

Draft

JARUS – ORG

Version 0.17

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consultation

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EXPLANATORY NOTE

1. Introduction

1.1 This draft JARUS-ORG have been compiled by JARUS WG 2 and underwent a written consultation procedure inside that group from 06 July to 23 August 2013. All the 27 received comments were disposed by WG 2 at their meeting on 07-09 October 2013.

On October 10th 2013 the JARUS Plenary agreed to launch a formal internal consultation of all JARUS members on draft JARUS-ORG v0.13.

This consultation provided 25 comments which have been individually replied through an internal JARUS Comment Response Document (CRD). The vast majority of such comments has been accepted or at least partially accepted.

WG 2 reached unanimous consensus on the this draft JARUS-ORG which is proposed to public external consultation through the web.

All comments received will be responded to and incorporated in a Comment Response Document (CRD), to be published simultaneously with the official release of the first edition of JARUS-ORG

1.2 JARUS-ORG recommendations ultimately aim at governing oversight of organisations involved in:

- The design, production, and continuing airworthiness of Remotely Piloted Aircraft Systems (RPAS);
- RPAS operations;
- Training of remote pilots for RPAS;
- Provision of Communication (COM) Service for command and control;
- Provision of Remote Pilot Station (RPS) services.

The content of this draft version 0.16 of JARUS-ORG is limited to RPAS operators (Part ORR), approved training organisations for remote pilots (Part ATO) and related authority recommendations (Part ARR). It also contains Part GOR, related to general recommendations applicable to all organisations involved in RPAS.

1.3 This draft JARUS-ORG is based on the following main assumptions:

1.3.1 Scope of JARUS-ORG includes both Visual Line Of Sight (VLOS) and Beyond Visual Line of Sight (BVLOS) in non-segregated airspace, and with equipment for 'command and control (C2) link, either directly managed by the RPAS operator, or provided and operated by a C2 link service provider, contracted by the RPAS operator.

1.3.2 This scope of this JARUS-ORG is wider than the envisaged scope of future ICAO SARPs, which according to the 14th meeting of the ICAO UAS Study Group (UAS SG/14) should be limited IFR BVLOS in controlled airspace (above 500 ft except for take-off and landing).

1.3.3 Out of scope of JARUS-ORG are organisations involved in:

- a. Model aircraft exclusively used for air display, recreational, sport or competition activity;
- b. Toy aircraft (suited to be used by a child of less than 14 years) falling under the definition of aircraft;
- c. Indoor operations;
- d. State flights (military or governmental non-military);
- e. Optionally piloted aircraft; and
- f. Aircraft with no pilot on-board, but carrying passengers.

- 1.3.4 Mounting specific equipment on board of model aircraft or toy aircraft, like e.g. cameras or sensors, does not turn them into RPAS unless they are used for aerial work (alias 'specialized operations' -SPO).
- 1.3.5 States remain responsible to regulate safety of civil aviation (e.g. 'due regard' from State flights or hazards stemming from model aircraft and toy aircraft), even in the absence of harmonised recommendations by JARUS.
- 1.3.6 RPAS operators, may contract a C2 link service provider, to provide connectivity for command and control. In this case the C2 link service provider (whether offering ground network, satellite communications (SATCOM) or combination of both) is equally under safety oversight by a competent authority, directly (i.e. the COM SP is an organisation certified by the authority) or indirectly (i.e. the RPAS operator is responsible and liable to manage the contracted COM SP through its safety management system).
- 1.3.7 After the initial issue of JARUS-ORG (limited to Part ARR, Part GOR, Part ORR and Part ATO), JARUS intends to develop recommendations for RPAS maintenance organisations (Part RMO) in the second edition and later for RPAS design organisations (RDO), RPAS production organisations (RPO) and other organisations involved in RPAS.
- 1.3.8 The RPAS Operator Certificate (ROC; and related OPS SPECS and OPS manual) are the basic enablers for safety oversight by the State of Operator, especially in the case that the RPA is not covered by a certificate of airworthiness (CofA).
- 1.3.9 For RPAS operations the traditional taxonomy (commercial versus non-commercial) is not a driving factor. Instead recommendations of growing complexity according to the impact on safety of third persons on the surface and in the air are recommended for:
 - a. Natural persons (extremely limited administrative burden);
 - b. Organisations intending to operate in VLOS or Extended Visual Line of Sight (E-VLOS);
 - c. Organisations intending to operate beyond VLOS but when the RPAS operator is in direct control of the C2 link equipment;
 - d. Organisations intending to contract C2 link service providers;
 - e. Organisations involved in commercial air transport (CAT) (e.g. freight) by RPAS;
 - f. Organisations involved in the transport of dangerous goods.
- 1.3.10 Consequently, certification of RPAS operators is almost always required, even in the case of a natural person using RPAS for civil (professional) purposes (e.g. a farmer spraying her/his crops). Exceptions are operations representing a minimal risk for society, like balloons or kites of less than 0.5 kg below 500 ft AGL.
- 1.3.11 The structure of JARUS-ORG is based on the above taxonomy for the RPAS operations.
- 1.3.12 Agreements between RPAS operators and service providers (C2 link or only RPS) are subject to approval by the competent authority established by the State of Operator.

2. Content of this draft JARUS-ORG

- 2.1 In this proposed JARUS-ORG, the '**FOREWORD**' is explanatory and lays down the scope of the initial issue of recommended JARUS-ORG: recommendations for organisations involved in RPAS operations and related training of remote pilots.
- 2.2 the section '**General recommendations**' lays down the whole JARUS-ORG subject matter and scope. It includes definitions and highlights the need for States oversight capabilities. Authority recommendations for discharging their certification and oversight responsibilities, and empowering of inspectors are proposed. Furthermore, proposed recommendations for organisations involved in RPAS activities, refers to one or more applicable JARUS-ORG Annexes (II-IX). These Annexes would be completed in later JARUS-ORG editions.
- 2.3 **JARUS-ORG Annex I, Part-ARR** contains recommendations for authorities to deal with RPAS matters. It comprises Subpart GEN, Subpart OPS and Subpart ATO:
- a. Subpart GEN (general) lays down the recommended general recommendations regarding the scope, oversight documentation and immediate reaction to a safety problem (Section 1) as well as management (Section 2), oversight, certification and enforcement (Section 3).
 - b. Subpart OPS (operations) , oversight of undertakings intending to operate RPAS, includes recommendations for certification of RPAS undertakings (Section 1), additional approval recommendations for RPAS operators (Section 2), additional approval recommendations for air transport RPAS operators (Section 3; reserved in first edition of JARUS-ORG) and recommended procedures for authorisation by the competent authority to fly in the airspace under sovereignty of the State of Operator (Section 4).
 - c. Subpart ATO, oversight of approved training organisations, includes recommendations for certification of ATO (Section 1), specific recommendations for oversight of approved training organisations (Section 2) and specific recommendations related to the qualification of flight simulation training devices (FSTDs) (Section 3).
- 2.4 **JARUS-ORG Annex II, Part-GOR** contains general recommendations for undertakings involved in RPAS activities, comprising Subpart GEN and Subpart MAN:
- a. Subpart GEN (general) lays down general recommendations to be followed by an undertaking involved in RPAS activities. It contains inter alia provisions to apply for an RPAS operator certificate, changes thereto, facility recommendations, immediate reaction to a safety problem and record-keeping.
 - b. Subpart MAN (management) includes recommendations for responsibilities of the RPAS operator organisation (more than one person), in particular for the competence of personnel and contracted activities.
- 2.5 **JARUS-ORG Annex VI, Part-ORR** contains specific recommendations for RPAS operators. It comprises Subpart OPS (recommendations for operator), Subpart OCA (certification of the operator), Subpart SEC (security), Subpart CRW (crew). In later JARUS-ORG editions there will be also Subpart ATR (recommendations for operators offering air transport through RPAS). In particular:
- a. Subpart OPS, recommendations for RPAS operators, includes general recommendations (Section 1), recommendations for undertaking intending to operate RPAS at very low level (VLL) in VLOS (Section 2), additional recommendations for organisations intending to operate RPAS in E-VLOS (Section 3), additional recommendations for organisations intending to operate RPAS in BVLOS (Section 4), recommendations for the management of organisations intending to operate RPAS in BVLOS (Section 5). Finally Section 6 contains requirements for RPAS operators wishing to contract C2 link service providers.
 - b. Subpart OCA on RPAS operator certificate and authorisation, includes recommendations for RPAS operator certificate (Section 1) and authorisations (Section 2).

