.1 An RPA shall have available a sufficient amount of usable fuel to complete the planned flight safely and to allow for deviations from the planned operation.

4.3.6.2 If fuel is planned to be generated or supplied during flight the RPA shall maintain sufficient capability at any given time to continue to a safe landing, including the necessary reserves and contingency fuel.

4.3.6.3 The amount of usable fuel available shall, as a minimum, be based on:

(a) fuel consumption data:

(i) provided by the RPAS manufacturer; or

(ii) if available, current RPA-specific data derived from a fuel consumption monitoring system; and

(b) the operating conditions for the planned flight including:

(i) anticipated RPA mass;

(ii) NOTAM;

(iii) current meteorological reports or a combination of current reports and forecasts;

(iv) air traffic services procedures, restrictions and anticipated delays; and

(v) the effects of deferred maintenance items and/or configuration deviations.

(c) the efficiency and capacity of fuel storage devices (e.g. batteries) for the planned operating conditions considering degradation of those fuel storage devices as appropriate.

4.3.6.4 The pre-flight calculation of usable fuel required shall include:

(a) *Taxi fuel*, which shall be the amount of fuel expected to be consumed before take-off taking into account local conditions at the point of departure and auxiliary power unit (APU) fuel consumption;

(b) *Trip fuel*, which shall be the amount of fuel required to enable the RPA to fly from take-off until landing at the destination aerodrome taking into account the operating conditions of 4.3.6.3 b);

(c) *contingency fuel*, which shall be the amount of fuel required to compensate for unforeseen factors;

(d) *destination alternate fuel*, which shall be:

(i) where a destination alternate is required, the amount of fuel required to enable the RPA to:

(1) perform a missed approach at the destination aerodrome;

(2) climb to the expected cruising altitude;

(3) fly the expected routing;

(4) descend to the point where the expected approach is initiated; and

(5) conduct the approach and landing at the destination alternate aerodrome; or

(ii) where two destination alternate aerodromes are required, the amount of fuel, as calculated in 4.3.6.4 (d) (i), required to enable the RPA to proceed to the destination alternate aerodrome which requires the greater amount of alternate fuel; or

(iii) where a flight is operated without a destination alternate aerodrome, the amount of fuel required to enable the RPA to fly 15 minutes at holding speed at 450 m (1 500 ft.) above destination elevation in standard conditions; or

(iv) where the intended destination is an isolated aerodrome:

(1) for a non-turbine-engined RPA, the amount of fuel required to fly for 45 minutes plus 15 per cent of the flight time planned to be spent at cruising level, including final reserve fuel, or two hours, whichever is less; or

(2) for a turbine-engine RPA, the amount of fuel required to fly for two hours at normal cruise consumption above the destination, including final reserve fuel;

(e) *final reserve fuel*, which shall be the amount of fuel calculated using the estimated mass on arrival at the destination alternate aerodrome, or the intended destination aerodrome when no destination alternate aerodrome is required:

(i) for a non-turbine-engined RPA, the amount of fuel required to fly for 45 minutes, under speed and altitude conditions specified by the State of the Operator; or

(ii) for a turbine-engined RPA, the amount of fuel required to fly for 30 minutes at holding speed at 450 m (1 500 ft.) above aerodrome elevation in standard conditions;

(f) *additional fuel*, which shall be the supplementary amount of fuel required if the minimum fuel calculated in accordance with 4.3.6.4 (b),(c), (d) and (e) is not sufficient to:

(iii) allow the RPA to descend as necessary and proceed to an alternate aerodrome in the event of engine failure based on the assumption that such a failure occurs at the most critical point along the route;

(iv) fly for 15 minutes at holding speed at 450 m (1 500 ft.) above aerodrome elevation in standard conditions; and

(v) make an approach and landing;

(vi) meet additional requirements not covered above;

g) *discretionary fuel*, which shall be the extra amount of fuel to be carried at the discretion of the remote pilot-in-command.

4.3.6.5 A flight shall not commence unless the usable fuel on board meets the requirements in 4.3.6.4 (a), (b), (c), (d), (e) and (f) if required and shall not continue from the point of in-flight re-planning unless the usable fuel on board meets the requirements in 4.3.6.4 (b), (c), (d), (e) and (f) if required.

4.3.6.6 Notwithstanding the provisions in 4.3.6.4 (a), (b), (c), (d) and (f), the Authority may, based on the results of a specific safety risk assessment conducted by the operator which demonstrates how an equivalent level of safety will be maintained, approve variations to the pre-flight fuel calculation of taxi fuel, trip fuel, contingency fuel, destination alternate fuel, and additional fuel. The specific safety risk assessment shall include at least the:

(a) flight fuel calculations;

(b) capabilities of the operator to include:

(i) a data-driven method that includes a fuel consumption monitoring programme; and/or

(ii) the advanced use of alternate aerodromes; and

(c) specific mitigation measures.

4.3.6.7 The use of fuel after flight commencement for purposes other than originally intended during pre-flight planning shall require a re-analysis and, if applicable, adjustment of the planned operation.

4.3.7 In-flight fuel management

4.3.7.1 The operator shall establish policies and procedures, approved by the Authority, to ensure that in-flight fuel checks and fuel management are performed.

4.3.7.2 The remote pilot-in-command shall continually ensure that the amount of usable fuel remaining on board is not less than the fuel required to proceed to a destination where a safe landing can be made with the planned final reserve fuel remaining upon landing.

4.3.7.2.1 The remote pilot-in-command shall request delay information from ATC when unanticipated circumstances may result in landing at the destination with less than the final reserve fuel plus any fuel required to proceed to a destination alternate or the fuel required to operate to a destination which is isolated.

4.3.7.2.2 The remote pilot-in-command shall advise ATC of a minimum fuel state by declaring MINIMUM FUEL when, having committed to land at a specific destination, the pilot calculates that any change to the existing clearance to that destination may result in landing with less than the planned final reserve fuel.

4.3.7.2.3 The remote pilot-in-command shall declare a situation of fuel emergency by broadcasting MAYDAY, MAYDAY, MAYDAY FUEL when the calculated usable fuel estimated to be available upon landing at the nearest destination where a safe landing can be made is less than the planned final reserve fuel.

4.4 In-Flight Procedures

4.4.1 Aerodrome operating minima

4.4.1.1 A flight shall not be continued towards the aerodrome of intended landing, unless the latest available information indicates that at the expected time of arrival, a landing can be effected at that aerodrome or at least one destination alternate aerodrome, in compliance with the operating minima established in accordance with 3.1.7.1.

4.4.1.2 An instrument approach shall not be continued below 300 m (1 000 ft.) above the aerodrome elevation or into the final approach segment unless the reported visibility or controlling RVR is at or above the aerodrome operating minima.

4.4.1.3 For approaches to aerodromes where the final part of the landing is to be conducted visually, if, after entering the final approach segment or after descending below 300 m (1 000 ft.) above the aerodrome elevation, the reported visibility or controlling RVR falls below the specified minimum, the approach may be continued to DA/H or MDA/H. In any case, an RPA shall not continue its approach-to-land at any aerodrome beyond a point at which the limits of the operating minima specified for that aerodrome would be infringed.

4.4.2 Meteorological observations.

4.4.2.1 The remote pilot-in-command shall report the runway braking action via a special air-report (AIREP) when the runway braking action encountered is not as good as reported.

4.4.3 Remote flight crew members at duty stations

4.4.3.1 *Take-off and landing*. All remote flight crew members required for take-off and landing shall be at their duty stations.

4.4.3.2 *En-route*. All remote flight crew members required to be at their stations shall remain at their stations except when their absence is necessary for the performance of duties in connection with the operation of the RPA or for physiological needs.

4.4.4 In-flight operational instructions

Operational instructions involving a change in the ATS flight plan shall be coordinated with the appropriate ATS unit before transmission to the remote pilot.

4.4.5 Instrument flight procedures

4.4.5.1 All RPAS operated in accordance with instrument flight rules shall comply with the instrument flight procedures approved by the Authority

4.4.6 RPAS operating procedures for landing performance

For remotely piloted aeroplanes, an approach to land shall not be continued below 300 m (1 000 ft.) above aerodrome elevation unless the remote pilot-in-command is satisfied that, with the runway surface condition information available, the RPA performance information indicates that a safe landing can be made.

4.4.7 Handovers

4.4.7.1 All RPS involved in the handover shall be under the operational control of the operator.

4.4.7.2 The operator shall develop procedures for the handover of control of an RPA from one RPS to another that ensure:

(a) the availability of the gaining RPS;

(b) the remote pilot initiating the handover retains responsibility for the RPA until handover is complete and the remote pilot in the gaining RPS has confirmed that control has been established;

(c) the remote pilot taking control of the RPA is notified of or briefed on the current ATC clearance and the current radio communication frequency and/or data link authority;

(d) the gaining RPS control settings are correctly aligned to the configuration of the RPA;

(e) the gaining RPS type is specified in the certificate of airworthiness of the RPA involved in the handover;

(f) the RPA is within C2 Link coverage of both the transferring and gaining RPS;

(g) communications between the transferring and gaining RPS involved in the handover are available and as near real-time as possible;

(h) the transferring RPS can retain or regain control of the RPA in the event that the handover to the gaining RPS is unsuccessful;

(i) notices to the remote pilot-in-command regarding the carriage of dangerous goods, including the NOTOC, are transferred to the remote pilot-in-command taking control of the RPA; and

(j) the journey log book is transferred and that the RPA technical log is accessible to the gaining RPS prior to conducting the handover, to allow the remote pilot taking control of the RPA to be made aware of the current status of the RPAS to include any faults/system failures;

(k) that the remote pilot-in-command is provided with following information prior to conducting the handover:

(i) location of the RPA and surrounding traffic;

(ii) current meteorological conditions;

(iii) destination weather forecast or conditions;

(iv) C2 Link status and configuration;

(v) changes or limitations to the intended flight or RPA performance; and

(vi) ATM-related limitations or outages (e.g. communications, navigation, surveillance equipment).

4.4.7.3 There shall be only one RPS actively controlling an RPA at any one time.

4.4.7.4 The remote flight crew members involved in the handover shall be qualified for the:

(i) RPS they are operating;

(ii) RPA being transferred; and

(iii) portion or phase of the flight which they are conducting.

4.4.7.5 Handovers conducted when the RPA is on the ground for maintenance or other purposes, shall only be conducted if the:

(a) RPA is secured so as to prevent inadvertent ground movements or take-off; and

(b) C2 Link is approved for use on the ground where the RPA and the RPS are located.

4.4.8 Transfer of control between remote pilots at a single RPS

4.4.8.1 The operator shall develop procedures for the transfer of control of an RPA between remote pilots as one remote pilot relieves the other at the same RPS. These procedures shall include the following minimum information to be provided to the remote pilot taking control of the RPA:

(a) current status of the RPAS, to include any faults/system failures;

(b) location of the RPA and surrounding traffic;

(c) current ATC clearance, ATC unit, and communication frequency or channel and if using data link communications, the current data link authority;

(d) current meteorological conditions;

(e) destination weather forecast or conditions;

(f) status of fuel and other RPA consumables;

(g) C2 Link status and configuration;

(h) changes or limitations to the intended flight or RPA performance;

(i) ATM-related limitations or outages (e.g. communications, navigation, surveillance equipment); and

(j) notices to the remote pilot-in-command regarding the carriage of dangerous goods, including the NOTOC, as applicable.

4.4.8.2 If flight operations will necessitate transfer of remote pilot-in-command responsibility during flight, the operator shall establish transfer procedures that ensure the safe continuity of the operation.

4.5 RPAS Specific Operating Rules

4.5.1 Establishment, assurance and termination of the C2 Link

4.5.1.1 When managed through the C2 Link, taxiing or ground movement shall not be initiated or shall be aborted if the Quality of Service Experienced (QoSE) does not provide the required performance for the remote pilot to safely control the RPA.

4.5.1.2 Take-off shall not be initiated or, if safe to do so, shall be aborted if the QoSE does not provide the required performance for the remote pilot to safely control the RPA.

4.5.1.3 A switchover to another C2 Link or network shall be conducted in accordance with the procedures defined in the operations manual. Such procedures shall include confirming the QoSE of the accepting C2 Link or network.

4.5.1.4 The remote pilot shall initiate the condition of a lost C2 Link state if, while in flight, the QoSE has been determined by the remote pilot to be insufficient to actively manage the flight in a safe and timely manner.

4.5.2 Visual line-of-sight

(a) For portions of the flight requiring visual line-of-sight (VLOS) procedures, including night-time operations, the remote pilot or an RPA observer shall maintain direct unaided visual contact with the RPA.

(b) A person shall not operate a RPA to which this applies in:

(i) any area in which the person's view of the surrounding airspace in which the RPA will operate is obstructed; or

(ii) meteorological conditions that obstruct the person's ability to maintain visual line-of-sight of the aircraft.

(c) A person who operates a RPA to which this applies shall at all times:

(i) maintain visual line-of-sight with the RPA or be in direct communications with a RPA observer that maintains visual line-of-sight with the RPA; and

(ii) be able to see the surrounding airspace in which the RPA is operating; and

(iii) operate the RPA below any cloud base.

4.5.3 Take-off and landing

4.5.3 For operations at locations other than aerodromes open to public use, the operator or remote pilot, prior to conducting operations at that location, shall take into account the following:

(a) take-off and landing area and the condition thereof, to include protections for persons and property;

(b) meteorological conditions appropriate to the intended flight;

(c) location and height of all obstacles that could hinder take-off or landing;

(d) performance and capability related to obstacle clearance, departure or arrival procedures (if applicable) and any flight restrictions;

(e) communications with the appropriate ATS unit, if required;

(f) service provision ensuring required C2 Link performance (transaction time, availability, continuity and integrity);

(g) compliance with ATC clearances and instructions in controlled airspace or remaining well clear from other air traffic in uncontrolled airspace; and

(h) availability of ground infrastructure, services and equipment required for take-off/launch, landing/recovery and taxiing (if applicable).

4.5.4 Launch and recovery equipment

4.5.4.1 Where specific launch and recovery equipment is required, the positioning, set-up, and operation of the launch and recovery equipment shall be coordinated with the aerodrome operator and appropriate ATS unit(s) to ensure there is no adverse impact on safety.

4.5.4.2 The RPAS ground crew and/or the remote flight crew shall position, prepare, set up and check that the condition and operability of all required launch and recovery equipment is:

(a) in accordance with the instructions provided by the manufacturer;

(b) in a position coordinated with the aerodrome operator and appropriate ATS unit(s) if located at an aerodrome; and

(c) for operations at locations other than aerodromes open to public use, in a position to afford protection to persons and property.

4.5.4.3 The operator shall ensure that the required launch and recovery equipment is serviceable before each launch and compatible with each RPA being used.

4.5.4.4 During launch and recovery operations, only persons and vehicles authorized by the operator shall be permitted within the launch and recovery area of the RPA.

4.5.5 Emergencies and contingencies

The RPAS operations manual shall contain procedures to mitigate at least the following:

(a) lost C2 Link, including the potential loss of air-ground communications;

(b) loss of essential systems or navigational data;

(c) unavailability of required services or equipment;

(d) unscheduled closure of airspace or aerodromes;

(e) emergency landing;

(f) RPS crew incapacitation; and

(g) inadvertent release of dangerous goods.

4.5.6 Emergency landing, ditching locations, flight termination

4.5.6.1 When planning for, or selecting, emergency landing locations, remote pilots shall prioritize the safety of persons on the ground over UA recovery.

4.5.6.2 During flight, remote pilots shall reassess the selected emergency landing areas so that risks to persons and property on the ground are minimized, considering the following:

(a) type of terrain and ground obstructions;

(b) population density and open air assemblies of persons;

(c) accessibility for recovery or fire suppression;

(d) proximity of aerodromes;

(e) possibility of landing on open water; and

(f) type and quantity of dangerous goods on board.

4.5.6.3 The operator shall establish procedures for the use of a flight termination system, if the RPA is so equipped.

4.5.7 C2 Link contingency and emergency procedures

4.5.7.1 If any of the C2 Link components fail, actions shall be taken to minimize the time that the remote pilot is not actively managing the flight of the RPA.

4.5.7.2 The RPAS operations manual shall state the actions to be taken by the remote pilot to minimize the time that the RPAS is in a lost C2 Link state.

4.5.7.3 Contingency switchovers shall be performed in line with security measures and procedures that ensure that the accepting C2 Link or network is authenticated and authorized.

4.5.7.4 Contingency handovers shall be performed in line with security measures and procedures that ensure that the gaining RPS is authenticated and authorized to take control of the RPA.

4.5.7.5 A means or process for anticipating C2 Link interruptions or lost C2 Link states shall be provided to the remote pilot.

4.5.8 Lost C2 Link

4.5.8.1 In the event of a lost C2 Link, an RPA shall be capable of following a pre-programmed and predictable flight profile.