- c. Subpart SEC, recommends security requirements for organisations, lays down general principles and responsibilities for organisations intending to carry out RPAS BVLOS operations. These recommendations are comprised of physical security of the installed RPS during operational use and when not in use, as well as security of portable RPS.
 - d. Subpart CRW, RPAS crew, includes recommendations for RPAS organisations employing or engaging remote crew: crew composition and resource management (Section 1), RPAS operator training (Section 2), crew responsibilities (Section 3) and additional recommendations for organisations employing or engaging additional RPAS crew (Section 4). It contains inter alia provisions for training and checking, initial training, RPAS operator conversion training and differences, recurrent or refresher training.
 - e. Subpart ATR, air transport, is reserved in first edition of JARUS-ORG.
- 2.7 Later JARUS-ORG editions will include Annex VII Part-CSP (C2 link service providers), and Annex VIII Part-RPS (providers of remote pilot station services).
- 2.9 **JARUS-ORG Annex IX, Part-ATO**, is applicable when formal remote pilot licences (RPL) or aircraft maintenance licences (AML) are required. It contains recommendations for Approved Training Organisations, comprising Subpart GEN, Subpart PTO and Subpart MTO:
- a. Subpart GEN, includes recommended general requirements for the scope, application, personnel requirements, record-keeping, training programme and RPAS operations manual (Section 1), and requirements for management system and related personnel (Section 2).
 - b. Subpart PTO, requirements for remote pilot training organisations, includes proposed requirements for PTO (Section 1), requirements for organisations operating flight synthetic training devices (FSTDs) (Section 2) and requirements for the qualification of FSTDs (Section 3).
 - c. Subpart MTO, maintenance training organisations, is reserved in first edition of JARUS-ORG.

**Requirements for organisations
involved in
design, production, maintenance,
continuous airworthiness,
operations, service provision
and training
for
Remotely Piloted Aircraft Systems
(RPAS)**

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FOREWORD

1. The competent authorities for civil aviation of certain ICAO Contracting States (referred to as the Joint Authorities for Rulemaking on Unmanned Systems (JARUS)), have agreed these recommendations (JARUS-ORG) with a view to provide a harmonised basis to regulate organisations involved in the life cycle of civil RPAS, namely:

- (a) design and production organisations of RPAS, and related products, parts and appliances;
- (b) maintenance and continuous airworthiness organisations;
- (c) RPAS operators;
- (d) ATOs;
- (e) Providers of remote pilot services and communications services for RPAS including for command and control (C2).

2. This JARUS-ORG may be used by the competent authorities to develop requirements applicable to organisations involved in RPAS activities in their respective States or Regions.

3. This initial issue of JARUS-ORG contains recommendations for organisations involved in RPAS operations and related training of remote pilots.

4. Future editions of JARUS-ORG may contain recommendations for organisations involved in RPAS design, production, maintenance, continuous airworthiness, and in the provision of RPAS related services.

1. GENERAL REQUIREMENTS

ORG.GEN.005 Subject matter and scope

This JARUS-ORG lays down recommended requirements for organisations involved in design, production, maintenance, continuous airworthiness, operations, service provisions of C2 link, service provision of RPS or training for RPAS used for the purpose of air transport or aerial work.

ORG.GEN.010 Definitions

- (a) 'Aerial work' means an RPAS operation in which a Remotely Piloted Aircraft (RPA) is used for specialised services such as agriculture, construction, photography, surveying, observation and patrol, search and rescue, aerial advertisement, etc.
- (b) 'Air transport (ATR) operation' means an RPAS operation to transport passengers, cargo or mail.
- (c) 'Beyond visual line of sight (BVLOS)' means an RPAS operation not compliant with either the VLOS or E-VLOS definition.
- (d) 'Extended Visual Line of Sight (E-VLOS)' means RPAS operations where the remote pilot is supported by one or more RPA observers and in which the RPAS crew maintains direct unaided visual contact with the RPA to manage its flight, to remain well clear of other traffic and to avoid collisions;
- (e) 'Model aircraft' means a non-human-carrying aircraft capable of sustained flight in the atmosphere and used exclusively for air display, recreational, sport or competition activity.
- (f) 'Occurrence' means an operational interruption, defect, failure condition or other irregular circumstance that has or may have influenced flight safety whether or not resulting in an accident or serious incident.
- (g) 'organisation' means any legal entity, whether profit-making or not, involved in RPAS activities.

- (h) 'Remote Pilot-in-command (RPIC)' means the pilot designated by the RPAS operator or the owner or the lessee of the RPAS, as being in command and charged with the safe conduct of a flight.
- (i) 'qualified entity' means a body accredited by a competent authority, which may assess the safety of RPAS or related organisations or persons.
- (j) 'RPA Observer' means a trained and competent person designated by the RPAS operator who, by visual observation of the RPA, assists the remote pilot in the safe conduct of the flight.
- (k) 'Remote pilot' means a person charged by the operator with duties essential to the operation of a remotely piloted aircraft and who manipulates the flight controls, as appropriate, during flight time.
- (l) 'Remotely piloted aircraft (RPA)' means an unmanned aircraft which is piloted from a remote pilot station.
- (m) 'Remotely piloted aircraft system (RPAS)' means a remotely piloted aircraft, its associated remote pilot station(s), the required command and control links and any other components as specified in the type design.
- (n) 'RPAS crew member' means a trained and competent person charged with duties essential to the operation of an RPAS during a flight duty period.
- (o) 'RPAS operator' means a natural person or organisation engaged in or offering to engage in RPA operation.
- (p) 'RPAS operator certificate (ROC)' means a certificate authorising an undertaking to engage in RPAS operation.
- (q) 'Remote pilot station (RPS)' means the component of the remotely piloted aircraft system containing the equipment used to pilot the remotely piloted aircraft.
- (r) 'service providers' means any organisation providing services to RPAS operators.
- (s) 'State RPAS flights' means activities or services carried out for military, customs, police, search and rescue, fire-fighting, coastguard or similar purposes, under the authority of one State.
- (t) 'Toy aircraft' means any object capable of sustained flight in the atmosphere but not equipped with internal combustion engine, intended to be used by a child of less than 14 years of age.
- (u) 'Undertaking' means any natural person or organisation, whether profit-making or not, or any official body whether having its own personality or not.
- (v) 'Very low level (VLL)' means RPAS operations below the minimum altitudes prescribed for manned aviation.
- (w) 'Visual Line of Sight (VLOS)' means RPAS operations in which the remote pilot maintains direct unaided visual contact with the remotely piloted aircraft to manage its flight, to remain well clear of other traffic and to avoid collision.

ORG.GEN.015 Oversight capabilities

States should designate one or more entities as the competent authority with the necessary powers and allocated responsibilities for the certification and oversight of organisations involved in RPAS manufacture, operations and related training.

ORG.GEN.020 Authority requirements

Competent authorities should discharge their certification and oversight responsibilities, in compliance with the recommendations in Annex I to this JARUS-ORG.

ORG.GEN.025 Empowering of inspectors

Personnel authorised by the competent authority to carry out certification and oversight tasks should be empowered to perform at least the following tasks:

- (a) examine the records, data, procedures and any other material relevant to the execution of the certification and oversight task;
- (b) take copies of or extracts from such records, data, procedures and other material;
- (c) ask for an oral explanation on the operating site;
- (d) enter relevant premises, operating sites, RPS or means of transport;
- (e) perform audits, investigations, assessments, inspections, including ramp inspections, RPS inspections and unannounced inspections;
- (f) take or initiate enforcement measures as appropriate.

ORG.GEN.030 Inspection of foreign RPAS operators

Reserved

ORG.GEN.035 recommendations for organisations involved in RPAS activities

Organisations involved in RPAS activities should comply with the recommendations contained in one or more of the following Annexes to this JARUS-ORG:

- (a) Annex II for general recommendations applicable to any organisation involved in RPAS activities;
- (b) Annex III for specific recommendations applicable to organisations involved in design of RPAS, RPA, RPS or their parts and appliances;
- (c) Annex IV for specific recommendations applicable to organisations involved in production of RPAS, RPA, RPS or their parts;
- (d) Annex V for specific recommendations applicable to organisations involved in maintenance and continuous airworthiness of RPAS, RPA, RPS or their parts;
- (e) Annex VI for specific recommendations applicable to undertakings involved in operations of RPAS, for air transport or aerial work;
- (f) Annex VII for specific recommendations applicable to organisations providing communication services to RPAS operators;
- (g) Annex VIII for specific recommendations applicable to organisations providing remote pilot services to RPAS operators;
- (h) Annex IX for specific recommendations applicable to organisation providing training to personnel used by the organisations mentioned in (d) to (g).

JARUS-ORG Annex I

2. PART-ARR

Recommendations for authorities

2.1. Subpart GEN – GENERAL RECOMMENDATIONS

2.1.1. Section 1 – GENERAL

ARR.GEN.105 Scope

This Annex establishes recommendations for the administration and management system to be fulfilled by the competent authorities for the implementation of safety oversight regarding RPAS.

ARR.GEN.110 Oversight documentation

The competent authority should provide all legislative acts, standards, rules, technical publications and related documents to relevant personnel in order to allow them to perform their tasks and to discharge their responsibilities.

ARR.GEN.115 Immediate reaction to a safety problem

- (a) The competent authority should implement a system to appropriately collect, analyse and disseminate RPAS related safety information.
- (b) The competent authority, based on the information referred to in (a), should take adequate measures to address an identified safety problem.
- (c) Measures taken under (b) should immediately be notified to all persons or organisations which need to comply with them. The competent authority should also notify those measures, when combined action is appropriate, to the other competent authorities concerned.

2.1.2. Section 2 – MANAGEMENT

ARR.GEN.200 Management system

- (a) The competent authority should establish and maintain a management system, including as a minimum:
 - (1) documented policies and procedures to describe its organisation. The procedures should be kept up-to-date and serve as the basic working documents within that competent authority for all related tasks;
 - (2) a sufficient number of personnel to perform its tasks and discharge its responsibilities. Such personnel should be qualified to perform their allocated tasks and have the necessary knowledge, experience, initial and recurrent training to ensure continuing competence;
 - (3) a function to monitor compliance of the management system with the relevant requirements and adequacy of the procedures including the establishment of an internal audit process and a safety risk management process. Compliance monitoring should include a feedback system of audit findings to the senior management of the competent authority to ensure implementation of corrective actions as necessary; and
 - (4) a person or group of persons, ultimately responsible to the senior management of the competent authority for the compliance monitoring function.
- (b) The competent authority should, for each field of activity, including management system, appoint one or more persons with the overall responsibility for the management of the relevant task(s).

ARR.GEN.210 Allocation of tasks to qualified entities

(a) Tasks related to the initial certification or continuing oversight of products, persons or organisations involved in RPAS manufacture, operations or training may be allocated by competent authorities to qualified entities. When allocating tasks, the competent authority should ensure that it has:

- (1) put a system in place to initially and continuously assess that the qualified entity is suitable for the allocated task. This system and the results of the assessments should be documented.
- (2) established a documented agreement with the qualified entity, approved by both parties at the appropriate management level, which clearly defines:
 - (i) the tasks to be performed;
 - (ii) the declarations, reports and records to be provided;
 - (iii) the technical conditions to be met in performing such tasks;
 - (iv) the related liability coverage;
 - (v) the protection given to information acquired in carrying out such tasks; and
 - (vi) the relation to any RPAS industry or other organisation which can lead to a conflict of interest.

(b) The competent authority should ensure that the internal audit process and safety risk management process required by ARR.GEN.200(a)(3) covers all certification or continuing oversight tasks performed on its behalf by qualified entities.

(c) The competent authority may grant to accredited qualified entities the privilege of being contracted by other organisations or persons and thereafter issue recommendations for the competent authority or reports, assessments or results of evaluations.

ARR.GEN.220 Changes in the management system

The competent authority should have a system in place to identify changes that affect its capability to perform its tasks and discharge its responsibilities. This system should enable it to take action as appropriate to ensure that its management system remains adequate and effective.

ARR.GEN.230 Record-keeping

(a) The competent authority should establish a system of record-keeping providing for adequate storage, accessibility and reliable traceability of:

- (1) the management system's documented policies and procedures;
- (2) training, qualification and authorisation of its personnel;
- (3) the allocation of tasks, covering the elements required by ARR.GEN.205 as well as the details of tasks allocated;
- (4) certification processes and continuing oversight of certified undertakings;
- (5) findings, corrective actions and date of action closure;
- (6) enforcement measures taken; and
- (7) safety information and follow-up measures.

(b) The competent authority should maintain a list of all undertaking certificates it issued.

(c) All records should be kept for a minimum period of 5 years, without prejudice subject to data protection law applicable in the State.

2.1.3. Section 3 – OVERSIGHT, CERTIFICATION AND ENFORCEMENT

ARR.GEN.300 Initial certification procedure

- (a) Upon receiving an application for the initial issue of a certificate or other form of approval for an undertaking, the competent authority should verify the undertaking's compliance with the applicable requirements.
- (b) When satisfied that the undertaking is in compliance with the applicable requirements, the competent authority should issue the certificate(s) or other form of approval, in the form and manner established by the competent authority.
- (c) The certificate(s) or other form of approval should be issued for an unlimited duration.
- (d) The privileges and scope of the activities that the undertaking is approved to conduct should be specified in the terms of approval.
- (e) In the case of other forms of approvals, the authority may issue such approval for a limited duration of time.

ARR.GEN.310 Oversight

- (a) The competent authority should verify:
 - (1) compliance with the requirements applicable to undertaking prior to the issue of an undertaking certificate, licence, authorisation or approval, as applicable;
 - (2) continued compliance with the applicable requirements of undertakings it has certified, licensed, authorised or approved;
 - (3) implementation of appropriate safety measures mandated by the competent authority as defined in ARR.GEN.135 (b) and (c).
- (b) This verification should:
 - (1) be supported by documentation specifically intended to provide personnel responsible for safety oversight with guidance to perform their functions;
 - (2) provide the persons and undertakings concerned with the results of safety oversight activity;
 - (3) be based on audits and inspections, including unannounced inspections at the undertaking premises, take-off or landing site or at the RPS; and
 - (4) provide the competent authority with the evidence needed in case further action is required, including the measures foreseen by ARR.GEN.350 and ARR.GEN.355.
- (c) The scope of oversight defined in (a) and (b) should take into account the results of past oversight activities and the safety priorities.
- (d) The competent authority should collect and process any information deemed useful for oversight, including for unannounced inspections.