4.5.8.2 Prior to flight, the operator shall ensure that if the RPAS enters a lost C2 Link state, the RPA will follow the procedures contained in SLCAR Part-2

4.5.8.3 The operator shall establish crew procedures for C2 Link interruption and lost C2 Link operations.

4.5.8.4 When operating in airspace where SSR transponder carriage is required, the RPAS/RPA shall set the transponder to Mode A Code 7400 to indicate a lost C2 Link state.

4.5.8.5 When operating in airspace where ADS-B carriage is required or if ADS-B is part of the RPA detect and avoid (DAA) capability, the RPAS/RPA shall be capable of selecting the appropriate functionality to indicate a lost C2 Link state.

4.5.8.6 Remote pilots shall notify the ATC unit as soon as practicable upon the lost C2 Link procedures being activated for any flight operated as a controlled flight or any flight that may affect other aircraft operating in controlled airspace and, if applicable, upon the C2 Link being successfully restored.

4.6 Duties and Responsibilities of Remote Pilot-In-Command

4.6.1 The remote pilot-in-command is responsible for the operation and safety of the RPA from the moment the RPA is ready to move with the purpose of flight until such time as it comes to rest at the end of the flight and the primary propulsion system is shut down.

4.6.1.1 The remote pilot-in-command shall hold the duties of remote pilot-in-command during the period detailed in 3.6.1 above, or for flights involving the use of multiple remote pilots-in command, from the time that person has assumed the duties from the previous remote pilot-in-command until the duties have been accepted by another remote pilot-in-command, or the RPA has come to rest at the end of the flight, as appropriate.

4.6.2 The remote pilot-in-command shall be responsible for notifying the nearest appropriate authorities, by the quickest available means, of any accident involving the RPAS resulting in serious injury or death of any person or substantial damage to the aeroplane or property.

4.6.3 The remote pilot-in-command, or a person designated by the operator, shall be responsible for reporting all known or suspected defects in the RPAS to the operator at the earliest practicable time.

4.6.4 The remote pilot-in-command shall be responsible for the journey log book or the general declaration containing the information listed in 10.4.2.

4.7 Duties of Flight Operations Officer/Flight Dispatcher

4.7.1 Where required in the operations manual, a flight operations officer/flight dispatcher in conjunction with a method of control and supervision of flight operations in accordance with 4.2.1.4 shall:

(a) assist the remote pilot-in-command in flight preparation and provide the relevant information;

(b) assist the remote pilot-in-command in preparing the operational and ATS flight plans, sign when applicable and file the ATS flight plan with the appropriate ATS unit;

(c) furnish the remote pilot-in-command while in flight, by appropriate means, with information which may be necessary for the safe conduct of the flight; and

(d) notify the appropriate ATS unit when the position of the RPA cannot be determined by an aircraft tracking capability and/or attempts to establish communication with the remote pilot are unsuccessful.

4.7.2 In the event of an emergency, a flight operations officer/flight dispatcher shall:

(a) initiate such procedures as outlined in the operations manual while avoiding taking any action that would conflict with ATC procedures; and

(b) convey safety-related information to the remote pilot-in-command that may be necessary for the safe conduct of the flight, including information related to any amendments to the flight plan that become necessary in the course of the flight.

4.8 Duties and Responsibilities of the aircraft observer

4.8.1 An aircraft observer shall:

(a) maintain a thorough airspace scan of the airspace surrounding the remotely piloted aircraft in order to identify any risk of a collision with any manned aircraft;

(b) maintain awareness of the position of the remotely piloted aircraft through direct airspace observation or through assistance provided by electronic means;

(c) alert the remote pilot when a hazard is detected and assist in avoiding or minimising the potential negative effects.

5. RPAS PERFORMANCE OPERATING LIMITATIONS

5.1 General

5.1.1 RPA shall be operated in accordance with a comprehensive and detailed code of performance established by the State of Registry in compliance with the applicable regulations of this chapter.

5.1.2 Except as provided in 5.4 and 5.5 for single-engine RPA, RPA shall only be operated over such routes and diversions therefrom, that permit a safe forced landing to be executed in the event of a critical engine failure.

5.1.2.1 For remotely piloted helicopters, notwithstanding the provisions of 5.1.2, the Authority may, based on the result of a risk assessment, allow for variations without a safe forced landing to be included in the code of performance established in accordance with the provisions of 5.1.1. The risk assessment shall take into consideration at least the following:

(a) the type and circumstances of the operation;

(b) the area/terrain over which the operation is being conducted and the population density;

(c) the probability of, and length of exposure to, a critical engine failure and the tolerability of such an event;

(d) the procedures and systems for monitoring and maintaining the reliability of the engine(s);

(e) the training and operational procedures to mitigate the consequences of the critical engine failure; and

(f) remotely piloted helicopter equipment.

5.1.2.2 Where the Authority permits operations over heavily populated areas with remotely piloted helicopters in performance Class 3, such operations shall be conducted in accordance with the provisions of 5.5.

5.2 RPA Certificated In accordance with SLCAR Part- 8

5.2.1 The regulations contained in 5.2.2 to 5.2.10 inclusive are applicable to the RPA to which SLCAR Part-8 are applicable.

5.2.2 The level of performance defined by the appropriate parts of the comprehensive and detailed national code referred to in 5.1.1 for RPA designated in 5.2.1 shall be at least substantially equivalent to the overall level embodied in the regulations of this chapter.

5.2.3 An RPA shall be operated in compliance with the terms of its certificate of airworthiness and within the approved operating limitations contained in its flight manual.

5.2.4 A flight shall not be commenced unless the performance information provided in the flight manual, supplemented as necessary with other data acceptable to the Authority, indicates that the regulations of 5.2.6 to 5.2.10 can be complied with for the flight to be undertaken.

5.2.8 Mass limitations

5.2.8.1 The mass of the RPA at the start of take-off shall not exceed the mass at which 5.2.8.4 is complied with, or the mass at which 5.2.9 and 5.2.10 are complied with, allowing for expected reductions in mass as the flight proceeds, and for such fuel jettisoning as is envisaged in applying 5.2.10 and, in respect of alternate aerodromes, 5.2.8.3 and 5.2.11.

5.2.8.2 In no case shall the mass at the start of take-off exceed the maximum take-off mass specified in the flight manual for the pressure altitude appropriate to the elevation of the aerodrome, and if used as a parameter to determine the maximum take-off mass, any other local atmospheric condition.

5.2.8.3 In no case shall the estimated mass for the expected time of landing at the destination of intended landing and at any destination alternate aerodromes, exceed the maximum landing mass specified in the flight manual for the pressure altitude appropriate to the elevation of those aerodromes, and if used as a parameter to determine the maximum landing mass, any other local atmospheric condition.

5.2.8.4 In no case shall the mass at the start of take-off, or at the expected time of landing at the aerodrome and at any destination alternate aerodrome, exceed the relevant maximum masses at which compliance has been demonstrated with the applicable noise certification Standards in Annex 16, Volume I, unless otherwise authorized in exceptional circumstances for a certain destination or a runway where there is no noise disturbance problem, by the State of the Aerodrome in which the aerodrome is situated.

5.2.9 *Take-off phase*

5.2.9.1 *Remotely piloted aeroplanes*. The remotely piloted aeroplane shall be able, in the event of a critical engine failing, or for other reasons, at any point in the take-off, either to discontinue the take-off and stop within either the accelerate-stop distance available or the runway available, or to continue the take-off and clear all obstacles along the flight path by an adequate vertical or horizontal distance until the remotely piloted aeroplane is in a position to comply with 5.2.10.1. When determining the resulting take-off obstacle accountability area, the operating conditions, such as the crosswind component and navigation accuracy, must be taken into account.

5.2.9.1.1 For remotely piloted aeroplanes, in determining the length of the runway available, account shall be taken of the loss, if any, of runway length due to alignment of the remotely piloted aeroplane prior to take-off.

5.2.9.2 *Remotely piloted helicopter operations in performance Class 1*. The remotely piloted helicopter shall be able, in the event of the failure of the critical engine being recognized at or before the take-off decision point, to discontinue the take off and stop within the rejected take-off area available or, in the event of the failure of the critical engine being recognized at or after the take-off decision point, to continue the take-off, clearing all obstacles along the flight path by an adequate margin until the remotely piloted helicopter is in a position to comply with 5.2.10.3.

5.2.9.3 *Remotely piloted helicopter operations in performance Class 2*. The remotely piloted helicopter shall be able, in the event of the failure of the critical engine at any time after reaching the defined point after take-off (DPATO), to continue the take-off, clearing all obstacles along the flight path by an adequate margin until the remotely piloted helicopter is in a position to comply with 5.2.10.3. Before the DPATO, failure of the critical engine may cause the remotely piloted helicopter to force-land; therefore the conditions stated in 5.1.2 shall apply.

5.2.9.4 *Remotely piloted helicopter operations in performance Class 3*. At any point of the flight path, failure of an engine will cause the remotely piloted helicopter to force-land; therefore, the conditions stated in 5.1.2 shall apply

5.2.10 *En-route phase*

5.2.10.1 *Remotely piloted aeroplanes — one engine inoperative*. In the case of a remotely piloted aeroplane having no less than two engines, the remotely piloted aeroplane shall be able, in the event of the critical engine becoming inoperative at any point along the route or planned diversions therefrom, to continue the flight to an aerodrome at which the Standard of 5.2.11.1 can be met, without flying below the minimum obstacle clearance altitude at any point.

5.2.10.2 *Remotely piloted aeroplanes — two engines inoperative*. In the case of a remotely piloted aeroplane having three or more engines, on any part of a route where the location of en-route alternate aerodromes and the total duration of the flight are such that the probability of a second engine becoming inoperative must be allowed for if the general level of safety implied by the Standards of this chapter is to be maintained, the remotely piloted aeroplane shall be able, in the event of any two engines becoming inoperative, to continue the flight to an en-route alternate aerodrome and land.

5.2.10.3 *Remotely piloted helicopters - operations in performance Classes 1 and 2*. The remotely piloted helicopter shall be able, in the event of the failure of the critical engine at any point in the en-route phase, to continue the flight to a site at which the conditions of 5.2.11.2 for operations in performance Class 1, or the conditions of 5.2.11.3 for operations in performance Class 2 can be met, without flying below the appropriate minimum flight altitude at any point.

5.2.10.4 *Remotely piloted helicopters - operations in performance Class 3*. The remotely piloted helicopter shall be able, with all engines operating, to continue along its intended route or planned diversions without flying at any point below the appropriate minimum flight altitude. At any point of the flight path, failure of an engine will cause the remotely piloted helicopter to force-land; therefore the conditions stated in 5.1.2 shall apply.

5.2.11 *Approach and landing phase*

5.2.11.1 *Remotely piloted aeroplanes*. The remotely piloted aeroplane shall, at the aerodrome of intended landing and at any alternate aerodrome, after clearing all obstacles in the approach path by a safe margin, be able to land, with assurance that it can come to a stop or, for a sea remotely piloted aeroplane, to a satisfactorily low speed, within the landing distance available. Allowance shall be made for expected variations in the approach and landing techniques, if such allowance has not been made in the scheduling of performance data.

5.2.11.2 *Remotely piloted helicopters - operations in performance Class 1*. In the event of the failure of the critical engine being recognized at any point during the approach and landing phase, before the landing decision point, the remotely piloted helicopter shall, at the destination and at any alternate, after clearing all obstacles in the approach path, be able to land and stop within

the landing distance available or to perform a balked landing and clear all obstacles in the flight path by an adequate margin equivalent to that specified in 5.2.9.2. In case of the failure occurring after the landing decision point, the remotely piloted helicopter shall be able to land and stop within the landing distance available.

5.2.11.3 *Remotely piloted helicopters - operations in performance Class 2*. In the event of the failure of the critical engine before the defined point before landing (DPBL), the remotely piloted helicopter shall, at the destination and at any alternate, after clearing all obstacles in the approach path, be able either to land and stop within the landing distance available or to perform a balked landing and clear all obstacles in the flight path by an adequate margin equivalent to that specified in 5.2.9.3. After the DPBL, failure of an engine may cause the remotely piloted helicopter to force-land; therefore, the conditions stated in 5.1.2 shall apply.

5.2.11.4 *Remotely piloted helicopters - operations in performance Class 3*. At any point of the flight path, failure of an engine will cause the remotely piloted helicopter to force-land; therefore, the conditions stated in 5.1.2 shall apply

5.3 OBSTACLE DATA

5.3.1 The operator shall use available obstacle data to:

(a) for remotely piloted aeroplanes, develop procedures to comply with 5.2.10.1; or

(b) for remotely piloted helicopters, develop procedures to comply with the take-off, initial climb, approach and landing phases detailed in the code of performance established by the State of the Operator.

5.3.2 The operator shall take account of charting accuracy when assessing compliance with 5.2.9.

5.4 Additional Requirements for Operations of Approved Single-Engine Remotely Piloted Aeroplanes Over Heavily Populated Areas

5.4.1 In approving operations by single-engine remotely piloted aeroplanes over heavily populated areas, the Authority shall ensure that the airworthiness certification of the remotely piloted aeroplane is appropriate and that the overall level of safety intended by the provisions of SLCAR Parts 6A and 8A is provided by:

(a) the reliability of the engine;

(b) the operator's maintenance procedures, operating practices, flight dispatch procedures and crew training programmes; and

(c) equipment and other requirements provided in accordance with IS 5.4.1.

5.4.2 All single-engine remotely piloted aeroplanes operated over heavily populated areas shall have an automatic engine trend monitoring system.

5.5 Additional Requirements for Operations of Remotely Piloted Helicopters in Performance Class 3 over Heavily Populated Areas

5.5.1 Remotely piloted helicopter operations in performance Class 3 shall be conducted only over a surface environment acceptable to the Authority over which the operations are performed.

5.5.2 In approving operations by remotely piloted helicopters operating in performance Class 3 over heavily populated areas, the Authority shall ensure that the airworthiness certification of the remotely piloted helicopter is appropriate and that the overall level of safety intended by the provisions of SLCAR Part 6A and 8A is provided by:

(a) the reliability of the engines;

(b) the operator's maintenance procedures, operating practices and crew training programmes; and

(c) equipment and other requirements provided in accordance with IS 5.4.1.

6. RPAS INSTRUMENTS, EQUIPMENT AND FLIGHT DOCUMENTS

6.1 General

6.1.1 In addition to the minimum equipment necessary for the issuance of a certificate of airworthiness, the instruments, equipment, flight documents, information and data prescribed in the following paragraphs shall be installed or carried, as appropriate, in the RPA or RPS according to the RPAS used and to the circumstances under which the operation is to be conducted. The prescribed instruments and equipment, including their installation, shall be approved or accepted by the State of Registry.

6.1.2 The operator shall provide a minimum equipment list (MEL) in the operations manual, approved by the Authority which will enable the remote pilot-in-command to determine whether a flight may be commenced or continued from any intermediate stop should any instrument, equipment or systems become inoperative.

6.1.3 The operator shall provide operations staff and remote flight crew with an RPAS operating manual, for each RPA type operated, containing the normal, abnormal and emergency procedures relating to the operation of the RPA/RPS. The manual shall include details of the RPA/RPS systems and of the checklist to be used. The design of flight manuals shall observe human performance principles.

6.2 All RPAS on All Flights

An RPAS shall be equipped with the systems and instruments necessary to enable the remote pilot to control the flight path of the RPA, carry out any required procedural manoeuvres and observe the operating limitations of the RPA in the expected operating conditions.

6.3 C2 Link

The C2 Link shall comply with the requirements defined in SLCAR Part-10F.

6.4 Remote Pilot Station

6.4.1 General

6.4.1.1 The RPS shall be equipped with suitable controls and displays which will enable the remote pilot(s) to monitor and control the intended operation of the RPA on the ground and in the air.

6.4.1.2 The RPS shall enable the remote pilot(s) to carry out any required manoeuvres and deal with emergencies while observing the operating limitations in the expected operating conditions.

6.4.1.3 The RPS shall provide the means for the remote pilot(s) to communicate with ATS units and other airspace users as appropriate.

6.4.1.4 The RPS shall be equipped to provide the remote pilot with all the relevant information, alerts and warnings pertaining to the operation, in a timely and distinctive manner.

6.4.2 RPS work environment

6.4.2.1 The operator shall ensure that the RPS is located in an environment which:

(a) allows the remote pilot(s) to concentrate on their tasks; and

(b) minimizes distractions.

6.4.2.2 The operator shall ensure that the working environment for the remote flight crew takes into account the application of Human Factors principles.

6.4.2.3 The display(s) shall be so arranged as to permit the remote pilot(s) to see the indications readily from their station

6.4.2.4 A means of measuring and displaying time in hours, minutes and seconds shall be available to the remote flight crew.