ARR.GEN.320 Oversight Programme

- (a) The competent authority should establish and maintain an oversight programme covering the oversight activities required by ARR.GEN.300.
- (b) For undertakings certified, licenced, authorised or approved by the competent authority, the oversight programme should be developed taking into account the specific nature of the undertaking, the complexity of its activities, the results of past certification and oversight activities required by ARR.GEN and should be based on the assessment of associated safety risks. It should include within each oversight planning cycle:

- (1) audits and inspections, including unannounced inspections as appropriate; and
- (2) meetings between the accountable manager of the organisation or the natural person holding the certificate and the competent authority, to ensure both remain informed of significant issues, convened if necessary.
- (c) For undertakings certified, licensed, authorised or approved by the competent authority an oversight planning cycle not exceeding 60 months shall be applied.
- (d) The oversight programme should include records of the dates when audits, inspections and meetings are due and when such audits, inspections and meetings have been carried out.

ARR.GEN.330 Oversight cycle

- (a) For organisations certified, licensed, authorised or approved by the competent authority an oversight planning cycle not exceeding 36 months shall be applied.
- (b) The oversight planning cycle may be reduced if there is evidence that the safety performance of the organisation has decreased.
- (c) The oversight planning cycle may be extended to a maximum of 48 months if the competent authority has established that, during the previous 36 months:
 - (1) the organisation has demonstrated an effective identification of aviation safety hazards and managed the associated risks;
 - (2) the organisation has continuously demonstrated under ORO.GEN.130 that it has full control over all changes;
 - (3) no level 1 findings have been issued; and
 - (4) all corrective actions have been implemented within the time period accepted or extended by the competent authority as defined in ARO.GEN.350 (d)(2).
- (d) The oversight planning cycle may be further extended to a maximum of 60 months if, in addition to the above, the organisation has established, and the competent authority has approved, an effective continuous reporting system to the competent authority on the safety performance and regulatory compliance of the organisation itself.

ARR.GEN.340 Change procedure

- (a) To enable an organisation to implement minor changes without prior competent authority approval, the competent authority should approve the procedure submitted by the organisation defining the scope of such changes and describing how such changes will be managed and notified.
- (b) For changes not requiring prior approval, the competent authority should assess the information provided in the notification sent by the undertaking in accordance with ORO.GEN.130 to verify compliance with the applicable requirements. In case of any non-compliance, the competent authority should:
 - (1) notify the undertaking about the non-compliance and request further changes;
 - (2) in case of level 1 or level 2 findings, act in accordance with ARO.GEN.350.

ARR.GEN.350 Approval of changes

- (a) Upon receiving an application for a change that requires prior approval, the competent authority should verify the undertaking's compliance with the applicable requirements before issuing the approval for the change.
- (b) The competent authority should prescribe the conditions under which the undertaking may operate during the change, unless the competent authority determines that the undertaking's certificate needs to be suspended.
- (c) When satisfied that the undertaking is in compliance with the applicable requirements, the competent authority should approve the change.

- (d) Without prejudice to any additional enforcement measures, when the undertaking implements changes requiring prior approval without having received competent authority approval as defined in (a), the competent authority should suspend, limit or revoke the organisation's certificate or other form of approval or take any other enforcement measure allowed by the law applicable in the State.
- (e)

ARR.GEN.360 Findings and corrective actions - organisations

- (a) The competent authority should have a system to analyse findings for their safety significance.
- (b) A level 1 finding should be issued by the competent authority when any significant non-compliance is detected with the applicable requirements, with the organisation's procedures and RPAS manuals or with the terms of an approval or certificate which seriously hazards flight safety. The level 1 findings should include, inter-alia:
 - (1) failure to give the competent authority access to the organisation's facilities or operating sites during normal operating hours and after two written requests;
 - (2) obtaining or maintaining the validity of the organisation certificate by falsification of submitted documentary evidence;
 - (3) evidence of malpractice or fraudulent use of the organisation certificate; and
 - (4) the lack of an accountable manager.
- (c) A level 2 finding should be issued by the competent authority when any non-compliance is detected with the applicable requirements, with the organisation's procedures and RPAS manuals or with the terms of an approval or certificate which could lower safety.
- (d) When a finding is detected during oversight or by any other means, the competent authority should, without prejudice to any additional action required by applicable law, communicate the finding to the organisation in writing and request corrective action to address the non-compliance(s) identified. Where relevant, the competent authority should inform the State in which the RPA is registered or the State of the Operator or the authority competent for oversight of other organisation.
- (e) In the case of level 1 findings the competent authority should take immediate and appropriate action to prohibit or limit activities, and if appropriate, it should take action to revoke the certificate or other form of approval or to limit or suspend it in whole or in part, depending upon the extent of the level 1 finding, until successful corrective action has been taken by the organisation.
- (f) In the case of level 2 findings, the competent authority should:
 - (1) grant the organisation a corrective action implementation period appropriate to the nature of the finding that in any case initially should not be more than 3 months. At the end of this period, and subject to the nature of the finding, the competent authority may extend the 3 month period subject to a satisfactory corrective action plan agreed by the competent authority; and
 - (2) assess the corrective action and implementation plan proposed by the organisation and, if the assessment concludes that they are sufficient to address the non-compliance(s), accept these.
- (g) Where an organisation fails to submit an acceptable corrective action plan, or to perform the corrective action within the time period accepted or extended by the competent authority, the finding should be raised to a level 1 finding and action taken as laid down in (e).

(h) The competent authority should record all findings it has raised or that have been communicated to it and, where applicable, the enforcement measures it has applied, as well as all corrective actions and date of action closure for findings.

(i) Without prejudice to any additional enforcement measures, when the competent authority identifies any non-compliance with the applicable requirements by an organisation certified or approved or authorised by the competent authority established by another State(s), it should inform that competent authority and provide an indication of the level of finding.

ARR.GEN.370 Findings and enforcement measures – persons

(a) If, during oversight or by any other means, evidence is found by the competent authority that shows a non-compliance with the applicable requirements by a person holding a licence, certificate, rating or attestation, the competent authority should take appropriate action.

(b) If, during oversight or by any other means, evidence is found showing a non-compliance with the applicable requirements by a person involved in activities related to RPAS, but not holding a licence, certificate, rating or attestation, the competent authority that identified the non-compliance should take any enforcement measures necessary to prevent the continuation of that non-compliance.

2.2. Subpart OPS — OVERSIGHT OF UNDERTAKINGS OPERATING OR INTENDING TO OPERATE RPAS

2.2.1. Section 1 — CERTIFICATION OF RPAS UNDERTAKINGS

ARR.OPS.100 Issue of the RPAS operator certificate

- (a) The competent authority should issue the ROC when satisfied that the undertaking intending to operate RPAS has demonstrated compliance with the elements required in ORR.OPS.300.
- (b) The certificate should include the associated operations specifications.

2.2.2. Section 2 — ADDITIONAL APPROVALS FOR RPAS OPERATORS

ARR.OPS.200 Service agreements

In addition to the recommendations in Section 1 above, the competent authority should approve service agreements between RPAS operators and:

- (a) service providers of C2 link;
- (b) providers of remote pilot station services; or
- (c) service providers of other safety relevant services.

ARR.OPS.210 Approval of service agreements

The competent authority should approve the service agreement when satisfied that the RPAS operator:

- (a) has established a contract and suitable service level agreement with a service provider certified by its competent authority;
- (b) has established with the certified service provider suitable arrangements for exchange of safety related information; or
- (c) in case of non-certified service providers has established proper arrangements to oversee the safety of the provided services through the safety management system of the RPAS operator.

ARR.OPS.220 Service level agreements with C2 link SPs

Reserved

ARR.OPS.230 Service level agreements with providers or remote pilot station services

Reserved

ARR.OPS.240 Specific approval procedure

- (a) Upon receiving an application for the issue of a specific approval or changes thereof, the competent authority should assess the application in accordance with the relevant requirements and conduct, where relevant, an appropriate inspection of the RPAS operator.
- (b) When satisfied that the RPAS operator has demonstrated compliance with the applicable requirements, the competent authority should issue or amend the specific approval.
- (c) The specific approval should be listed in the operations specifications.

ARR.OPS.250 Determination of local area

The competent authority may determine a local area for the purpose of training in RPAS flight and related checking requirements.

2.2.3. *Section 3 – ADDITIONAL APPROVALS FOR AIR TRANSPORT RPAS OPERATORS*

Reserved in first edition of JARUS-ORG

2.2.4. *Section 4 – PROCEDURES FOR AUTHORISATION BY THE COMPETENT AUTHORITY TO FLY IN THE AIRSPACE UNDER SOVEREIGNTY OF THE STATE OF OPERATOR*

ARR.OPS.400 Operations within the airspace under sovereignty of the State of Operator

The competent authority of the State of Operator should define the scope and privileges granted to a certified RPAS operator:

- (a) to fly without further administrative approval process when in compliance with the operations specifications attached to the ROC and with the RPAS operations manual;
- (b) limited to the airspace under the sovereignty of the State of Operator.

ARR.OPS.410 Permit to fly

The competent authority may issue the authorisations for a single flight or series of flights or for limited calendar duration, beyond the privileges listed in the operations specifications attached to the ROC, or to entities other than certified RPAS operators.

ARR.OPS.420 Issuance of the authorisation

- (a) Upon receiving an application for the authorizations in ARR.OPS.400 and ARR.OPS.410, the competent authority should verify the RPAS operator's compliance with the applicable requirements.
- (b) When satisfied that the RPAS operator is in compliance with the applicable requirements, the competent authority should issue the authorisation(s), in a form and manner established by it. The RPAS operations that the RPAS operator is authorised to conduct shall be specified in the terms of the authorisation.

2.3. **Subpart** ATO — OVERSIGHT OF APPROVED TRAINING ORGANISATIONS

2.3.1. *Section 1 — CERTIFICATION OF ATO*

ARR.ATO.100 Issue of the ATO certificate

The competent authority should issue the ATO certificate when satisfied that the training organisation has demonstrated compliance with the elements required in ORO.ATO.100 including course standards, and, where applicable, procedures for training flights with students, or training on FSTD.

2.3.2. *Section 2 — SPECIFIC RECOMMENDATIONS FOR OVERSIGHT OF APPROVED TRAINING ORGANISATIONS*

ARR.ATO.200 Oversight Programme

The oversight programme for ATOs shall include the monitoring of course standards, procedures for training RPAS flights with students, or training on FSTD.

ARR.ATO.210 Record-keeping

In addition to the records required in ARR.GEN.220, the competent authority should include in its system of record-keeping details of courses provided by the ATO, and if applicable, records relating to FSTDs used for training.

2.3.3. *Section 3 -SPECIFIC RECOMMENDATIONS RELATED TO THE QUALIFICATION OF FLIGHT SIMULATION TRAINING DEVICES (FSTDs)*

ARR.FSTD.300 Initial evaluation procedure

(a) Upon receiving an application for an FSTD qualification certificate, the competent authority should:

- (1) evaluate the FSTD submitted for initial evaluation or for upgrading against the applicable qualification basis;
- (2) assess the FSTD in those areas that are essential to completing the remote crew member training, testing and checking process, as applicable;
- (3) conduct objective, subjective and functions tests in accordance with the qualification basis and review the results of such tests to establish the qualification test guide (QTG); and
- (4) verify if the organisation operating the FSTD is in compliance with the applicable requirements. This does not apply to the initial evaluation of basic instrument training devices (BITDs).

(b) The competent authority should only approve the QTG after completion of the initial evaluation of the FSTD and when all discrepancies in the QTG have been addressed to the satisfaction of the competent authority. The QTG resulting from the initial evaluation procedure should be the master qualification test guide (MQTG), which should be the basis for the FSTD qualification and subsequent recurrent FSTD evaluations.

(c) The competent authority may prescribe special conditions for the FSTD qualification basis.

ARR.FSTD.310 Issue of an FSTD qualification certificate

After completion of an evaluation of the FSTD and when satisfied that the FSTD meets the applicable qualification basis and that the organisation operating it meets the applicable requirements to maintain the qualification of the FSTD, the competent authority should issue the FSTD qualification certificate of unlimited duration.

ARR.FSTD.320 Continuation of an FSTD qualification

(a) The competent authority should continuously monitor the organisation operating the FSTD to verify that:

- (1) the complete set of tests in the MQTG is rerun progressively over a 12 month period;
- (2) the results of recurrent evaluations continue to comply with the qualification standards and are dated and retained; and
- (3) a configuration control system is in place to ensure the continued integrity of the hardware and software of the qualified FSTD.

(b) The competent authority should conduct recurrent evaluations of the FSTD.

ARR.FSTD.330 Change procedure

When the competent authority approves the change procedure for an ATO according to ARR.GEN.340, it may give privileges to an ATO to introduce changes to FTSDs.

ARR.FSTD.340 Approval of changes

(a) Upon receipt of an application for any changes to the FSTD qualification certificate, the competent authority shall comply with the applicable elements of the initial evaluation procedure requirements.

(b) The competent authority may complete a special evaluation following major changes or when an FSTD appears not to be performing at its initial qualification level.

(c) The competent authority should conduct a special evaluation before granting a higher level of qualification to the FSTD, if agreed in the procedures per ARR.FSTD.130.

ARR.FSTD.350 Record keeping

In addition to the records required in ARA.GEN.220, the competent authority should keep and update a list of the qualified FSTDs under its supervision, the dates when evaluations are due and when such evaluations were carried out.

JARUS-ORG Annex II

3. PART-GOR

General recommendations for organisations involved in RPAS activities

3.1. Subpart GEN - GENERAL

GOR.GEN.100 Scope

This Annex contains general recommendations to be followed by an undertaking involved in RPAS activities.

GOR.GEN.105 Competent authority

For the purpose of this JARUS-ORG, the competent authority exercising oversight over RPAS undertakings should be the authority designated by the State where the undertaking resides or has its principal place of business.

GOR.GEN.110 Application for an undertaking certificate

- (a) The application for an undertaking certificate or an amendment to an existing certificate should be made in a form and manner established by the competent authority.
- (b) Applicants for an initial certificate should provide the competent authority with documentation demonstrating how they will comply with the recommendations contained in this JARUS-ORG.
- (c) Such documentation should include a procedure describing how changes not requiring prior approval will be managed and notified to the competent authority.

GOR.GEN.115 Alternative AMC

RPAS undertakings should be allowed to use means of compliance alternative to those adopted by the competent authority to demonstrate compliance with applicable rules.

GOR.GEN.120 Terms of approval and privileges of an RPAS undertaking

A certified RPAS undertaking should comply with the scope and privileges defined in the operations specifications or terms of approval attached to its certificate.

GOR.GEN.125 Changes

- (a) Any change affecting:
 - (1) the scope of the certificate, the operations specifications or the terms of approval of an RPAS undertaking; or
 - (2) any of the elements of the undertaking's management system, if applicable, should require prior approval by the competent authority.
- (b) For any changes requiring prior approval the RPAS undertaking should apply for and obtain an approval issued by the competent authority. The application should be submitted before any such change takes place, in order to enable the competent authority to determine continued compliance with the applicable requirements and to amend, if necessary, the certificate and related operations specifications or terms of approval attached to it.
- (c) The RPAS undertaking should provide the competent authority with any relevant documentation.
- (d) The change should only be implemented upon receipt of formal approval by the competent authority.

- (e) The RPAS undertaking should operate under the conditions prescribed by the competent authority during implementation of such changes, as applicable.
- (f) All changes not requiring prior approval should be managed and notified to the competent authority as defined in the procedure approved by the competent authority.