6.4.3 Manuals, charts and information

6.4.3.1 The remote pilot shall have the following manuals, charts and information, readily available at the RPS:

(a) the operations manual prescribed in 4.1.4 or those parts of it that pertain to flight operations;

(b) the flight manual for the RPAS, or other documents containing performance data required for the application of Chapter 3, and any other information necessary for the operation of the RPAS within the terms of its certificate of airworthiness, unless these data are available in the operations manual;

(c) current and suitable charts for the route of the proposed flight and all routes along which it is reasonable to expect that the flight may be diverted;

(d) procedures, as prescribed in SLCAR Part-2, for pilots-in-command of intercepted aircraft;

(e) visual signals for use by intercepting and intercepted aircraft, if relevant for the RPA being used, as contained in SLCAR Part-2;

(f) the appropriate licence for each remote flight crew member;

(g) any information and procedures identified as relevant in the safety assessment performed by the operator including emergency and contingency procedures.

6.4.4 Contingency plans

6.4.4.1 The operator shall provide the remote flight crew with the capability to contact and coordinate with the appropriate ATS unit in the event of an evacuation of the RPS.

6.4.4.2 The remote flight crew shall contact and coordinate with the appropriate ATS unit in the event of an evacuation of the RPS.

6.4.4.3 The operator shall develop, promulgate and implement contingency plans to provide alternative RPS facilities when assigned RPS facilities are unavailable.

6.4.4.4 Contingency plans shall include, as a minimum, the following:

(a) provisions for alternative facilities and services;

(b) detailed agreements among the parties concerned, before the occurrence of the event requiring contingency action, including the manner and timing of promulgating such arrangements; and

(c) details regarding alternative RPS facilities, infrastructure and remote pilots.

6.5 RPAS Recorder Systems

6.5.1 Applicability

6.5.1.1 For all RPA of a maximum certified take-off mass (MCTOM) of over 2 250 kg, and that are first issued with a certificate of airworthiness on or after 2027 an RPA-RS on board the RPA shall record the data associated with the RPA functions defined in IS 6.5, Section 3.

6.5.1.1 All RPS controlling RPA operating under this regulation, and that are manufactured on or after 2027 shall be equipped with an RPS-RS.

6.5.2 Duration

6.5.2.1 All RPA-RS shall be capable of retaining the information recorded from the moment the RPA is ready to move with the purpose of flight until such time as it comes to rest at the end of the flight and the primary propulsion system is shut down, or the last 25 hours, whichever is longer.

6.5.2.2 The RPS-RS shall begin recording continuously from the commencement of the RPS checks prior to connecting to a specific RPA, either pre-flight or inflight, until connection with the specific RPA is terminated, either inflight or post-flight, and RPS post connection checks are completed.

6.5.2.3 In the case of multiple RPS controlling the flight of a specific RPA sequentially, each RPS shall record data for the duration stated in 6.5.2.2.

6.5.3 Construction and installation

RPA-RS shall be constructed, located and installed so as to provide maximum practical protection for the recordings in order that the recorded information may be preserved, recovered and analysed. The recorder systems shall meet the prescribed crashworthiness and fire protection specifications.

6.5.4 Preservation of data

6.5.4.1 In the case of an accident or incident occurring during a flight, the data recorded by the RPA-RS, when required by 6.5.1.1, and RPS-RS shall be preserved for investigation purposes.

6.5.4.2 *RPA-RS crash protection*. All RPA required to carry an RPA-RS in accordance with 6.5.1.1 shall be equipped with an RPA-RS protected with Flight Recorder Systems industry crashworthiness and fire protection. The crashworthiness and fire protection shall be based on analysis of potential damages to the recording media.

6.5.4.3 *RPS-RS protection*. RPS-RS shall ensure the recorded data is safely maintained with respect to environmental conditions, security and emergencies that could affect the integrity of the RPS. Where the RPS is carried on board a vehicle, vessel or another aircraft, the RPS-RS shall include crashworthiness and fire protection.

6.5.4.4 The RPA-RS shall be deactivated whenever possible upon completion of the flight if an accident or incident has occurred or is suspected of having occurred and shall not be reactivated before the disposition of the recorders is determined in accordance with Annex 13.

6.5.4.5 The RPS-RS shall preserve the original recorded data related to the accident or incident of an RPA without affecting the continued operation of the RPS-RS. The original recorded data related to the accident or incident of an RPA shall be preserved and retained until the disposition of the recorders is determined in accordance with Annex 13.

6.5.5 RPAS recorder system data recovery

6.5.5.1 An RPA meeting the applicability standards outlined in Chapter 2 and 6.5.1 of this Part shall be equipped with a means, to recover the data from RPAS recorder systems (RPAS-RS), and make it available in a timely manner

6.5.5.2 In approving the means to make the RPAS-RS data available in a timely manner, the State of the Operator shall take into account the following:

(a) the capabilities of the operator;

(b) overall capability of the RPAS as certified by the State of Design

(c) the reliability of the means to recover the appropriate RPS-RS voice recorder channels; and

(d) specific mitigation measures.

6.5.6 Continued serviceability

Operational checks and evaluations of recordings from the recording systems shall be conducted to ensure the continued serviceability of the recorders.

6.5.7 RPS recorder systems

6.5.7.1 *General*

6.5.7.1.1 All RPAS required to meet the operational requirements of this Part (defined in Chapter 2) and the applicability Standards outlined in 6.5.1.3 shall record voice communications and the aural environment at the RPS.

6.5.7.1.2 All RPS required to meet the operational requirements of this Part (defined in Chapter 2) and the applicability Standards outlined in 6.5.1.3 shall record the information displayed to the remote flight crew from electronic displays, as well as the operation of switches and selectors by the remote flight crew as defined in IS 6.5.

6.5.7.1.3 All RPS shall record on an RPS-RS the data associated with the functions.

6.5.7.2 *RPS-RS Documentation*

6.5.7.2.1 The operator shall retain the documentation necessary to convert the recorded flight data into flight parameters expressed in engineering units. This documentation shall be provided upon request to the accident investigation authorities.

6.5.7.2.3 The operator shall maintain a record of each RPS that has controlled an RPA during each flight.

6.5.7.3 *Data security*

Data shall be secured in a manner that prevents readout of the data without the use of special tools or techniques. Data encryption of the RPA-RS or RPS-RS shall not be used as it may affect data recovery if the memory or media is damaged

6.5.8 Data link recorders

All RPS which utilize any of the data link communications applications and are required to be equipped with an RPS-RS, shall record the data link communications.

6.6 All RPAS on flights over water

6.6.1 Sea RPA

6.6.1.1 For all flights, sea RPA shall be equipped with equipment for making the sound signals prescribed in the International Regulations for Preventing Collisions at Sea.

6.7 All RPAS operated in accordance with Instrument flight rules

6.7.1 All RPAS when operated in accordance with the instrument flight rules shall be equipped with a means of detecting as a minimum the following information:

(a) magnetic heading;

(b) pressure altitude;

(c) airspeed;

(d) RPA attitude;

(e) outside air temperature;

(f) rate-of-climb and descent; and

(g) failures of an altitude, airspeed or attitude system.

6.7.2 For operations in accordance with instrument flight rules, the information in 6.7.1 shall be displayed at the RPS to the remote pilot(s).

6.7.3 RPAS shall be equipped with such additional instruments and equipment as may be prescribed by the appropriate authority.

6.8 RPS emergency power supply

6.8.1 The RPS shall be fitted with an emergency power supply, independent of the main electrical supply or generated power supply systems, which is capable of providing power for a duration that is sufficient to implement contingency actions or transfer control of the RPA to an alternate RPS.

6.8.2 The emergency power supply shall be automatically operative after the total failure of the main electrical generating system and clear indication shall be given that the RPS is being operated on emergency power.

6.8.3 When operating on emergency power supply, the RPS shall provide the remote pilot with, as a minimum, the essential flight information required to conduct a safe recovery.

6.9 All RPA when operated at night

All RPA when operated at night shall be equipped with:

(a) all equipment as specified in 6.7;

(b) the lights required by SLCAR Part-2 for aircraft in flight or operating on the movement area of an aerodrome; and

(c) two landing lights.

6.10 Mach Number Indicator

RPA with speed limitations expressed in terms of Mach number shall be equipped with a means of displaying Mach number in the RPS.

6.10 Ground Proximity Warning Systems (GPWS)

6.10.1 Applicability

6.10.1.1 Unless the design of the RPAS already includes a capability to fully address the risk of ground collision, all RPA conducting IFR operations shall be equipped with a GPWS which has a forward-looking terrain avoidance function.

6.10.1.2 When a GPWS is installed in an RPA, the operator shall implement database management procedures that ensure the timely distribution and update of current terrain and obstacle data to the GPWS.

6.10.1.3 A GPWS shall provide, automatically, a timely and distinctive warning to the remote flight crew when the RPA is in potentially hazardous proximity to the earth's surface.

6.10.1.4 A GPWS shall provide, unless otherwise specified herein, warnings of the following circumstances:

(a) excessive descent rate;

(b) excessive terrain closure rate;

(c) excessive altitude loss after take-off or go-around;

(d) unsafe terrain clearance while not in landing configuration:

(i) gear not locked down;

(ii) flaps not in a landing position; and

(e) excessive descent below the instrument glide path.

6.11 Emergency Locator Transmitter (ELT)

Only RPA configured to carry persons on board shall be equipped with an ELT.

6.12 Detect and Avoid Capability

6.12.1 DAA operational requirements

6.12.1.1 The Operator shall establish and document the operational limitations, procedures for the use of, and training requirements for, the DAA equipment.

6.12.1.2 Any RPAS operated in accordance with IFR shall have a DAA capability which enables the remote pilot to avoid conflicting traffic and other hazards.

6.12.1.3 A DAA airborne collision avoidance capability shall operate in accordance with the relevant provisions of SLCAR Part 10D.

6.12.1.4 DAA shall provide the remote pilot with the capability of exercising vigilance for the purpose of detecting and avoiding potential collisions with other aircraft.

6.12.1.5 DAA shall provide the remote pilot with the capability of ensuring appropriate action is taken when different hazards are present at the same time whether DAA for these hazards is provided by one system or different systems.

6.12.1.6 The remote pilot shall be able to intervene in the management of automated hazard avoidance manoeuvres, except in the case of a C2 Link interruption.

6.12.1.7 RPAS controls, displays and alerts shall enable the remote pilot to recognize when an action may be necessary to override an automated hazard avoidance manoeuvre.

6.12.2 Automated collision avoidance

6.12.2.1 The RPA shall be equipped with an automated system that performs appropriate collision avoidance manoeuvres, except when the collision avoidance responsibilities of the remote pilot can be adequately exercised using other means.

6.12.2.2 Notwithstanding the provisions in 6.12.2.1, the Authority may approve RPAS operations without automated collision avoidance, based on the results of a specific safety risk assessment conducted by the operator which demonstrates how an equivalent level of safety will be maintained. The specific safety risk assessment shall include at least the:

(a) integrity and performance of the C2 Link;

(b) diversity of multiple C2 Links, if installed; and

(c) reliability of other systems that are required to allow the remote pilot to exercise control of the RPA flight trajectory.

6.13 Requirements for Pressure-Altitude Reporting Transponders

6.13.1 All RPA shall be equipped with a Mode S transponder which operates in accordance with the relevant provisions of SLCAR Part-10D.

6.13.2 All RPA shall be equipped with a data source that provides pressure-altitude information with a resolution of

7.62 m (25 ft.), or better.

6.13.3 The Mode S transponder shall be provided with the airborne/on-the-ground status of the RPA.

6.14 Microphones

All remote flight crew members required to be on duty at the RPS shall communicate through hands-free microphones whenever the situation is such that they must not be distracted by the overall environment within the RPS and at all times during:

(a) the departure and arrival phases of the flight; and

(b) periods when close monitoring of the flight is deemed to be essential.

6.15 Documents held by the operator

6.15.1 General

The following documents, manuals and information specific to the operator, shall be available, in the authentic form, at the location of the operator's operational management location or other location specified by the Authority:

(a) the ROC;

(b) operations specifications relevant to the RPA and RPS models, associated with the ROC;

(c) special authorizations obtained from States different from the Authority, as required by SLCAR Part-2;

(d) certificate of registration of each RPA;

(e) certificate of airworthiness of each RPA;

f) radio station licence(s), if applicable;

g) noise certificate(s), if applicable;

h) documents of any additional RPAS components, if applicable;

i) flight manual(s) of each model of RPA;

j) operations manual;

k) maintenance control manual (MCM);

l) contract(s) and service level agreement(s) with third parties providing safety-related services, if applicable;

m) third party liability insurance certificate(s) if required;

n) emergency response plan (ERP) to cover actions resulting from risks to the RPS, such as earthquakes, floods, security incidents, etc.; and

o) any other document required by the Authority.

6.16 Documents carried on board the RPA

6.16.1 A certified true copy of the ROC specified in Chapter 2, 2.2.1, and a copy of the operations specifications relevant to the RPA, issued in conjunction with the certificate shall be carried on the RPA and be available at each RPS used in the operation.

6.16.2 Additionally, the following documents shall be readily accessible on board each RPA and be available at each RPS used in the operation, for inspection by authorized inspection authorities. When these documents are issued in a language other than English, an English translation shall be included:

(a) RPA certificate of registration;

(b) RPA certificate of airworthiness;

(c) appropriate licences for each member of the remote flight crew;

(d) RPA radio station licence;

(e) noise certificate, if applicable;

(f) RPA journey log book;

(g) RPA technical log; and

(h) if it carries cargo, a manifest and detailed declarations of the cargo.

6.17 Documents at the RPS

6.17.1 As a minimum, the following documents, manuals and information shall be available at each RPS used for the operation:

(a) appropriate licences for each member of the remote flight crew involved in the operation, during respective duty periods;

(b) flight manual, or pertinent subset thereof, including configuration deviation list (CDL);

(c) operations manual or pertinent subset thereof, including the minimum equipment list (MEL);

(d) applicable checklists;

(e) operations specifications relevant to the RPA and RPS models;

(f) RPA journey log book;

(g) RPA technical log;

(h) RPS technical log;

(i) details of the filed and the current ATS and operational flight plans, if applicable;

(j) current and suitable aeronautical charts for the route of flight and all routes along which it is reasonable to expect that the flight may be diverted, including departure, arrival and approach charts for all relevant aerodromes/heliports, or electronic access to such charts;

(k) information concerning search and rescue services for the area of the intended flight;

(l) NOTAM and aeronautical information service (AIS) briefing documentation or electronic access to it;

(m) meteorological information;

(n) fuel requirements, fuel load and records;

(o) if the RPA carries cargo, a manifest and detailed declarations of the cargo;

(p) if the RPA carries dangerous goods, the notification of dangerous goods;

(q) mass and balance documentation; and

(r) any other documentation that may be pertinent to the flight or be required by the State(s) involved in the operation

7. RPAS COMMUNICATION, NAVIGATION AND SURVEILLANCE EQUIPMENT

7.1 COMMUNICATION EQUIPMENT

7.1.1 The RPAS communication equipment readily available to the remote pilot shall be capable of:

(a) conducting two-way communication for aerodrome control purposes;

(b) receiving meteorological information at any time during flight; and

(c) conducting two-way communication at any time during flight with at least one aeronautical station and with such other aeronautical stations and on such frequencies as may be prescribed by the Authority.

7.1.2 The RPAS radio communication equipment shall provide for communication on the aeronautical emergency frequency 121.5 MHz.

7.1.3 For operations where communication equipment is required to meet RCP specification for performance-based communication (PBC), the RPAS shall, in addition to the requirements specified in 7.1.1:

(a) be provided with communication equipment which will enable it to operate in accordance with the prescribed required communication performance (RCP) specification(s);

(b) have information relevant to the RPAS RCP specification capabilities listed in the flight manual or other RPAS documentation approved by the State of Design or State of Registry; and

(c) have information relevant to the RPAS RCP specification capabilities included in the MEL.

7.1.4 The operator shall, for operations where an RCP specification for PBC has been prescribed, establish and document:

(a) normal and abnormal procedures, including contingency procedures;

(b) remote flight crew qualification and proficiency requirements, in accordance with appropriate RCP specifications;

(c) a training programme for relevant personnel consistent with the intended operations; and

(d) appropriate maintenance procedures to ensure continuing airworthiness, in accordance with appropriate RCP specifications.

7.1.5 The operator shall ensure that, in respect of those RPAS mentioned in 7.1.3, adequate provisions exist for:

(a) receiving the reports of observed communication performance issued by monitoring programmes established in accordance with SLCAR Part 11, Chapter 3; and

(b) taking immediate corrective action for individual RPAS, RPAS types or operators, identified in such reports as not complying with the RCP specification(s).

7.2 Navigation Equipment

7.2.1 An RPAS shall be provided with navigation equipment which will enable the remote pilot to proceed:

(a) in accordance with the operational flight plan; and

(b) in accordance with the requirements of air traffic services.