GOR.GEN.130 Continued validity

- (a) The RPAS undertaking certificate should remain valid subject to:
 - (1) the undertaking remaining in compliance with the applicable requirements, taking into account the provisions related to the handling of findings as specified under GOR.GEN.165;
 - (2) the competent authority being granted access to the undertaking to determine continued compliance with the relevant requirements; and
 - (3) the certificate not being surrendered or revoked.
- (b) Without prejudice to (a), during the initial phases of activities the certificate may remain valid for a limited time.
- (c) Upon revocation or surrender, the certificate should be returned to the competent authority without delay.

GOR.GEN.135 Facility recommendations

The RPAS undertaking should have facilities allowing the performance and management of all planned tasks and activities taking into account the nature and complexity of such activities.

GOR.GEN.140 Access

For the purpose of determining compliance with the relevant requirements, the RPAS undertaking should grant access at any time to any facility, RPAS, RPA, RPS, FSTD, document, records, data, procedures or any other material relevant to its activity subject to certification, whether it is contracted or not, to any person authorised by one of the following entities:

- (a) the competent authority;
- (b) the qualified entity delegated by the competent authority;
- (c) the aviation accident investigating body;
- (d) the authority responsible for oversight of safety in the involved territory or airspace.

GOR.GEN.145 Immediate reaction to a safety problem

The RPAS undertaking should implement:

- (a) any safety measures mandated by the competent authority;
- (b) any relevant mandatory safety information issued by the relevant authorities, including airworthiness directives; and
- (c) if applicable, any instruction for continuing airworthiness issued by the RPAS manufacturer.

GOR.GEN.150 Occurrence reporting

- (a) The RPAS undertaking should report to the competent authority, and to any other organisation required by the State of the undertaking to be informed, any accident or serious incident.
- (b) Reports should be made as soon as practicable, but in any case within 72 hours of the RPAS undertaking identifying the condition to which the report relates.
- (c) The reports referred in paragraph (a) should be made in a form and manner established by the competent authority and contains all pertinent information about the condition known to the RPAS undertaking.

GOR.GEN.155 Preservation, production and use of mission information

Following an accident or an incident that is subject to mandatory reporting, the RPAS undertaking should preserve any original mission information or data for a period of 60 days unless otherwise directed by the investigating authority.

GOR.GEN.160 Privacy and data protection

RPAS undertakings should establish and notify to the competent authority, processes and procedures to ensure privacy and data protection in relation to third parties.

GOR.GEN.165 Findings

After receipt of notification of findings, the RPAS undertaking should demonstrate corrective action implementation to the satisfaction of the competent authority within a period agreed by that authority.

GOR.GEN.170 Endangering safety

The RPAS undertaking should take all reasonable measures to ensure that no person recklessly or negligently acts or omits to act so as to:

- (a) endanger a third party aircraft; or
- (b) cause or permit an RPA to endanger any person or property.

GOR.GEN.175 Record-keeping

- (a) The RPAS undertaking should establish a system of record-keeping that allows adequate storage and reliable traceability of all activities developed.
- (b) The RPAS operator should file a summary of each mission flown through the electronic tools made available by the competent authority.
- (c) The format of the other records should be specified in the RPAS operator's procedures.
- (c) Records should be stored in a manner that ensures protection from damage, alteration and theft.

3.2. **Subpart MAN - MANAGEMENT**

GOR.MAN.200 Responsibilities of the RPAS undertaking

The RPAS undertaking should establish a management system that corresponds to the size of the organisation and the nature and complexity of its activities, taking into account the hazards and associated risks inherent in these activities.

GOR.MAN.210 Competence of personnel

- (a) The RPAS undertaking should ensure that all personnel assigned to, or directly involved in its RPAS activities are properly instructed, have demonstrated their abilities in their particular duties and are aware of their responsibilities and the relationship of such duties to the activities as a whole.
- (b) The RPAS undertaking should ensure that all personnel are made aware that they shall comply with the laws, regulations and procedures of those States in which the activities are conducted and that are pertinent to the performance of their duties.

GOR.MAN.220 Contracted activities

- (a) Contracted activities include all activities within the undertaking's scope of approval that are performed by another organisation either itself certified to carry out such activity or if not certified, working under the undertaking's approval. The RPAS undertaking should ensure that when contracting or purchasing any part of its activity, the contracted or purchased service or product conforms to the applicable requirements.
- (b) When the certified RPAS undertaking contracts any part of its activity to an organisation that is not itself certified in accordance with this JARUS-ORG to carry out such activity, the contracted organisation shall work under the approval of the RPAS undertaking, including for safety and security management.
- (c) The RPAS undertaking should ensure that the competent authority is given access to the contracted organisation, to determine continued compliance with the applicable requirements.

JARUS-ORG Annex III

4. **PART-RDO**

Specific recommendations for RPAS Design Organisations

Reserved

JARUS-ORG Annex IV

5. **PART-RPO**

Specific recommendations for RPAS Production Organisations

Reserved

JARUS-ORG Annex V

6. **PART-RMO**

Specific recommendations for RPAS maintenance and Continuous Airworthiness Organisations

Reserved

JARUS-ORG Annex VI

7. PART-ORR

Specific recommendations for RPAS Operators

7.1. Subpart OPS RECOMMENDATIONS FOR RPAS OPERATORS

7.1.1. Section 1 - GENERAL

ORR.OPS.100 Scope

This Annex contains recommendations to be followed by an undertaking conducting or intending to conduct RPAS operations, except if operating a tethered RPAS of no more than 500 grams, below 500 ft above ground level (AGL).

7.1.2. Section 2 – RECOMMENDATIONS FOR UNDERTAKINGS INTENDING TO OPERATE RPAS OF NO MORE THAN 500 GRAMS, AT VERY LOW LEVEL (VLL) IN VISUAL LINE-OF-SIGHT (VLOS) AND OUT OF CONGESTED AREAS

ORR.OPS.200 Declaration

(a) The RPAS operator, intending to operate an RPA of no more than 500 grams, in VLOS at VLL and out of congested areas, should send to the competent authority a declaration containing:

- (1) Identification, address and contact of the RPAS operator;
- (2) Identification of the RPA intended to be used;
- (3) Description of the intended operations and areas of activity;
- (4) Safety assessment acceptable to the competent authority.

7.1.3. Section 3 – RECOMMENDATIONS FOR UNDERTAKINGS INTENDING TO OPERATE RPAS AT VERY LOW LEVEL (VLL) IN VISUAL LINE-OF-SIGHT (VLOS) EXCLUDING OPERATORS FALLING UNDER SECTION 2

ORR.OPS.300 Responsibilities of RPAS Operator

- (a) The RPAS operator is responsible for the operation of the RPAS in accordance with the applicable requirements on RPAS operations, the relevant recommendations of previous Section 1 and of this Section and its certificate.
- (b) Every RPA flight should be conducted in accordance with the provisions of the RPAS operations manual and with the instructions delivered by the RPAS manufacturer.
- (c) The RPAS operator is responsible for exercising operational control over any RPA flight operated under the terms of its certificate.
- (d) The RPAS operator should ensure that its RPAS are equipped and the related crew are qualified as required for the area and type of operation.
- (e) The RPAS operator shall establish procedures and instructions for the safe operation of each RPAS type.
- (f) The RPAS operator should ensure that its personnel is aware of and complies with the laws, regulations and procedures of those States in which operations are conducted and that are pertinent to the performance of their duties.
- (g) In States, where RPAS operators might be considered directly responsible for damage caused to third-parties, they must take appropriate third party liability insurance, at least complying with national requirements if any.

ORR.OPS.310 Lease of RPAS

(a) The RPAS operator may lease, another RPAS from another RPAS operator, manufacturer or dealer. In this case the lessee is responsible to verify the continuous suitability for use of leased RPAS and that the terms of approval and ratings of its ROC and the licenses and ratings of its remote pilot are suitable to operate the leased RPAS.

(b) Lease of an RPAS product not already covered by the ROC, the operations specification and the RPAS operations manual, should be subject to prior approval by the competent authority.

ORR.OPS.320 Privileges

Undertaking certified to operate RPAS, should have the privilege to operate according to their approved operations specifications and RPAS operations manual, in VLL and in VLOS.

ORR.OPS.330 Documents, RPAS manuals and information to be retained in the principal place of business

(a) The following documents, RPAS manuals and information, if applicable, should be retained by the RPAS operator at its principal place of business, as originals:

- (1) the certificates of registration of the RPA, or record of identification where applicable.
- (2) the CofA where applicable or the safety assessment where applicable;
- (3) the noise certificate where applicable;
- (4) the ROC where applicable;
- (5) the operations specifications relevant to the RPAS type, issued with the ROC;
- (6) the third party liability insurance certificate(s), where applicable.

(b) Alternatively the originals of the documents listed in paragraph a), may be retained in close proximity of the RPS.

ORR.OPS.340 RPAS manuals and information to be retained in proximity of the RPS

The following documents, RPAS manuals and information should be retained in proximity of each RPS from which the RPA is planned to be controlled and until the conclusion of the flight, in electronic format, or paper copy:

- (a) the RPA flight manual;
- (b) the relevant parts RPAS operations manual;
- (c) the CofA where applicable;
- (d) the journey log, or equivalent, for the RPAS;
- (e) current and suitable aeronautical charts, for the route of the proposed flight and all routes along which it is reasonable to expect that the flight may be diverted;
- (f) appropriate notices to airmen (NOTAMs) and aeronautical information service (AIS) briefing documentation;
- (g) Check list in paper copy with possible additional electronic copy.

ORR.OPS.350 documents to be carried by the RPA

(a) The following documents, if applicable, should be available on each RPA in electronic format, Radio-Frequency Identification Device or paper copy:

- (1) The RPA certificate of registration, if applicable;
- (2) The RPA certificate of airworthiness if applicable;
- (3) The aircraft radio licence if applicable.

ORR.OPS.360 Check list

The RPAS operator should establish a checklist system for each RPAS type to be used under normal, abnormal and emergency conditions to ensure that the operating procedures in the RPAS operations manual are followed. The design and utilisation of checklists should observe human factors principles and take into account the latest relevant documentation from the aircraft manufacturer.

ORR.OPS.370 Provision of documentation and records

The remote pilot should, within a reasonable time of being requested to do so by a person authorised by the competent authority, provide to that person the documentation required to be retained in proximity of the RPS.

7.1.4. Section 4 – ADDITIONAL RECOMMENDATIONS FOR UNDERTAKINGS INTENDING TO OPERATE RPAS IN E-VLOS

ORR.OPS.400 Responsibilities of E-VLOS RPAS Operator

The RPAS operator is responsible for the operation of the RPAS in accordance with the applicable requirements on RPAS operations, the recommendations in previous Sections 1 and 2 and in this Section and its certificate.

ORR.OPS.410 Approval of E-VLOS operations

Before initiating E-VLOS operations the RPAS operator should obtain approval from its competent authority.

ORR.OPS.420 Privileges

Undertakings complying with this section should have the privilege to operate according to their approved operations specifications and RPAS operations manual, in E-VLOS, in VLL or above 500 ft AGL.

7.1.5. Section 5 – ADDITIONAL RECOMMENDATIONS FOR ORGANISATIONS INTENDING TO OPERATE RPAS IN BVLOS AND DIRECTLY MANAGING C2 LINK EQUIPMENT

ORR.OPS.500 Responsibilities of RPAS Operator in BVLOS and directly managing C2 link equipment

(a) The RPAS operator is responsible for the operation of the RPAS in accordance with the applicable requirements on RPAS operations, the recommendations in previous Sections 1, 2 and 3 and in this Section and its certificate.

(b) The RPAS operator should establish procedures and instructions for the safe operation of each RPAS type, containing ground staff and remote crew member duties and responsibilities for all types of operation on the ground and in flight.

(c) The RPAS operator should specify flight planning procedures to provide for the safe conduct of the flight based on considerations of RPA performance, other operating limitations and relevant expected conditions along the trajectory to be followed and at the aerodromes or operating sites concerned. These procedures should be included in the RPAS operations manual.

ORR.OPS.510 Privileges

(a) RPAS operators complying with this section should have the privilege to operate according to their approved operations specifications and RPAS operations manual, in BVLOS, in RLOS, in VLL or above 500 ft AGL.

(b) The privileges may include specific phases of flight in VLOS.

ORR.OPS.520 Findings

After receipt of notification of findings, the RPAS operator should:

- (a) identify the root cause of the non-compliance;
- (b) define a corrective action plan; and
- (c) demonstrate corrective action implementation to the satisfaction of the competent authority within a period agreed with that authority.

ORR.OPS.530 Occurrence reporting

The RPAS operator should report to the organisation responsible for the design of the RPAS any incident, malfunction, technical defect, exceeding of technical limitations, occurrence that would highlight inaccurate, incomplete or ambiguous information contained in data provided by the holder of the RPAS TC or other irregular circumstance that has or may have endangered the safe operation of the RPAS and that has not resulted in an accident or serious incident.

ORR.OPS.540 Lease and service agreements

- (a) Any lease agreement concerning RPAS operations or service level agreement with providers of remote pilot services, should be subject to prior approval by the competent authority.
- (b) The applicant for the approval of the wet lease-in of RPAS operations should demonstrate to the competent authority that:
 - (1) the lessor RPAS operator holds a valid ROC;
 - (2) the safety standards of the lessor RPAS operator with regard to continuing airworthiness and RPAS operations are equivalent to the requirements applicable to the lessee; and
 - (3) the RPAS, RPA and RPS have respective individual certificates, if applicable.
- (c) An applicant for the approval of a dry lease-in of an RPAS whose RPA is registered in a State different from the State of Operator should demonstrate to the competent authority that:
 - (1) compliance with the applicable requirements for continuous airworthiness is ensured.
 - (2) the appendix to OM has been amended to include new registration or serial number
- (d) An applicant for the approval of a service level agreement concerning RPS services, should demonstrate to the competent authority that:
 - (1) an operational need has been identified;
 - (2) the contracted service providers are certified; and
 - (3) the service level agreement includes all the provisions and procedure necessary to ensure a safe and proper interface between the two involved organisations.
- (e) The holder of a ROC may conduct recreational operations with an RPA, otherwise used for RPAS operations, providing that such operations are described in the RPAS operations Manual.

ORR.OPS.550 Documents, RPAS manuals and information to be retained in proximity of the RPS

(a) In addition to the documents listed in ORR.OPS.075, the following documents, RPAS manuals and information should be retained in proximity of the RPS from which the take-off of the RPA is controlled and until the conclusion of the flight, as originals or preferably copies in electronic format unless otherwise specified:

- (1) the aircraft technical log;
- (2) details of the filed ATS flight plan, if applicable;
- (3) the current parts of the RPAS operations manual that are relevant to the duties of the RPAS crew members, which should be easily accessible to the RPAS crew members;
- (4) the MEL, if applicable;
- (5) appropriate meteorological information;
- (6) cargo manifest, if applicable;
- (7) mass and balance documentation;
- (8) the operational flight plan, if applicable;
- (9) notification of special loads, if applicable.

(b) The RPAS operator should conduct operational checks and evaluations of flight data recorder (FDR) recordings, voice recorder (VR) recordings and data link recordings to ensure the continued serviceability of the recorders.

(c) The RPAS operator should keep and maintain up-to-date documentation that presents the necessary information to convert FDR raw data into parameters expressed in engineering units.

(d) The RPAS operator should make available any flight recording that has been preserved, if so determined by the competent authority.