7.2.2 For operations where a navigation specification for performance-based navigation (PBN) has been prescribed, an RPAS shall, in addition to the requirements specified in 7.2.1:

(a) be provided with navigation equipment which will enable it to operate in accordance with the prescribed navigation specification(s);

(b) have information relevant to the RPAS navigation specification capabilities listed in the flight manual or other RPAS documentation approved by the State of Design or State of Registry; and

(c) have information relevant to the RPAS navigation specification capabilities included in the MEL.

7.2.3 The operator shall, for operations where a navigation specification for PBN has been prescribed, establish and document:

(a) normal and abnormal procedures including contingency procedures;

(b) remote flight crew qualification and proficiency requirements in accordance with the appropriate navigation specifications;

(c) a training programme for relevant personnel consistent with the intended operations; and

(d) appropriate maintenance procedures to ensure continuing airworthiness in accordance with the appropriate navigation specifications.

7.2.4 The Authority shall issue a specific approval for operations based on PBN authorization required (AR) navigation specifications.

7.2.5 For flights in defined portions of airspace where, based on Regional Air Navigation Agreement, minimum navigation performance specifications (MNPS) are prescribed, an RPAS shall include navigation equipment which:

(a) continuously provides indications to the remote flight crew of adherence to or departure from track to the required degree of accuracy at any point along that track; and

(b) has been authorized by the Authority for the MNPS operations concerned.

7.2.6 For flights in defined portions of airspace where, based on Regional Air Navigation Agreement, a reduced vertical separation minimum (RVSM) of 300 m (1 000 ft.) is applied between FL 290 and FL 410 inclusive:

(a) an RPAS shall be provided with equipment which is capable of:

(i) indicating to the remote flight crew the flight level being flown;

(ii) automatically maintaining a selected flight level;

(iii) providing an alert to the remote flight crew when a deviation occurs from the selected flight level. The threshold for the alert shall not exceed ±90 m (300 ft.);

(iv) automatically reporting pressure-altitude; and

(b) the Authority shall issue a specific approval for RVSM operations.

7.2.7 At each aerodrome at which an RPAS operator intends to execute an instrument approach and landing, including at any designated alternate aerodromes, an RPAS shall be provided with a navigation capability that provides:

(a) sufficient performance and functionality to guide the RPA to landing; or

(b) to allow the remote pilot to conduct a landing under VLOS or through indirect observation utilizing appropriately certified visual surveillance system or methodology.

7.2.9 The State of the Operator that has issued an RVSM specific approval to an operator shall establish a requirement which ensures that a minimum of two RPA from each RPA type grouping of the operator have their height keeping performance monitored, at least once every two years or within intervals of 1 000 flight hours per RPA, whichever period is longer. If an operator RPA type grouping consists of a single RPA, monitoring of that RPA shall be accomplished within the specified period.

7.2.10 All States that are responsible for airspace where RVSM has been implemented, or that have issued RVSM specific approvals to owners/operators within their State, shall establish provisions and procedures which ensure that appropriate action will be taken in respect of RPAS and owners/operators found to be operating in RVSM airspace without a valid RVSM specific approval.

7.2.11 The RPAS shall be sufficiently provided with navigation equipment to ensure that, in the event of the failure of one item of equipment at any stage of the flight, the remaining equipment will enable the RPAS to navigate in accordance with 7.2.1 and where applicable 7.2.2, 7.2.5 and 7.2.6.

7.2.12 At each aerodrome at which an RPAS operator intends to execute an instrument approach and landing, including at any designated alternate aerodromes, an RPAS shall be provided with a navigation capability that provides:

(a) sufficient performance and functionality to guide the RPA to landing; or

(b) to allow the remote pilot to conduct a landing under VLOS or through indirect observation utilizing appropriately certified visual surveillance system or methodology.

7.2.13 When the RPA is taxiing, the RPAS shall be provided with a navigation capability providing sufficient performance and functionality to guide the RPA to a designated point on the movement area.

7.3 Surveillance Equipment

7.3.1 The RPAS shall be provided with surveillance equipment which will enable it to operate in accordance with the requirements of air traffic services.

7.3.2 For operations where surveillance equipment is required to meet a required surveillance performance (RSP) specification for performance-based surveillance (PBS), an RPAS shall, in addition to the requirements specified in 6.3.1:

(a) be provided with surveillance equipment which will enable it to operate in accordance with the prescribed RSP specification(s);

(b) have information relevant to the RPAS RSP specification capabilities listed in the flight manual or other RPAS documentation approved by the State of Design or State of Registry; and

(c) have information relevant to the RPAS RSP specification capabilities included in the MEL.

7.3.3 The operator shall, for operations where an RSP specification for PBS has been prescribed, establish and document:

(a) normal and abnormal procedures, including contingency procedures;

(b) remote flight crew qualification and proficiency requirements, in accordance with appropriate RSP specifications;

(c) a training programme for relevant personnel consistent with the intended operations; and

(d) appropriate maintenance procedures to ensure continuing airworthiness, in accordance with appropriate RSP specifications.

7.3.4 The operator shall ensure that, in respect of those RPAS mentioned in 7.3.2, adequate provisions exist for:

(a) receiving the reports of observed surveillance performance issued by monitoring programmes established in accordance with Annex 11, Chapter 3; and

(b) taking immediate corrective action for individual RPAS, RPAS types or operators, identified in such reports as not complying with the RSP specification(s).

7.4 Installation

The equipment installation shall be such that the failure of any single unit required for communication, navigation or surveillance purposes or any combination thereof will not result in the failure of another unit required for communication, navigation or surveillance purposes.

7.5 Electronic Navigation Data Management

7.5.1 The operator shall not employ electronic navigation data products that have been processed for application in the air and on the ground unless the Authority has approved the operator's procedures for ensuring that the process applied and the products delivered have met acceptable standards of integrity and that the products are compatible with the intended function of the equipment that will use them. The operator shall continue to monitor both process and products.

6.5.2 The operator shall implement procedures that ensure the timely distribution and insertion of current and unaltered electronic navigation data to all necessary RPAS.

8. RPA CONTINUING AIRWORTHINESS

8.1 Operator's Continuing Airworthiness Responsibilities

8.1.1 Operators shall ensure that, in accordance with procedures acceptable to the State of Registry:

(a) each RPA is maintained in an airworthy condition;

(b) the operational and emergency equipment necessary for an intended flight is serviceable;

(c) the certificate of airworthiness of the RPA remains valid; and

(d) each RPS conforms to the approved design and is maintained in a condition for the safe operation of the RPAS.

8.1.2 The operator shall not operate an RPAS unless maintenance on the RPAS, including any associated engine, propeller and part, is carried out:

(a) by an organization complying with SLCAR Part 8B that is either approved by the State of Registry of the RPA or is approved by another Contracting State and is accepted by the State of Registry; or

(b) by a person or organization in accordance with procedures that are authorized by the State of Registry

and there is a maintenance release in relation to the maintenance carried out.

8.1.3 The operator shall employ a person or group of persons to ensure that all maintenance is carried out in accordance with the maintenance control manual.

8.1.4 The operator shall ensure that the maintenance of its RPAS is performed in accordance with the maintenance programme.

8.1.5 The operator shall ensure that maintenance personnel receive initial and continuation training acceptable to the Authority that includes the application of Human Factors principles.

8.2 Operator's Maintenance Control Manual

8.2.1 The operator shall provide, for the use and guidance of maintenance and operational personnel concerned, a maintenance control manual for the RPA and RPS, in accordance with the requirements of 11.2. The design of the manual shall observe Human Factors principles.

8.2.2 The operator shall ensure that the maintenance control manual is amended as necessary to keep the information contained therein up to date.

8.2.3 Copies of all amendments to the operator's maintenance control manual shall be furnished promptly to all organizations or persons to whom the manual has been issued.

8.2.4 The operator shall provide the Authority and the State of Registry with a copy of the operator's maintenance control manual, together with all amendments and/or revisions to it and shall incorporate in it such mandatory material as the Authority or the State of Registry may require.

8.3 Maintenance Programme

8.3.1 The operator shall provide, for the use and guidance of maintenance and operational personnel concerned, maintenance programme(s), approved by the State of Registry, containing the information required by 11.3 for RPA, the RPS, any ground-based infrastructure and ground-based equipment under the direct control of the operator. The design and application of the operator's maintenance programme shall observe Human Factors principles.

8.3.2 Copies of all amendments to the maintenance programme(s) shall be furnished promptly to all organizations or persons to whom the maintenance programme has been issued.

8.4 Continuing Airworthiness Records

8.4.1 The operator shall ensure that the following records are kept for the periods mentioned in 8.4.2:

(a) the total time in service (hours, calendar time and cycles, as appropriate) of the RPA and all life-limited components of the RPAS;

(b) the current status of compliance with all applicable mandatory continuing airworthiness information;

(c) appropriate details of modifications and repairs;

(d) the time in service (hours, calendar time and cycles, as appropriate) since the last overhaul of the RPA or RPAS components subject to a mandatory overhaul life;

e) the current status of the RPAS compliance with the maintenance programme(s); and

f) the detailed maintenance records to show that all requirements for the signing of a maintenance release have been met.

8.4.2 The records in 8.4.1 a) to e) shall be kept for a minimum period of 90 days after the unit to which they refer has been permanently withdrawn from service and the records in 8.4.1 f) for a minimum period of one year after the signing of the maintenance release.

8.4.3 In the event of a temporary change of operator, the records shall be made available to the new operator. In the event of any permanent change of operator, the records shall be transferred to the new operator.

8.4.4 For each RPA and each RPS, records kept and transferred in accordance with 8.4 shall be maintained in a form and format that ensures readability, security and integrity of the records at all times.

8.5 Continuing Airworthiness Information

8.5.1 The operator of an RPAS certificated in accordance with SLCAR Parts 8A and 8B shall monitor and assess maintenance and operational experience with respect to continuing airworthiness and provide the information as prescribed by the State of Registry and report through the system specified in SLCAR Part 8B

8.5.2 The operator of an RPAS certificated in accordance with SLCAR Parts 8A and 8B shall obtain and assess continuing airworthiness information and recommendations available from the organization responsible for the type design and shall implement resulting actions considered necessary in accordance with a procedure acceptable to the State of Registry.

8.6 Modifications and Repairs

All modifications and repairs shall comply with airworthiness requirements acceptable to the State of Registry. Procedures shall be established to ensure that the substantiating data supporting compliance with the airworthiness requirements are retained.

8.7 Approved Maintenance Organization

An approved maintenance organization shall comply with SLCAR Part 8B, Chapter 6 — Maintenance organization approval.

8.7 Maintenance Release

8.7.1 When maintenance is carried out by an approved maintenance organization, the maintenance release shall be issued by the approved maintenance organization in accordance with the provisions of SLCAR Part 8B.

8.7.2 When maintenance is not carried out by an approved maintenance organization, the maintenance release shall be completed and signed by a person appropriately licensed in accordance with

SLCAR Part 1A to certify that the maintenance work performed has been completed satisfactorily and in accordance with approved data and procedures acceptable to the State of Registry.

8.7.3 When maintenance is not carried out by an approved maintenance organization, the maintenance release shall include the following:

(a) basic details of the maintenance carried out including detailed reference of the approved data used;

(b) the date such maintenance was completed; and

(c) the identity of the person or persons signing the release.

9. REMOTE FLIGHT CREW

9.1 Composition of the Remote Flight Crew

9.1.1 The number and composition of the remote flight crew shall not be less than that specified in the operations manual. When necessitated by considerations related to the type(s) of RPA and RPS used, the type of operation involved and the duration of flight between points where remote flight crews are changed, the remote flight crew shall include remote flight crew members in addition to the minimum numbers specified in the flight manual or other documents associated with the certificate of airworthiness.

9.1.2 The operator shall establish procedures for remote flight crew rostering, particularly in consideration of long duration flights.

9.1.3 Radio operator

At all times during a RPAS operation, the remote flight crew shall include at least one member who holds a valid licence, issued by, or rendered valid by, the State of the Registry authorizing operation of the type of communication equipment to be used.

9.2 Remote Flight Crew Member Duties

9.2.1 The operator shall define the roles and task allocation of remote flight crew members for the operation of the RPAS.

9.2.2 The operator shall, for each type of RPS, assign to all remote flight crew members the necessary functions they are to perform in an emergency or in a situation requiring emergency evacuation of the RPS.

9.2.3 Recurrent training in accomplishing these functions shall be contained in the operator's training programme and shall include instruction in the use of all emergency and life-saving equipment required to be installed, and drills in the emergency evacuation of the RPS, when appropriate.

9.3 Remote Flight Crew Member Training Programmes

9.3.1 The operator shall establish and maintain a ground and flight training programme, Authority, which ensures that all remote flight crew members are adequately trained to perform their assigned duties. The training programme shall:

(a) include ground and flight training facilities and properly qualified RPAS instructors as determined by the Authority;

(b) consist of ground and flight training in the class or type of RPAS for which the remote flight crew member will be assigned;

(c) include appropriate remote flight crew coordination and training in all types of emergency and abnormal situations or procedures caused by engine, airframe or systems malfunctions;

(d) include RPS malfunctions, including fire, natural disaster such as earthquakes, or other abnormalities;

(e) include training on the causes of upsets and means of prevention;

(f) include training in knowledge and skills related to flight procedures for the intended area of operation, human performance including threat and error management and in the transport of dangerous goods;

(g) ensure that all remote flight crew members know the duties for which they are responsible and the relation of these duties to the duties of other remote flight crew members, particularly in regard to abnormal or emergency procedures;

(h) be given on a recurrent basis, as determined by the Authority and shall include an assessment of competence;

(i) establish a recurrent crew resource management (CRM) training programme for the remote flight crew; and

(j) for RPAS equipped with a DAA capability, ensure that each remote flight crew member has been appropriately trained to be competent in the use of such equipment.

9.3.2 The requirement for recurrent flight training for a particular type of RPA or RPS shall be considered fulfilled by:

(a) the use, to the extent deemed feasible by the Authority, of flight simulation training devices approved by that State for that purpose; or

(b) the completion within the appropriate period of the proficiency check required by 9.4.6 in that type of RPAS.

9.4 Qualifications

9.4.1 The operator shall only designate a remote pilot to act as remote pilot-in-command if they have:

(a) the minimum level of training, experience and currency specified in the operations manual; and

(b) in the case of multi-crew operations, completed a command course appropriate for the envisaged operations.

9.4.2 The operator shall ensure each remote flight crew member:

(a) holds a valid licence issued by, or rendered valid by, the Authority;

(b) holds the appropriate ratings; and

(c) is competent to carry out assigned duties.

9.4.3 When a remote pilot-in-command or a remote co-pilot is flying several variants of the same RPAS or different AS with similar characteristics in terms of operating procedures, systems and handling, the State of the Operator shall decide under which conditions the requirements of 9.4.2 a) for which variants of RPA and RPS can be combined.

9.4.4 Recent experience

9.4.4.1 The operator shall not assign a remote pilot to act as remote pilot-in-command to perform take-off and landing duties or to operate the flight controls of an RPAS during take-off and landing unless that remote pilot has conducted at least three take-offs and landings within the preceding 90 days with the same combination of RPA and RPS or a flight simulation training device approved for that purpose.

9.4.4.2 The operator shall not assign a remote pilot to act as remote pilot-in-command or remote co-pilot for any portion of a flight unless that remote pilot has conducted at least three flights within the preceding 90 days with the same combination of RPA and RPS or a flight simulation training device approved for that purpose.

9.4.5 Remote pilot-in-command area, route and aerodrome qualification

9.4.5.1 The operator shall not utilize a remote pilot as remote pilot-in-command on a route or route segment for which that remote pilot is not currently qualified until such remote pilot has complied with 9.4.5.2 and 9.4.5.3.

9.4.5.2 Each such remote pilot shall demonstrate to the operator an adequate knowledge of:

(a) the route to be flown, and the aerodromes which are to be used. This shall include knowledge of:

(i) the terrain and minimum safe altitudes;

(ii) the seasonal meteorological conditions;

(iii) the meteorological, communication and air traffic facilities, services and procedures;

(iv) the search and rescue procedures;

(v) the navigational facilities and procedures, including any long-range navigation procedures, associated with the route along which the flight is to take place; and

(b) procedures applicable to flight paths over heavily populated areas and areas of high air traffic density, obstructions, physical layout, lighting, approach aids and arrival, departure, holding and instrument approach procedures, and applicable operating minima.

9.4.5.3 A remote pilot-in-command shall have made an actual approach into each aerodrome of landing on the route, accompanied by a remote pilot who is qualified for the aerodrome, as a member of the remote flight crew or as a remote pilot observing at the RPS, unless:

(a) the approach to the aerodrome is not over difficult terrain and the instrument approach procedures and aids available are similar to those with which the remote pilot is familiar, and a margin to be approved by the State of the Operator is added to the normal operating minima, or there is reasonable certainty that approach and landing can be made in visual conditions; or

(b) the descent from the initial approach altitude can be made by day in visual conditions; or

(c) the operator qualifies the remote pilot-in-command to land at the aerodrome concerned by means of an adequate pictorial presentation; or

(d) the aerodrome concerned is adjacent to another aerodrome at which the remote pilot-in-command is currently qualified to land.

9.4.5.4 The operator shall maintain a record, sufficient to satisfy the Authority of the qualification of the remote pilot and of the manner in which such qualification has been achieved.

9.4.5.5 The operator shall not continue to utilize a remote pilot as a remote pilot-in-command on a route or within an area specified by the operator and approved by the Authority unless, within the preceding 12 months, that remote pilot has made at least one trip as a remote pilot, or as a remote check pilot, or as a remote pilot observing at the RPS:

(a) within that specified area; and

(b) if appropriate, on any route where procedures associated with that route or with any aerodromes intended to be used for take-off or landing require the application of special skills or knowledge.

9.4.5.6 In the event that more than 12 months elapse in which a remote pilot-in-command has not made such a trip on a route in close proximity and over similar terrain, within such a specified area, route or aerodrome, and has not practised such procedures in a training device which is adequate

for this purpose, prior to again serving as a remote pilot-in-command within that area or on that route, that remote pilot must requalify in accordance with 9.4.5.2 and 9.4.5.3.

9.4.6 Remote pilot proficiency checks

9.4.6.1 The operator shall ensure that piloting technique and the ability to execute emergency procedures is checked in such a way as to demonstrate the remote pilot's competence on each combination of RPA and RPS.

9.4.6.2 Where the operation may be conducted under IFR, the operator shall ensure that the remote pilot's competence to comply with such rules is demonstrated to either a remote check pilot of the operator or a representative of the Authority.

9.4.6.3 Checks in 9.4.6.1 and 9.4.6.2 shall be performed twice within any period of one year. Any two such checks which are similar and which occur within a period of four consecutive months shall not alone satisfy this requirement.

9.4.6.4 When the operator schedules remote flight crew on several combinations of RPA and RPS or different combinations of RPA and RPS with similar characteristics in terms of operating procedures, systems and handling, the Authority shall decide under which conditions the requirements of 9.4.6.1 for which variants of RPA and RPS can be combined.

9.5 Remote Flight Crew Equipment

A remote flight crew member assessed as fit to exercise the privileges of a licence, subject to the use of suitable correcting lenses, shall have a spare set of the correcting lenses readily available when exercising those privileges

10. FLIGHT OPERATIONS OFFICER/FLIGHT DISPATCHER

10.1 Flight operations officer/flight dispatcher shall be licensed in accordance with the provisions of SLCAR Part 1A.

10.2 A flight operations officer/flight dispatcher shall not be assigned to duty unless that person has:

(a) satisfactorily completed the operator-specific training course that addresses all the specific components of its approved method of control and supervision of flight operations specified in 2.2.1.4;

(b) made, within the preceding 12 months, at least one qualification flight observing the remote flight crew at the RPS over any area for which that individual is authorized to exercise flight supervision. The flight should include landings at as many aerodromes as practicable;

(c) demonstrated to the operator a knowledge of:

(i) the contents of the operations manual described in IS 3.1.4;

(ii) the radio equipment used by the RPAS;

(iii)the navigation equipment used by the RPAS;

(d) demonstrated to the operator a knowledge of the following details concerning operations for which the officer is responsible and areas in which that individual is authorized to exercise flight supervision:

(i) the seasonal meteorological conditions and the sources of meteorological information;

(ii) the effects of meteorological conditions on C2 Link and radio reception in the RPAS used;

(iii)the peculiarities and limitations of each navigation system which is used by the operation;

(iv)the RPA loading instructions;

(e) demonstrated to the operator knowledge and skills related to human performance relevant to dispatch duties; and demonstrated to the operator the ability to perform the duties specified in 2.7

11. MANUALS, LOGS AND RECORDS

11.1 Flight Manual

The flight manual shall be updated by implementing changes made mandatory by the State of Registry.

11.2 Operator's Maintenance Control Manual

The operator's maintenance control manual provided in accordance with 6.2, which may be issued in separate parts, shall contain the following information:

(a) a description of the procedures required by 6.1.1 including, when applicable:

(i) a description of the administrative arrangements between the operator and the approved maintenance organization;

(ii) a description of the UA and RPS maintenance procedures and the procedures for completing and signing the maintenance release when maintenance is based on a system other than that of an approved maintenance organization;

(b) names and duties of the person or persons required by 6.1.3;

(c) a reference to the maintenance programme(s) required by 6.3.1;

(d) a description of the methods used for the completion and retention of the operator's continuing airworthiness records required by 6.4;

(e) a description of the procedures for monitoring, assessing and reporting maintenance and operational experience required by 6.5.1;

(f) a description of the procedures for complying with the service information reporting requirements of SLCAR Part 8B and 2.2.5;

(g) a description of procedures for assessing continuing airworthiness information and implementing any resulting actions, as required by 6.5.2;

(h) a description of the procedures for implementing action resulting from mandatory continuing airworthiness information;

i) a description of establishing and maintaining a system of analysis and continued monitoring of the performance and efficiency of the maintenance programme(s), in order to correct any deficiency in that programme;

j) a description of the RPA and RPS types and models to which the manual applies;

k) a description of procedures for ensuring that unserviceabilities affecting airworthiness are recorded and rectified; and

l) a description of the procedures for advising the State of Registry of significant in-service occurrences.

11.3 Maintenance Programme

11.3.1 A maintenance programme for each UA, each RPS and any ground-based communication infrastructure as required by 7.3 shall contain the following information:

(a) maintenance tasks and the intervals at which these are to be performed, taking into account the anticipated utilization of the RPAS;

(b) when applicable, a continuing structural integrity programme;

(c) procedures for changing or deviating from a) and b) above; and

(d) when applicable, condition monitoring and reliability programme descriptions for the RPAS and all its components.

11.3.2 Maintenance tasks and intervals that have been specified as mandatory in approval of the type design shall be identified as such.

11.3.3 The maintenance programme(s) shall be based on maintenance programme information made available by the State of Design or by the organization responsible for the type design, and any additional applicable experience.

11.4 Journey Log Book

11.4.1 A journey log book shall be maintained for every A engaged in international air navigation in which particulars of the RPAS and its crew shall be entered at the end of the duty period of each remote pilot-in-command.

11.4.2 The RPA journey log shall contain the following items:

(a) RPA nationality and registration;

(b) a record of each RPS used in the course of a flight;

(c) the duration of use for each RPS and the times of transfer between RPS;

(d) date;

(e) names and duty assignments of remote flight crew members and other remote crew members;

(f) departure and arrival points and times;

(g) hours of flight;

(h) purpose and type of flight;

(i) incidents, observations regarding the RPAS, if any; and

(j) signature(s) of the remote pilot(s)-in-command

11.4.3 A signature shall be required for each instance in which the remote pilot-in-command is changed, which, during long duration flights, may occur while the RPA remains airborne.

11.4.4 Completed journey log book shall be retained to provide a continuous record of the last six months' operations.

11.5 Operator Record-Keeping

11.5.1 The operator shall establish a system of record-keeping that allows adequate storage and reliable traceability of all activities, covering in particular all the elements related to RPAS operations as defined in the operations manual and management system processes as defined in this chapter.

11.5.2 The format of the records shall be specified in the operator's procedures.

11.5.3 Records shall be stored in a manner that ensures protection from damage, alteration and theft, for a period determined by Operator.

11.6 Flight Recorder Records

11.6.1 The operator shall ensure, to the extent possible, in the event the RPAS becomes involved in an accident or incident, the preservation of all related RPA-RS and RPS-RS records and, if necessary, the associated recorders, and their retention in safe custody pending their disposition as determined in accordance with Annex 13.

11.6.2 In the event a contracted RPS service provider is used, the operator shall ensure, in the event the RPAS becomes involved in an accident or incident, the preservation of all related RPS-RS records and, if necessary, the associated recorders, and their retention in safe custody pending their disposition as determined in accordance with Annex 13.

12. SECURITY

12.1 General

12.1.1 The operator shall establish structure, responsibilities, processes, and procedures to foster a culture of continuous improvement and enhancement of aviation security for RPAS operations.

12.1.2 The operator shall develop and implement RPAS-related training programmes and a certification system that ensures that RPAS instructors are qualified in the applicable subject matters in accordance with the national civil aviation security programme.

12.2 Aerodrome Operations

The aerodrome operator shall include measures for RPAS operations in their written airport security program that are appropriate to meet the requirements of the national civil aviation security program.

12.3 RPAS Operators

The RPAS operator shall establish, implement, and maintain a written RPAS operator security programme, and an associated training programme, that meets the requirements of the national civil aviation security programme.

12.4 Reporting Acts of Unlawful Interference

12.4.1 The remote pilot-in-command shall report any act of unlawful interference to the Authority without delay.

13. DANGEROUS GOODS

13.1 General

Transport of dangerous goods as cargo on board RPA shall not be permitted unless the Authority has issued a specific approval.

13.2 Operators with a Specific approval for the transport of Dangerous Goods as cargo

The RPAS Operator that has been issued with specific approval for the transport of dangerous goods by the Authority shall:

(c) establish a dangerous goods training programme that meets the requirements of SLCAR Part 18, the Technical Instructions, Part 1, Chapter 4. Details of the dangerous goods training programme shall be included in the operator's operations manuals;

(d) establishes dangerous goods policies and procedures in its operations manual to meet, at a minimum, the requirements of SLCAR Part 18, and the Technical Instructions;

(i) identify and reject undeclared or misdeclared dangerous goods, including COMAT classified as dangerous goods;

(ii) report to the Authority any:

(1) occasions when undeclared or misdeclared dangerous goods are discovered in cargo or mail;

(2) dangerous goods accidents and incidents;

(iii) report to the Authority any occasions when dangerous goods are discovered to have been carried;

(1) when not loaded, segregated, separated, or secured in accordance with Technical Instructions, Part 7, Chapter 2;

(2) without information having been provided to the remote pilot-in-command;

(iv) accept, handle, store, transport, load, and unload dangerous goods, including COMAT classified as dangerous goods as cargo on board an RPA;

(v) provide the remote pilot-in-command with accurate information concerning dangerous goods that are to be carried as cargo in the format required in SLCAR Part 18 and the Technical Instructions; and

(vi) notify emergency services at the scene of an incident or accident of the information provided to the remote pilot on the NOTOC.

13.3 Provision of Information

The RPAS operator shall ensure that all personnel, including third-party personnel, involved in the acceptance, handling, loading, and unloading of cargo are informed of the operator's specific approval and limitations with regard to the transport of dangerous goods.

14. CARGO COMPARTMENT SAFETY

14.1 Transport of Items in the Cargo Compartment

The operator shall establish policies and procedures for the transport of items in the cargo compartment, which include the conduct of a specific safety risk assessment. The safety risk assessment shall include at least the

(a) hazards associated with the properties of the items to be transported;

(b) capabilities of the operator;

(c) operational considerations (e.g. area of operations, diversion time);

(d) capabilities of the RPA and its systems (e.g. cargo compartment fire suppression capabilities);

(e) containment characteristics of unit load devices;

(f) packing and packaging;

(g) safety of the supply chain for items to be transported; and

(h) quantity and distribution of dangerous goods items to be transported.

14.2 Fire Protection

14.2.1 The elements of the cargo compartment(s) fire protection system, as approved by the State of Design or State of Registry, and a summary of the demonstrated cargo compartment fire protection certification standards, shall be provided in the flight manual or other documentation supporting the operation of the RPAS.

14.2.2 The Operator shall establish policies and procedures that address the items to be transported in the cargo compartment. These shall ensure, to a reasonable certainty, that in the event of a fire involving those items, it can be detected and sufficiently suppressed or contained by the elements of the RPA design associated with cargo compartment fire protection, until the RPA makes a safe landing.

15. FATIGUE MANAGEMENT

15.1 Applicability

This regulation is applicable to the management of fatigue-related safety risks of crew members and flight operations officers or flight dispatchers engaged in RPAS operations and is based upon scientific principles, knowledge and operational experience withthe aim of ensuring that flight and cabin crew members are performing at an adequate level of alertness.

15.2 Managing Fatigue-Related Safety Risks

(a) For the purpose of managing fatigue-related safety risks, an ROC holder shall establish flight time, flight duty period, duty period limitations and rest period requirements that are within the prescriptive fatigue management limits prescribed in this sub part

(i) The limits referred to in sub part shall include the following:

(1) limits on the aggregate of all that persons flight times during every period of twenty eight (28) consecutive days;

(2) limits on that person flight duty period; and

(3) minimum rest periods which that person is to have immediately before any duty period in the course of which he makes any flight.

(b) Where the operator adopts prescriptive fatigue management as prescribed in this regulations for part or all of its operations, the Authority may approve, in exceptional circumstances, variations to these Regulations on the basis of a risk assessment provided by the operator. Approved variations shall provide a level of safety equivalent to, or betterthan that achieved through the prescriptive fatigue management regulations described therein.

(c) The matters which an operator shall take into account in establishing the limits and minimum rest periods referred to in sub part are; the nature of the work and other duties which those persons will carry out, and all the circumstances arising out of the carrying out of that work and those duties, which may affect the degree of fatigue from which thosepersons may suffer while they are making a flight in an aircraft to which this regulation applies in any such

capacity as is mentioned in this sub part including:

(i) the area in which the flight will be made;

(ii) the number of landings which will be made during the course of each flight duty period;

(iii) the amount of night flying during each flight duty period; and

(iv) the number of consecutive occasions on which each crew member will be requiredto fly for the maximum period permitted under this sub part.

(d) No limits or minimum rest periods may be established under this sub part which would require or permit any person to fly in any aircraft at a time when such flying would constitute a contravention of any of the provisions of these Regulations, or would requireor permit any person to fly in any aircraft as a crew member thereof within the period of one hour immediately preceding the end of the specified time referred to in 12.2(b) or, when the specified time is twenty-four hours (24), within the period of two (2) hours immediately preceding the end of the specified time.

(e) An operator of an RPA to which this regulation applies shall not permit that aircraft to make a flight unless limits and minimum rest periods have been established inaccordance with the provisions of this regulation so as to apply to every crew member.

(f) An operator of an RPA to which this regulation applies shall take all such steps as are reasonably practicable to ensure that all limits for the time being established by that operator in accordance with the provisions of this regulation are observed, and that no person for whom minimum rest periods are for the time being so established makes any flight in an aircraft to which this regulation applies, unless immediately before the duty period in the course of which that person makes the flight, the person has had the appropriate rest period so established.

(g) Notwithstanding anything contained in this regulation, an operator of an aircraft to whichthis regulation applies may confer upon the remote pilot in command a discretion to make,or authorize any person to make, a flight in that aircraft in such circumstances that the remote pilot in command or that other person will not observe the limits or will not have had the minimum rest periods established by that operator under this regulation and applicable to the remote pilot in command or thatother person.

(h) The discretion set out (g) shall not be exercisable unless:

(i) it appears to the remote pilot in command that:

(1) arrangements had been made for the flight to be made with such a crew and soas

to begin and end at such times that if the flight had been made in accordancewith those arrangements each member of the crew would have observed the limits and have had the minimum rest periods established by the operator andapplicable to them, and that since those arrangements were made the flight hasbeen or will be prevented from being made in accordance with those arrangements by reason of circumstances which were not foreseen, as likely toprevent that flight from being so made; or

(2) the flight is one which ought to be carried out in the interests of the safety or health of any person; and

(ii) the remote pilot in command is satisfied that the safety of the aircraft on that flight will not be endangered if the remote pilot in command or that other person makes that flight.

(i) An ROC holder shall include in the operations manual for the use and guidance to crew members and flight dispatchers the full particulars of all limits and minimum rest periods required which may affect any of those members, and of any discretion conferredupon the remote pilot in command of that RPA

15.3 Flight Time, Flight Duty Periods, Duty Periods, and Rest Periodsfor Fatigue Management

15.3.1 Applicability

These regulations shall apply to the rest, duty, and flight time limitations of crewmembers and flight operations officers or flight dispatchers engaged in RPA operations.

15.3.2 Duty and Rest Periods – all Crewmembers and Flight Operations Officers

(a) With respect to duty periods:

(i) Persons are considered to be on duty if they are performing any tasks on behalf of the ROC holder, whether scheduled, requested or self-initiated.

(ii) If an ROC holder requires a flight crewmember to engage in dead head transportationfor more than 4 hours, one half of that time shall be treated as duty time, unless they are given 10 hours of rest on the ground before being assigned to flight duty.

(iii)No ROC holder may schedule:

(1) A flight crew member for more than 14 hours of duty, except as prescribed by the Authority.

(2) A flight operations officer or aircraft dispatcher for more than 10 consecutive hours of duty within a 24 consecutive hour period, unless that person is given an intervening rest period of at least 6 hours at or before the end of the 10 hours duty,except in cases

where circumstances or emergency conditions beyond the controlof the ROC holder require otherwise.

A. Each ROC holder shall establish the daily duty period for a flight operations officer or aircraft dispatcher so that it begins at a time that allows him or her to become thoroughly familiar with existing and anticipated weather conditions along the route before he or she dispatches any aircraft.

B. He or she shall remain on duty until each aircraft dispatched by him or her has completed its flight or has gone beyond his or her jurisdiction or until he or she is relieved by another qualified dispatcher.

(b) With respect to rest periods:

(i) The minimum rest period is considered to be 6 consecutive hours.

(ii) The minimum rest period for flight crewmembers shall be 9 consecutive hours, unless otherwise prescribed by the Authority.

(iii)The ROC holder shall relieve the flight crewmember, flight operations officer or flight dispatcher, from all duties for 24 consecutive hours during any7 consecutive day periods.

(iv) No ROC holder may assign, nor may any person:

(1) Perform duties unless that person has had at least the minimum rest period applicable to those duties as prescribed by the Authority;or

(2) Accept an assignment to any duty with the ROC holder during any required rest period.

15.3.3 Maximum Number of Flight Time Hours – Flight Crew

(a) No person may schedule any flight crew member and no flight crew member may accept an assignment for flight time in commercial air transportation, if that flight crew member'stotal flight time will exceed 8 hours in any 24 consecutive hours.

(b) No person may schedule any flight crew member and no flight crew member may accept an assignment as a required crewmember for more than 7 flights in RPA during any period of 18 consecutive hours, whichever comes first.

(c) No person may schedule any flight crew member and no flight crew member may accept an assignment for flight time in RPA, if that flight crew member's total flight time will exceed 30 hours in any 7-day period.

(d) No person may schedule any flight crew member and no flight crewmember may accept an assignment for flight time in commercial air transportation, if that flight crew member'stotal

flight time will exceed 100 hours in any 30-day period.

(e) No person may schedule any flight crew member and no flight crew member may accept an assignment for flight time in commercial air transportation, if that flight crew member'stotal flight time, total flights will exceed the limitationsprescribed by the Authority.

(f) No person may schedule any flight crew member and no flight crewmember may accept an assignment for flight time in commercial air transportation, if that flight crew member'stotal flight time will exceed 1000 hours in any 12-calendar month period.

15.3.4 Compliance with Scheduling Requirements

(a) The Authority may consider a person in compliance with prescribed standards if that person exceeds flight and or duty limitations when—

(i) The flight is scheduled and normally terminates within the prescribed limitations; but

(ii) Due to circumstances beyond the control of the ROC holder (such as adverse weather conditions) are not expected at the time of departure to reach the destination within the scheduled time.

(b) The Authority may consider a person in compliance with prescribed duty limitations, if that person exceeds applicable limitations during emergency or adverse situations beyondthe control of the ROC holder.

15.3.5 Special Flight Duty Schemes

(a) The Authority may approve a special flight duty scheme for an ROC holder.

(b) An ROC holder may elect to apply the flight crewmember flight duty and rest requirements to the cabin crewmembers.

15.3.6 Flight Time, Duty and Rest Period Records

Each ROC holder shall maintain records for each crew member and flight operations officeror flight dispatcher of flight time, flight duty periods, duty periods, and rest periods for a period of 24 months.

16. REQUEST FOR AUTHORISATION TO OPERATE RPA FROM THE TERRITORY OF ANOTHER STATE

16.1 The request for authorisation to operate RPA from the territory of another State shall be made not less than seven days before the date of the intended flight in the format and manner prescribed by the Authority.

16.2 The request for authorisation shall include the following:

(a) name and contact information of the operator;

(b) RPA characteristics (type of aircraft, maximum certificated take-off mass, number of engines, wing span);

(c) copy of certificate of registration;

(d) aircraft identification to be used in radiotelephony, if applicable;

(e) copy of the certificate of airworthiness;

(f) copy of the RPAS operator certificate;

(g) copy of the remote pilot(s) licence;

(h) copy of the aircraft radio station licence, if applicable;

(i) description of the intended operation (to include type of operation or purpose), flight rules, visual line-of-sight (VLOS) operation if applicable, date of intended flight(s), point of departure, destination, cruising speed(s), cruising level(s), route to be followed, duration/frequency of flight;

(j) take-off and landing requirements;

(k) RPA performance characteristics, including:

(i) operating speeds;

(ii) typical and maximum climb rates;

(iii) typical and maximum descent rates;

(iv) typical and maximum turn rates;

(v) other relevant performance data (e.g. limitations regarding wind, icing, precipitation); and

(vi) maximum aircraft endurance;

(l) communications, navigation and surveillance capabilities:

(i) aeronautical safety communications frequencies and equipment, including:

(1) command and control links (C2) including performance parameters and designated operational coverage area;

(2) communications between remote pilot and RPA observer, if applicable;

(ii) navigation equipment; and

(iii) surveillance equipment (e.g. SSR transponder, ADS-B out);

(m) detect and avoid capabilities;

(n) emergency procedures, including:

(i) communications failure with ATC;

(ii) C2 failure; and

(iii) remote pilot/RPA observer communications failure, if applicable;

(o) number and location of remote pilot stations as well as handover procedures between remote pilot stations, if applicable;

(p) document attesting noise certification that is consistent with the provisions of Annex 16, Volume 1, if applicable;

(q) confirmation of compliance with national security standards in a manner that is consistent with the provisions of SLCAR Part 17, to include security measures relevant to the RPAS operation, as appropriate;

(r) payload information/description; and

(s) proof of adequate insurance/liability coverage.

16.3 When certificates or other documents identified in 16.2 above are issued in a language other than English, an English translation shall be included.

16.4 Once authorization has been granted by the Authority, the operator shall

(a) file a flight plan prior to operation of a RPA;

(b) follow the operational rules for RPA in as per this Part;

(c) notify the Authority and ATC immediately in the event of a flight cancellation, and

(d) in the case of changes to the proposed flight, submit such changes to the Authority for consideration.

16.5 In the event of a flight cancellation, the operator or remote pilot shall notify all appropriate authorities as soon as possible.

IS 4.2.4.1 ORGANIZATION AND CONTENTS OF AN OPERATIONS MANUAL

1. ORGANIZATION

An operations manual, which may be issued in separate parts corresponding to specific aspects of RPAS operations, provided in accordance with Chapter 4, 4.2.4.1, shall be organized with the following structure:

(a) General;

(b) RPAS operating information;

(c) Areas, routes and aerodromes; and

(d) Training.

2. CONTENTS

The operations manual referred to in 1 shall contain at the least the following:

2.1 General

2.1.1 Instructions outlining the responsibilities of operations personnel pertaining to the conduct of flight operations.

2.1.2 Information and policy relating to fatigue management including:

(a) policies pertaining to flight time, flight duty period, duty period limitations and rest requirements for remote flight crew members in accordance with Chapter 4, 4.10.2 a); and

(b) where applicable, policy and documentation pertaining to the operator's Fatigue Risk Management System

2.1.3 A list of the navigational equipment to be carried including any requirements relating to operations where performance-based navigation is prescribed.

2.1.4 Where relevant to the operations, the long-range navigation procedures and the nomination and utilization of diversion aerodromes.

2.1.5 The circumstances in which a radio listening watch is to be maintained.

2.1.6 The method for determining minimum flight altitudes.

2.1.7 The methods for determining aerodrome operating minima.

2.1.8 Ground handling arrangements and procedures.

2.1.9 Procedures, as prescribed in SLCAR Part 12, for remote pilots-in-command observing an accident.

2.1.10 The remote flight crew for each type of operation including the designation of the succession of command.

2.1.11 Specific instructions for the computation of the quantities of fuel and oil to be carried, taking into account all circumstances of the operation including the possibility of the failure of one or more engines while en-route.

2.1.12 Instructions for mass and balance control.

2.1.13 Instructions for the conduct and control of ground de-icing/anti-icing operations.

2.1.14 The specifications for the operational flight plan.

2.1.15 Standard operating procedures (SOPs) for each phase of flight.

2.1.16 Instructions on the use of normal checklists and the timing of their use.

2.1.17 Departure contingency procedures.

2.1.18 Instructions on the maintenance of altitude awareness and the use of automated or remote flight crew altitude call out.

2.1.19 Instructions on the use of autopilots and auto-throttles.

2.1.20 Instructions on the clarification and acceptance of ATC clearances, particularly where terrain clearance is involved.

2.1.21 Departure and approach briefings.

2.1.22 Procedures for familiarization with areas, routes and aerodromes.

2.1.23 Stabilized approach procedure.

2.1.24 Limitation on high rates of descent near the surface.

2.1.25 Conditions required to commence or to continue an instrument approach.

2.1.26 Instructions for the conduct of precision approach (PA) procedures, approach procedures with vertical guidance (APV) and non-precision approach (NPA) procedures.

2.1.27 Allocation of remote flight crew duties and procedures for the management of remote crew workload during night and IMC instrument approach operations.

2.1.28 Instructions and training requirements for the avoidance of controlled flight into terrain and, when installed, policy for the use of the ground proximity warning system (GPWS).

2.1.29 Policy, instructions, procedures and training requirements for the avoidance of collisions and the use of the detect and avoid (DAA) capability.

2.1.30 Information and instructions relating to the interception of civil RPA including:

(a) procedures, as prescribed in SLCAR Part 2, for remote pilots-in-command of intercepted aircraft; and

(b) visual signals for use by intercepting and intercepted aircraft, as contained in Annex 2.

2.1.31 For A intended to be operated above 15 000 m (49 000 ft.), procedures in the event that a decision to descend is taken, covering:

(a) the necessity of giving the appropriate ATS unit prior warning of the situation and of obtaining a provisional descent clearance; and

(b) the action to be taken in the event that communication with the ATS unit cannot be established or is interrupted.

2.1.32 Details of the safety management system (SMS) provided in accordance with SLCAR Part 2.

2.1.33 Information and instructions on the carriage of dangerous goods, in accordance with Chapter 14, including action to be taken in the event of an emergency.

2.1.34 Security instructions and guidance.

2.2 RPAS operating information

2.2.1 Certification limitations and operating limitations.

2.2.2 The normal, abnormal and emergency procedures to be used by the remote flight crew and the checklists relating thereto as required by Chapter 6, 6.1.3.

2.2.3 Operating instructions and information on climb performance with all engines operating, if provided in accordance with Chapter 4, 4.2.5.3.

2.2.4 Flight planning data for pre-flight and in-flight planning with different thrust/power and speed settings.

2.2.5 The maximum crosswind and tailwind components for each RPA type operated and the reductions to be applied to these values having regard to gusts, low visibility, runway surface conditions, remote crew experience, use of autopilot, abnormal or emergency circumstances, or any other relevant operational factors.

2.2.6 Instructions and data for mass and balance calculations.

2.2.7 Instructions for RPA loading and securing of load.

2.2.8 RPAS systems, associated controls and instructions for their use, as required by Chapter 6, 6.1.3.

2.2.9 The minimum equipment list and configuration deviation list for the RPA types operated and specific operations authorized, including any requirements relating to operations where

performance-based navigation is prescribed. Checklist of emergency and safety equipment and instructions for its use.

2.2.10 Emergency evacuation procedures for the RPS, including type-specific procedures, remote crew coordination, assignment of remote crew's emergency positions and the emergency duties assigned to each remote crew member.

2.2.11 Procedures to mitigate at least the emergencies and contingencies as required by Chapter 4, 4.5.5.

2.2.12 Procedures related to the quality of the C2 Link and mitigations for degraded C2 Link, as required by Chapter 4, 4.3.3.7.

2.2.13 Procedures for the establishment, assurance and termination of the C2 Link, including switchover procedures, as required by Chapter 4, 4.5.1.

2.2.14 Procedures to ensure a seamless operation throughout the duration of the flight, as required by Chapter 4, 4.3.3.9.

2.3 Routes and aerodromes

2.3.1 A route guide to ensure that the remote flight crew will have, for each flight, information relating to communication facilities, navigation aids, aerodromes, instrument approaches, instrument arrivals and instrument departures as applicable for the operation, and such other information as the operator may deem necessary for the proper conduct of flight operations.

2.3.2 The minimum flight altitudes for each route to be flown.

2.3.3 Aerodrome operating minima for each of the aerodromes that are likely to be used as aerodromes of intended landing or as alternate aerodromes.

2.3.4 The increase of aerodrome operating minima in case of degradation of approach or aerodrome facilities.

2.3.5 The necessary information for compliance with all flight profiles required by regulations, including but not limited to, the determination of:

(a) for remotely piloted aircraft, take-off runway length requirements for dry, wet and contaminated conditions, including those dictated by system failures which affect the take-off distance;

(b) take-off climb limitations;

(c) en-route climb limitations;

(d) approach climb limitations and landing climb limitations;

(e) for remotely piloted aircraft, landing runway length requirements for dry, wet and contaminated conditions, including systems failures which affect the landing distance; and supplementary information, such as tire speed limitations.

2.4 Training

2.4.1 Details of the remote flight crew training programme, as required by Chapter 9, 9.3.

2.4.2 Details of the flight operations officer/flight dispatcher training programme when employed in conjunction with a method of flight supervision in accordance with Chapter 4, 4.2.1.

IS 6.12 LIGHTS TO BE DISPLAYED BY RPA

1. TERMINOLOGY

When the following terms are used in this implementing standard, they have the following meanings:

Angles of coverage.

(a) Angle of coverage A is formed by two intersecting vertical planes making angles of 70 degrees to the right and 70 degrees to the left respectively, looking aft along the longitudinal axis to a vertical plane passing through the longitudinal axis.

(b) Angle of coverage F is formed by two intersecting vertical planes making angles of 110 degrees to the right and 110 degrees to the left respectively, looking forward along the longitudinal axis to a vertical plane passing through the longitudinal axis.

(c) Angle of coverage L is formed by two intersecting vertical planes, one parallel to the longitudinal axis of the RPA, and the other 110 degrees to the left of the first, when looking forward along the longitudinal axis.

(d) Angle of coverage R is formed by two intersecting vertical planes, one parallel to the longitudinal axis of the RPA, and the other 110 degrees to the right of the first, when looking forward along the longitudinal axis.

Horizontal plane. The plane containing the longitudinal axis and perpendicular to the plane of symmetry of the RPA.

Longitudinal axis of the RPA. A selected axis parallel to the direction of flight at a normal cruising speed, and passing through the centre of gravity of the RPA.

Making way. An RPA on the surface of the water is "making way" when it is under way and has a velocity relative to the water.

Under command. An RPA on the surface of the water is "under command" when it is able to execute manoeuvres as required by the International Regulations for Preventing Collisions at Sea for the purpose of avoiding other vessels.

Under way. An RPA on the surface of the water is "under way" when it is not aground or moored to the ground or to any fixed object on the land or in the water.

Vertical planes. Planes perpendicular to the horizontal plane.

Visible. Visible on a dark night with a clear atmosphere.

2. NAVIGATION LIGHTS TO BE DISPLAYED IN THE AIR

As illustrated in Figure 1, the following unobstructed navigation lights shall be displayed:

(a) a red light projected above and below the horizontal plane through angle of coverage L;

(b) a green light projected above and below the horizontal plane through angle of coverage R;

(c) a white light projected above and below the horizontal plane rearward through angle of coverage A.

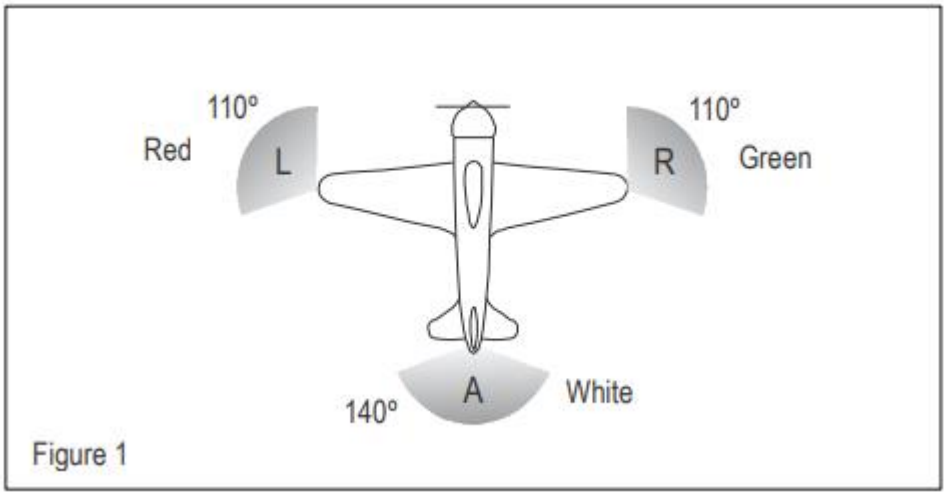


Figure 1

3. LIGHTS TO BE DISPLAYED ON THE WATER

3.1 General

The International Regulations for Preventing Collisions at Sea require different lights to be displayed in each of the following circumstances:

(a) when under way;

(b) when towing another vessel, or aircraft;

(c) when being towed;

(d) when not under command and not making way;

(e) when making way but not under command;

(f) when at anchor; and

(g) when aground.

The lights required by RPA in each case are described below.

3.2 When under way

As illustrated in Figure 2, the following appearing as steady unobstructed lights:

(a) a red light projected above and below the horizontal through angle of coverage L;

(b) a green light projected above and below the horizontal through angle of coverage R;

(c) a white light projected above and below the horizontal through angle of coverage A; and

(d) a white light projected through angle of coverage F.

The lights described in 3.2 a), b) and c) should be visible at a distance of at least 3.7 km (2 NM). The light described in 3.2 d) should be visible at a distance of 9.3 km (5 NM) when fitted to an RPA of 20 m or more in length or visible at a distance of 5.6 km (3 NM) when fitted to an RPA of less than 20 m in length.

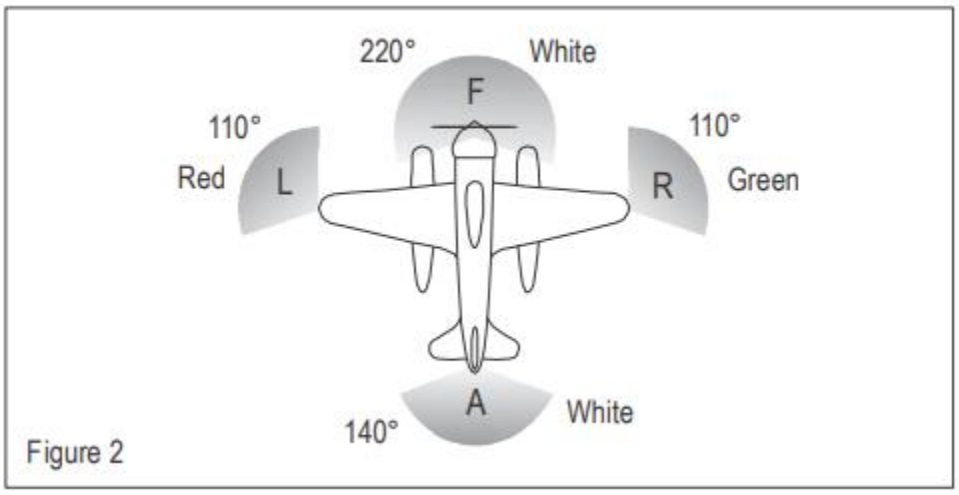


Figure 2

3.3 When towing another vessel or RPA

As illustrated in Figure 3, the following appearing as steady, unobstructed lights:

(a) the lights described in 3.2;

(b) a second light having the same characteristics as the light described in 3.2 d) and mounted in a vertical line at least 2 m above or below it; and

(c) a yellow light having otherwise the same characteristics as the light described in 3.2 c) and mounted in a vertical line at least 2 m above it.

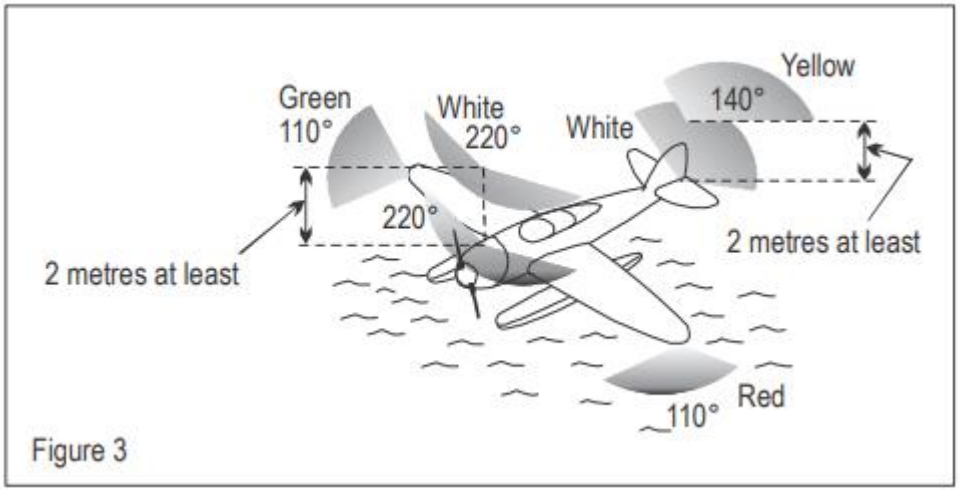


Figure 3

3.4 When being towed

The lights described in 3.2 (a), (b) and (c) appearing as steady, unobstructed lights.

3.5 When not under command and not making way

As illustrated in Figure 4, two steady red lights placed where they can best be seen, one vertically over the other and not less than 1 m apart, and of such a character as to be visible all around the horizon at a distance of at least 3.7 km (2 NM).

3.6 When making way but not under command

As illustrated in Figure 5, the lights described in 3.5 plus the lights described in 3.2 a), b) and c).

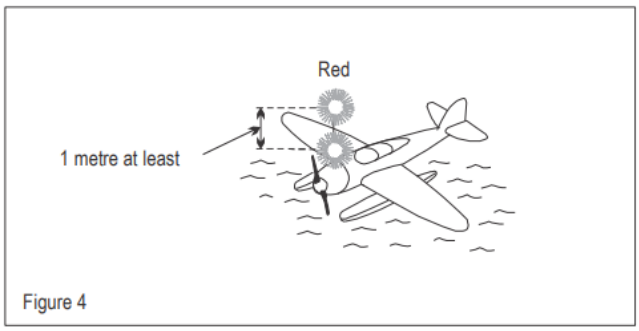


Figure 4

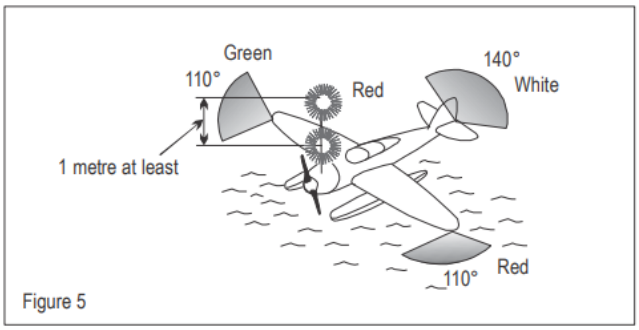


Figure 5

3.7 When at anchor

If less than 50 m in length, where it can best be seen, a steady white light (Figure 6), visible all around the horizon at a distance of at least 3.7 km (2 NM).

If 50 m or more in length, where they can best be seen, a steady white forward light and a steady white rear light (Figure 7) both visible all around the horizon at a distance of at least 5.6 km (3 NM).

If 50 m or more in span a steady white light on each side (Figures 8 and 9) to indicate the maximum span and visible, so far as practicable, all around the horizon at a distance of at least 1.9 km (1 NM).

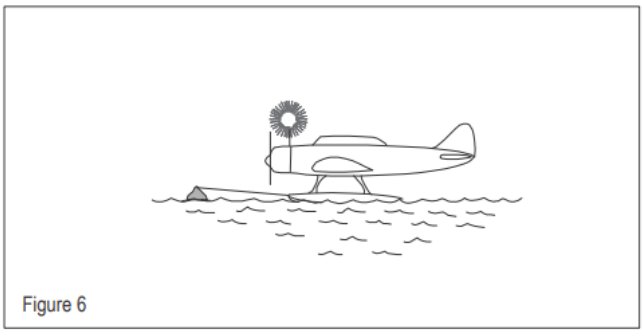


Figure 6

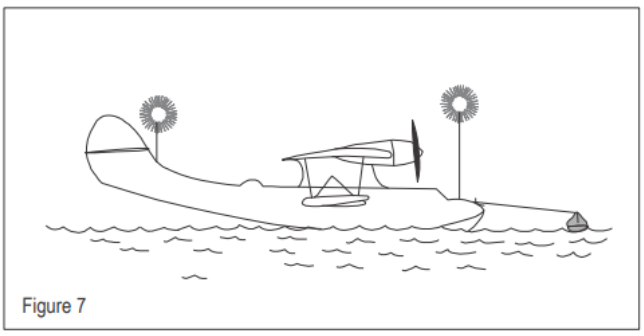
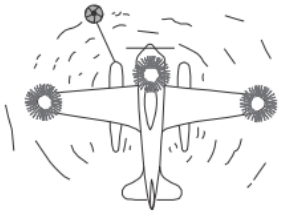
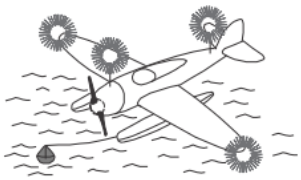


Figure 7



Less than 50 metres in length; 50 metres or more in span

Figure 8



50 metres or more in length; 50 metres or more in span

Figure 9

3.8 When aground

The lights prescribed in 3.7 and in addition two steady red lights in vertical line, at least 1 m apart so placed as to be visible all around the horizon.

IS 5.4.1 ADDITIONAL REQUIREMENTS FOR APPROVED OPERATIONS BY SINGLE-ENGINE RPA OVER HEAVILY POPULATED AREAS

1. ENGINE RELIABILITY

1.1 Engine reliability shall be shown to have a power loss rate of less than 1 per 100 000 engine hours.

1.2 The operator shall be responsible for engine trend monitoring.

1.3 To minimize the probability of in-flight engine failure, the engine shall be equipped with:

(a) for an engine that has an ignition system, an ignition system that activates automatically, or is capable of being operated manually, for take-off and landing, and during flight, in visible moisture;

(b) a magnetic particle detection or equivalent system that monitors the engine, accessories gearbox, and reduction gearbox, and which includes a flight deck caution indication; and

(c) an emergency engine power control device that permits continuing operation of the engine through a sufficient power range to safely complete the flight in the event of any reasonably probable failure of the fuel control unit, batteries or fuel-cell systems.

2. SYSTEMS AND EQUIPMENT

Single-engine RPA approved to operate over heavily populated areas shall be equipped with the following:

(a) Systems and equipment capable of transmitting data or transferring capability to the RPS to ensure continued safe flight and to assist in achieving a safe forced landing after an engine failure, under all allowable operating conditions:

(i) a radio altimeter;

(ii) two attitude indicators, powered from independent sources;

(iii) a means to provide for at least one attempt at engine re-start;

(iv) a weather radar, if this capability is provided from the RPA;

(v) a certified area navigation system capable of being programmed with the positions of aerodromes and safe forced landing areas, and providing instantly available track and distance information to those locations;

(vi) if the RPAS design is such that a means of external vision from the RPA is available to the remote pilot, a landing

(vii) light that is independent of the landing gear and is capable of adequately illuminating the touchdown area in a night forced landing; and

(viii) an engine fire warning system.

(b) Systems intended to ensure continued safe flight and to assist in achieving a safe forced landing after an engine failure, under all allowable operating conditions:

(i) two separate electrical generating systems, each one capable of supplying all probable combinations of continuous in-flight electrical loads for instruments, equipment and systems; and

(ii) an emergency electrical supply system of sufficient capacity and endurance, following loss of all generated power, to as a minimum:

(1) maintain the operation of the C2 Link, detect and avoid (DAA) capabilities and all essential flight instruments, communication and navigation systems during a descent from the maximum certificated altitude in a glide configuration to the completion of a landing;

(2) lower the flaps and landing gear, if applicable;

(3) provide power to one pitot heater, which must serve an air speed indicator that provides indications to the remote pilot;

(4) provide for one engine restart, if applicable; and

(5) provide for the operation of the radio altimeter.

3. MINIMUM EQUIPMENT LIST

The State of the Operator shall require the minimum equipment list of the operator approved in accordance with Chapter 5, 5.4 or 5.5 to specify the operating equipment required for over heavily populated areas.

4. FLIGHT MANUAL INFORMATION

The flight manual shall include limitations, procedures, approval status and other information relevant to operations by single-engine RPA over heavily populated areas.

5. EVENT REPORTING

5.1 The operator approved for operations by single-engine RPA over heavily populated areas shall report all significant failures, malfunctions or defects to the State of the Operator who in turn will notify the State of Design.

5.2 The State of the Operator shall review the safety data and monitor the reliability information so as to be able to take any actions necessary to ensure that the intended safety level is achieved. The State of the Operator will notify major events or trends of particular concern to the appropriate Type Certificate Holder and the State of Design.

6. OPERATOR PLANNING

6.1 Operator route planning shall take account of all relevant information in the assessment of intended routes or areas of operations, including the following:

(a) the nature of the terrain to be overflown, including the potential for carrying out a forced landing without unreasonably elevating risk to persons on the surface or other airspace users in the event of an engine failure or major malfunction;

(b) weather information, including seasonal and other adverse meteorological influences that may affect the flight; and

(c) other criteria and limitations as specified by the State of the Operator.

6.2 The operator shall identify aerodromes or safe forced landing areas available for use in the event of engine failure, and the position of these shall be programmed into the area navigation system.

7. REMOTE FLIGHT CREW EXPERIENCE, TRAINING AND CHECKING

7.1 The State of the Operator shall prescribe the minimum remote flight crew experience required for operations by approved single-engine RPA over heavily populated areas.

7.2 The operator's remote flight crew training and checking shall be appropriate to operations over heavily populated areas by approved single-engine RPA, covering normal, abnormal and emergency procedures and, in particular, engine failure, including descent to a forced landing.

9. OPERATOR CERTIFICATION OR VALIDATION

The operator shall demonstrate the ability to conduct operations by approved single-engine RPA over heavily populated areas through a certification and approval process specified by the State of the Operator.

IS 7.2.7. ALTIMETRY SYSTEM PERFORMANCE REQUIREMENTS FOR OPERATIONS IN RVSM AIRSPACE

1. The design of the altimetry system and any errors therein shall be considered in context of the safety of the entirety of the RPAS flight systems; including but not limited to potential loss or latency of the C2 Link, and the continuing valid operation of the detect and avoid (DAA) capability.

2. In respect of groups of RPA that are nominally of identical design and build with respect to all details that could influence the accuracy of height-keeping performance, the height-keeping performance capability shall be such that the total vertical error (TVE) for the group of RPA shall have a mean no greater than 25 m (80 ft.) in magnitude and shall have a standard deviation no greater than $28 - 0.013z^2$ for $0 \leq z \leq 25$ when z is the magnitude of the mean TVE in metres, or $92 - 0.004z^2$ for $0 \leq z \leq 80$ where z is in feet. In addition, the components of TVE shall have the following characteristics:

(a) the mean altimetry system error (ASE) of the group shall not exceed 25 m (80 ft.) in magnitude;

(b) the sum of the absolute value of the mean ASE and of three standard deviations of ASE shall not exceed 75 m (245 ft.); and

(c) the differences between cleared flight level and the indicated pressure altitude actually flown shall be symmetric about a mean of 0 m, with a standard deviation no greater than 13.3 m (43.7 ft.), and in addition, the decrease in the frequency of differences with increasing difference magnitude shall be at least exponential.

3. In respect of RPA for which the characteristics of the airframe and altimetry system fit are unique and so cannot be classified as belonging to a group of RPA encompassed by paragraph 1, the height-keeping performance capability shall be such that the components of the TVE of the RPA have the following characteristics:

(a) the ASE of the RPA shall not exceed 60 m (200 ft.) in magnitude under all flight conditions; and

(b) the differences between the cleared flight level and the indicated pressure altitude actually flown shall be symmetric about a mean of 0 m, with a standard deviation no greater than 13.3 m (43.7 ft.), and in addition, the decrease in the frequency of differences with increasing difference magnitude shall be at least exponential.

IS 4.2.1.7 FORMAT AND CONTENT OF RPAS OPERATOR CERTIFICATE (ROC)

1. PURPOSE AND SCOPE

1.1 The ROC and its associated specific operations specifications shall contain the minimum information required as detailed in the paragraphs below, in a standardized format.

1.2 The ROC and its associated operations specifications shall define the operations for which the operator is authorized including specific approvals, conditions and limitations

2. ROC TEMPLATE

<table>
<tr><th colspan="3">RPAS OPERATOR CERTIFICATE</th></tr>
<tr><td>  </td><td>Sierra Leone[1]</td><td>For use by SLCAA[2]</td></tr>
<tr><td></td><td>Sierra Leone Civil Aviation Authority[3]</td><td></td></tr>
<tr><td>AOC#:[4]</td><td>Operator name:[6]</td><td rowspan="6">Operational points of contact:[10] Contact details, at which operational management can be contacted without undue delay, are listed in _____.[11]</td></tr>
<tr><td></td><td>DBA trading name:[7]</td></tr>
<tr><td>Expiry date:[5]</td><td>Operator address:[8]</td></tr>
<tr><td></td><td>Telephone:[9]</td></tr>
<tr><td></td><td>Facsimile:</td></tr>
<tr><td></td><td>Email:</td></tr>
<tr><td colspan="3">This certificate certifies that _____[12] is authorised to perform commercial air transport operations, as defined in the attached operations specifications, in accordance with the Operations Manual and the _____.[13]</td></tr>
<tr><td>Date of issue:[14]</td><td colspan="2">Name and signature:[15]</td></tr>
<tr><td></td><td colspan="2">Title:</td></tr>
</table>

Notes.—

1. *For use of the State of the Operator.*
2. *Replace by the name of the State of the Operator.*
3. *Replace by the identification of the issuing authority of the State of the Operator.*
4. *Unique ROC number, as issued by the State of the Operator.*
5. *Date after which the ROC ceases to be valid (dd-mm-yyyy).*

6. Replace by the operator's registered name.

7. Operator's trading name, if different. Insert "dba" before the trading name (for "doing business as").

8. Operator's principal place of business address.

9. Operator's principal place of business telephone details, including the country code. Email to be provided if available.

10. The contact details include the telephone numbers, including the country code, and the email address (if available) at which operational management can be contacted without undue delay for issues related to flight operations, airworthiness, remote flight crew competency, dangerous goods and other matters, as appropriate.

11. Insert the controlled document, carried on board, in which the contact details are listed, with the appropriate paragraph or page reference, e.g.:

"Contact details are listed in the operations manual, Gen/Basic, Chapter 1, 1.1" or "... are listed in the operations specifications, page 1" or "... are listed in an attachment to this document".

12. Operator's registered name.

13. Insertion of reference to the appropriate civil aviation regulations.

14. Issuance date of the ROC (dd-mm-yyyy).

15. Title, name and signature of the authority representative. In addition, an official stamp may be applied on the ROC.

3. OPERATIONS SPECIFICATIONS FOR EACH RPAS MODEL

3.1 For each RPA model in the operator's fleet, identified by RPA make, model and variant, the following information shall be included:

(a) issuing authority contact details;

(b) operator name and ROC number;

(c) date of issue and signature of the authority representative;

(d) RPA model;

(e) RPS model;

(f) types and areas of operations; and

(g) special limitations and specific approvals.

3.2 The operations specifications layout referred to in Chapter 4, 4.2.1.8, shall be as follows:

OPERATIONS SPECIFICATIONS

(subject to the approved conditions in the Operations Manual)

Issuing Authority Contact Details[1]

Telephone:	Facsimile:	Email:	
AOC #:[2]	Operator name:[3]	Date:[4]	Signature:
DBA trading name:			
Aircraft Sierra Leone:[5]			
Types of operation: □Passengers □Cargo □Other:[6]			
Area(s) of operation:[7]			
Special limitations:[8]			

Specific Approval:	Yes	No	Description[9]	Remarks
Dangerous goods	□	□		
Low-visibility operations				
Approach and landing	□	□	CAT:[10] ____, RVR: _____m, DH: ___ ft	
Take-off	□	□	RVR:[11] _____m	
Operational credit(s)	□	□	[12]	
RVSM[13] □ N/A	□	□		
EDTO[14] □ N/A	□	□	Threshold time:[15] ____ minutes Maximum diversion time:[15] ___ minutes	
AR navigation specifications for PBN operations	□	□	[16]	
Continuing airworthiness	X	X	[17]	
EFB	□	□	[18]	
Other[19]	□	□		

1. Telephone and contact details of the authority, including the country code. Email to be provided if available.

2. Insert the associated ROC number.

3. Insert the operator's registered name and the operator's trading name, if different. Insert "dba" before the trading name (for "doing business as").

4. Issuance date of the operations specifications (dd-mm-yyyy) and signature of the authority representative.

5. Insert the Commercial Aviation Safety Team (CAST)/ICAO designation of the RPA make, model and series, or master series, if a series has been designated. The CAST/ICAO taxonomy is available at: http://www.intlaviationstandards.org/.

Note— there could be multiple entries in this section

6. Very high level (VHL) operations above FL 600, aerial work, long duration flight, commercial transport, etc.

7. List the geographical area(s) of authorized operation (by geographical coordinates or specific routes, flight information region or national or regional boundaries), as defined by the issuing authority.

8. List the applicable special limitations (e.g. day-only, population density and atitude limitations).

9. List in this column the most permissive criteria for each specific approval (with appropriate criteria).

10. Insert the applicable precision approach category (e.g. CAT II, III). Insert the minimum RVR in metres and decision height in feet. One line is used per listed approach category.

11. Insert the approved minimum take-off RVR in metres, or the equivalent horizontal visibility if RVR is not used. One line per approval may be used if different approvals are granted.

12. Reserved for future use.

13. "Not applicable (N/A)" box may be checked only if the RPA maximum ceiling is below FL 290.

14. Reserved for future use.

15. Reserved for future use.

16. Performance-based navigation (PBN): one line is used for each PBN AR navigation specification approval (e.g. RNP AR APCH), with appropriate limitations listed in the "Description" column.

17. Insert the name of the person/organization responsible for ensuring that the continuing airworthiness of the RPAS is maintained and the regulation that requires the work, i.e. within the ROC regulation or a specific approval (e.g. EC1321/2014, Part M, Subpart G).

18. N/A for RPAS operations.

19. Other authorizations or data can be entered here, using one line (or one multi-line block) per authorization (e.g. special approach authorization, approved navigation performance).

IS 6.5. RPAS RECORDER SYSTEMS

The material in this IS concerns flight recorders intended for installation in RPAS engaged in international air navigation. Recording of RPAS safety critical data will be conducted in both the RPA, on an RPA-RS, and in the RPS, on a RPS-RS. Crash-protected flight recorders on the RPA comprise one or more of the following systems:

— a flight data recorder (FDR),

— an RPA voice recorder (to record voice communications relayed through the RPA),

— an RPA camera recorder (to record data from on-board cameras),

— a data link recorder (DLR).

Flight recorders installed in an RPS should be suitable to the environment where the RPS is located with respect to environmental conditions, security and emergencies that could affect the integrity of the RPS (e.g. fixed location, mobile, separate facility, inside a building, etc.). Where the RPS is carried on board a vehicle, vessel or another aircraft, the RPS-RS shall include crashworthiness and fire protection. Protection of RPS-RS data is addressed in section 6.5.4.

1. GENERAL REQUIREMENTS

1.1 Non-deployable RPA-RS containers shall be painted a distinctive orange colour.

1.2 Non-deployable RPA-RS crash-protected flight recorder containers shall:

(a) carry reflective material to facilitate their location; and

(b) have securely attached an automatically activated underwater locating device operating at a frequency of 37.5 kHz. This device shall operate for a minimum of 90 days.

1.3 The RPA-RS shall be installed so that:

(a) the probability of damage to the recordings is minimized;

(b) there is an aural or visual means for pre-flight checking that the RPA-RS are operating properly; and

(c) if the RPA-RS has an erasure device, the installation shall be designed to prevent operation of the device during flight time or crash impact; and

(d) a remote flight crew-operated erase function shall be provided at the RPS which, when activated, modifies the recording of an RPAS-RS so that it cannot be retrieved using normal replay or copying techniques. The installation shall be designed to prevent activation during flight. In addition, the probability of an inadvertent activation of an erase function during an accident shall also be minimized.

1.4 The RPA-RS shall be installed so as to be powered by the most reliable power source of the RPA or in the case of RPS, the RPS-RS should also be on the most reliable power source, without jeopardizing service to essential or emergency loads.

1.5 The RPAS-RS, when tested by methods approved by the appropriate certificating authority, shall be demonstrated to be suitable for the environmental extremes over which they are designed to operate.

1.6 Means shall be provided for an accurate time correlation between the RPAS-RS recordings.

1.7 The manufacturer shall provide the appropriate certificating authority with the following information in respect of the RPAS-RS:

(a) manufacturer's operating instructions, equipment limitations and installation procedures;

(b) parameter origin or source and equations which relate counts to units of measurement;

(c) manufacturer's test reports; and

(d) detailed information to ensure the continued serviceability of the RPAS-RS.

1.8 The RPAS-RS has three components: the data recording requirements and equipment needed in the RPA; the recording of C2 Link; and the data recording requirements and equipment needed in the RPS. All the data received and transmitted shall be recorded whether it is flight data, audio or image data used to manage the RPA, or flight data transmitted to the RPA. All recorded data shall be time synchronized with UTC, shall not be encrypted (to ensure compatibility with 6.5.7.3) and provided with any documentation needed to extract the data.

1.9 The data frame layout documentation should be in electronic format and recorded on the RPS-RS. In addition, if practicable, depending on the size of the RPA, a copy of the data frame layout documentation pertaining to the RPA-RS data should be recorded on the RPA-RS.

1.10 The use and protection of data recordings and, in particular, accessibility to audio and image data used to manage the flight of the RPA shall be regulated. The provisions in Annex 13, 5.2 and Attachment E are applicable during accident and incident investigations, and the provisions in Annex 19 are applicable for safety management considerations. Provisions specific to the protection of RPAS recordings can be found in 3.3.4 of this Part.

1.11 The data shall be retained for a minimum period of 30 days from the completion of the flight, or flight segment, on the RPS-RS, but considering the possibility for extended, long-endurance, flights, data retention time should be extended accordingly.

1.12 RPA flight data is needed to accurately reconstruct the RPA flight. As referred to in 6.5.1 of this Part, the RPA, based on its MCTOM, and the RPS shall have capabilities to record flight

information. For RPA of a MCTOM of 2 250 kg or less, instead of being recorded on the RPA, this flight data may be transmitted throughout the flight for recording by the RPS-RS.

1.13 If the RPA is required to carry an RPA-RS in accordance with section 6.5.1, the RPS shall separately record the flight data to reconstruct the flight from the data received by the RPS.

1.14 Data relating to the C2 Link between the RPA and RPS shall be recorded on both the RPA, when required to carry an RPA-RS in accordance with 6.5.1, and the RPS in order that the integrity of the C2 Link during the flight can be determined.

2. RPA RECORDER SYSTEM

2.1 According to section 6.5.1 of this Part, for RPA having an MCTOM of less than 2 250 kg, an RPA-RS is not mandatory. As such, the type and size of the RPA-RS installed on such an RPA should be in relation to the size of the RPA and the type of operations in which it is involved. For RPA having an MCTOM of 2 250 kg or more, the same capability of recorder systems as installed on similar size conventional aircraft should be used.

2.2 For RPA having an MCTOM of less than 2 250 kg, where crash and fire protection standards are impractical, flight data should be recorded in such a way that crash and fire protection provisions are commensurate to the risk of losing the flight data as a result of an accident or serious incident.

3. RPA FUNCTIONS TO RECORD

An RPA is comprised of numerous complex systems which may require more and different functions to be recorded than for conventional aircraft of similar size. For RPA having an MCTOM of 2 250 kg or more, the functions that shall be recorded at the RPA, include but are not limited to:

(a) telecommand (C2 uplink information) and telemetry (C2 downlink information) received at and sent from the RPA via the C2 Link;

(b) information needed to accurately reconstruct RPA flight path, speed, attitude, altitude and configuration, at a minimum rate of once a second;

(c) information needed to determine the operating status of RPA systems, to include, at a minimum, flight controls, propulsion, power-supply, navigation and flight modes;

(d) parameters related to C2 Link operation for determining types of link errors, interruptions or failures;

(e) information regarding contingency or emergency situations resulting in warning alerts, for example, GPWS failure, detect and avoid (DAA) failure, on-board fire warning, generator failure, etc.;

(f) images related to any image streaming capability used to manage the RPA.

4. RPS RECORDER SYSTEM

4.1 Data recording capabilities in the RPS should not normally be restricted by recording system mass and power limitations such as those that exist in conventional aircraft. As such, recorder capabilities can be expanded and larger amounts of data could be recorded with little to no limitations on the duration of recordings. Furthermore, crash protection for RPS-RS in the RPS may not be required. The recording of "duplicate data" should be considered in order to enable reconstruction of uplink errors in the case where such errors occur during the accident or incident flight. In the case of flight data streaming from the RPA, the RPS-RS should be able to record these large amounts of flight data.

4.2 An RPS may control several RPA sequentially during various phases of their flight, and a single RPA may utilize several RPS sequentially over the period of a particular flight. Flight data needs to be recorded in order to reconstruct the air situation display that was used to control each individual RPA. In the case of an RPS sequentially controlling multiple RPA, the data exchanged with each RPA needs to be identifiable in the recorded flight data.

4.3 In the case of several RPS controlling a single RPA during its entire flight, data needs to be recorded in order to reconstruct the telecommand (C2 uplink) information that was used to manage the RPA.

4.4 The determination of the parameters and the parameter list specifications which are to be recorded should be done in relation to the type of operation in which the RPAS is involved.

5. RPS FUNCTIONS TO RECORD

5.1 The RPS can range from a hand-held device up to a multi-console station. It may be stationary (installed in a shipping container or large operational control centre) or mobile (installed in a vehicle/ship/aircraft). Parameters that should be recorded at the RPS are as follows:

(a) uplink and downlink parameters received at and sent from the RPS via C2 Link;

(b) parameters needed to accurately determine what inputs the remote pilot made to manage the RPA. In cases where the remote pilot has direct attitude control of the RPA, attitude data shall be recorded at an appropriate rate;

(c) parameters relating to significant remote pilot actions, for example: C2 Link switchovers, RPS handover initiations/completions/attempts as well as the associated time of their occurrences respectively, the actual state of critical RPS systems including switch/control positions and display settings;

(d) parameters needed to accurately reconstruct what was displayed to the remote pilot during the occurrence flight in terms of flight path, speed, altitude, attitude and configuration of the RPA;

(e) images related to any image streaming capability used to manage the RPA shall be recorded; and

(f) data link communications applications, including digital communications with air traffic management (ATM), having an effect on the navigation and flight profile of the RPA.

5.2 To investigate if and how human factors contributed to the outcomes of the occurrence, the operational environment in which the remote pilots work, including the audio and image data used to manage the RPA, shall be recorded.

5.3 The RPS environment is equivalent to the flight deck of a conventional aircraft and as such, all audio shall be recorded. This will include the general environment audio and any operational discussions with ATC, other pilots, operations centre/flight dispatch discussions and all telephone calls.

5.4 An area microphone should be used to record the general environment audio, and in multi-pilot operations pilot channel segregation of operating personnel should be incorporated.

5.5 Non-audio communications should also be recorded. For example, communications such as text messages and communications similar to controller-pilot data link communications (CPDLC) and/or communication, navigation and surveillance (CNS) ATM messages.

5.6 Image data from the RPS needs to provide information about non-verbal communications, remote pilot actions and other external distractions that may have contributed to the occurrence. Image data used to manage the RPA will also provide information about what was effectively displayed to the remote pilot in cases where parameters from flight data recordings were not recorded properly. The image data used to manage the RPA would also clarify what the remote pilot saw as captured by an on-board RPA camera and relayed to the RPS via the C2 Link in cases where the RPA is managed by means of video displayed to the remote pilot.

6. INSPECTION OF RPAS RECORDER SYSTEMS

6.1 The built-in test features for the RPA-RS shall be monitored by automatic checks.

6.2 RPA-RS shall have recording inspection intervals of one year. Subject to the approval from the appropriate regulatory authority, this period may be extended to two years provided these systems have demonstrated a high integrity of serviceability and self-monitoring.

6.3 Recording inspections shall be carried out as follows:

(a) an analysis of the recorded data from the RPA-RS shall ensure that the recording system operates correctly for the nominal duration of the recording;

(b) the recording of the parameters from a complete flight shall be examined in engineering units to evaluate the validity of all recorded functions. For flights over 2 hours, such a review shall include each phase of flight including a minimum of 30 minutes at cruise or loiter. Particular attention shall be given to parameters from sensors dedicated to the RPA-RS. Parameters taken from the RPA's electrical bus system need not be checked if their serviceability can be detected by other RPA systems;

(c) the readout facility shall have the necessary software to accurately convert the recorded values to engineering units and to determine the status of discrete signals;

(d) an examination of the images used to manage the RPA, and required to be recorded, shall be carried out by replay of the image recording; and

(e) if a system of cameras is installed in the RPA or RPS to record images, this system shall record test images from each RPAS source and from relevant external sources to ensure that all required images meet recording quality standards.

6.4 RPA-RS and RPS-RS shall be considered unserviceable if there is a significant period of poor quality data, unintelligible signals, or if one or more of the mandatory functions is not recorded correctly.

6.5 The most recent report of the recording inspection shall be made available on request to regulatory authorities for monitoring purposes.