(e) Without prejudice to law applicable to accident and incident investigations:

(1) VR recordings should only be used for purposes other than for the investigation of an accident or an incident subject to mandatory reporting, if all crew members and maintenance personnel concerned consent.

(2) FDR recordings or data link recordings should only be used for purposes other than for the investigation of an accident or an incident which is subject to mandatory reporting, if such records are:

- (i) used by the RPAS operator for airworthiness or maintenance purposes only; or
- (ii) de-identified; or
- (iii) disclosed under secure procedures.

7.1.6. *Section 6 – ADDITIONAL MANAGEMENT RECOMMENDATIONS FOR ORGANISATIONS INTENDING TO OPERATE RPAS IN BVLOS*

ORR.OPS.600 Responsibilities of RPAS Operator in BVLOS

The RPAS operator is responsible for the operation of the RPAS in accordance with the applicable requirements on RPAS operations, the recommendations in previous Sections 1, 2, 3 and 4 and in this Section and its certificate.

ORR.OPS.610 Management system

The RPAS operator should establish, implement and maintain a management system that includes:

- (a) clearly defined lines of responsibility and accountability throughout the RPAS operator, including a direct safety accountability of the accountable manager;
- (b) a description of the overall philosophies and principles of the RPAS operator with regard to safety, referred to as the safety policy;
- (c) the identification of aviation safety hazards entailed by the activities of the RPAS operator, their evaluation and the management of associated risks, including taking actions to mitigate the risk and verify their effectiveness;
- (d) documentation of all management system key processes, including a process for making personnel aware of their responsibilities and the procedure for amending this documentation;
- (e) a function to monitor compliance of the RPAS operator with the relevant requirements. Compliance monitoring shall include a feedback system of findings to the accountable manager to ensure effective implementation of corrective actions as necessary

ORR.OPS.620 Personnel recommendations

- (a) The RPAS operator should appoint an accountable manager, who has the authority for ensuring that all activities can be financed and carried out in accordance with the applicable requirements. The accountable manager should be responsible for establishing and maintaining an effective management system.
- (b) A person or group of persons should be nominated by the RPAS operator, with the responsibility of ensuring that the RPAS operator remains in compliance with the applicable requirements. Such person(s) should be ultimately responsible to the accountable manager.
- (c) The RPAS operator should have sufficient qualified personnel for the planned tasks and activities to be performed in accordance with the applicable requirements.
- (d) The RPAS operator should maintain appropriate experience, qualification and training records to show compliance with (c).
- (e) The RPAS operator should ensure that all personnel are aware of the rules and procedures relevant to the exercise of their duties.

ORO.OPS.630 Responsibilities, competence and supervision of personnel

(a) The RPAS operator should nominate one or more persons responsible for the management and supervision of the following areas:

- (1) RPAS operations;
- (2) safety, security and compliance monitoring;
- (3) remote crew training; and
- (4) continuing airworthiness.

(b) Adequacy and competency of personnel:

- (1) The RPAS operator should employ sufficient personnel for the planned RPAS operations.
- (2) All personnel assigned to, or directly involved in, ground and flight operations should:
 - (i) be properly trained;
 - (ii) demonstrate their capabilities in the performance of their assigned duties; and
 - (iii) be aware of their responsibilities and the relationship of their duties to the operation as a whole.

(c) Supervision of personnel:

- (1) The RPAS operator should appoint a sufficient number of personnel supervisors, taking into account the structure of the RPAS operator's organisation and the number of personnel employed.
- (2) The duties and responsibilities of these supervisors should be defined, and any other necessary arrangements should be made to ensure that they can discharge their supervisory responsibilities.
- (3) The supervision of remote crew members and personnel involved in the operation should be exercised by individuals with adequate experience and the skills to ensure the attainment of the standards specified in the RPAS operations manual.

ORR.OPS.640 Facility recommendations

The RPAS operator should have facilities allowing the performance and management of all planned tasks and activities in accordance with the applicable requirements, including:

- (a) appropriate ground handling facilities to ensure the safe handling of its RPA;
- (b) operational support facilities at the main operating base, appropriate for the area and type of operation;
- (c) appropriate storage, transport systems, power supply and other devices for its portable RPS;
- (d) appropriate installation and power supply for its fixed RPS; and
- (e) ensure that the available working space at each operating base is sufficient for personnel whose actions may affect the safety of RPAS operations. Consideration should be given to the needs of ground and remote crew, personnel concerned with operational control, the storage and display of essential records and flight planning.

7.1.7. *Section 7 – ADDITIONAL RECOMMENDATIONS FOR ORGANISATIONS INTENDING TO OPERATE RPAS IN BVLOS AND CONTRACTING A C2 LINK SERVICE PROVIDER*

Reserved in first edition of JARUS-ORG

7.2. **Subpart** OCA - RPAS OPERATOR CERTIFICATE AND AUTHORIZATIONS

7.2.1. *Section 1 – RPAS OPERATOR CERTIFICATE*

ORR.OCA.110 RPAS Operator Certificate

Prior to commencing RPAS operations, the should apply for and obtain an ROC issued by the competent authority.

ORR.OCA.120 Application for a ROC

- (a) The application for an ROC or an amendment to an existing certificate should be made in a form and manner established by the competent authority.
- (b) The applicant for an initial ROC should provide the competent authority with documentation demonstrating how they will comply with the applicable requirements in this JARUS-ORG.
- (c) The applicant should provide the following information to the competent authority:
 - (1) the official name or business name, address, and mailing address of the applicant;
 - (2) a description of the proposed operation, including the type(s), and number of RPAS to be operated;
 - (3) a copy of the RPAS operations manual required by ORO.MLR.100;
 - (4) a statement that all the documentation sent to the competent authority have been verified by the applicant and found in compliance with the applicable requirements.
- (d) In addition to the information required in (c), organisations should provide the following information to the competent authority:
 - (1) a description of the management system, including organisational structure;
 - (2) the name of the accountable manager;
 - (3) the names of the nominated persons together with their qualifications and experience.

ORR.OCA.130 Demonstration of compliance

The applicant should demonstrate to the competent authority that:

- (a) it complies with all the applicable recommendations of this JARUS-ORG;
- (b) all RPAS operated have a CofS, if applicable;
- (c) all RPA operated have a CofA, if applicable;
- (d) all RPS operated have a CofC, if applicable; and
- (e) its organisation and management are suitable and properly matched to the scale and scope of the operation.

7.2.2. Section 2 – AUTHORISATIONS

ORR.OCA.200 Authorisation for RPAS operations

- (a) The RPAS operator should only operate a RPA into, within or out of the territory of a State after receiving appropriate authorisation from the competent authority designated by that State.
- (b) The RPAS operator should only operate a RPA into, within or out of airspace not subject to the sovereignty of any State after receiving appropriate authorisation from the competent authority designated by the State of the operator.

ORR.OCA.210 Authorisation for operations over the high seas

The RPAS operator should not operate an RPA over the high seas without prior coordination with the appropriate Air Traffic Service Provider (ATSP) in accordance with airspace classification.

7.3. Subpart SEC Security recommendations for organisations

7.3.1. SECTION 1 – SECURITY RECOMMENDATIONS FOR ORGANISATIONS intending to carry out RPAS BVLOS operations

ORR.SEC.100 General principles and responsibilities

- (a) The RPAS operator should address the structure, responsibilities, processes and procedures that promote and establish an environment and culture of continuing improvement and enhancement of RPAS operation security.
- (b) The RPAS operator is responsible for the security of their RPAS, RPA, RPS and facilities, guidance on personnel training and for the establishment of procedures to effectively recognize and respond to acts of unlawful interference against civil aviation.

ORR.SEC.110 Physical security of the installed RPS during operational use

When the RPS is installed in a compartment or room, the following recommendations apply:

- (a) The compartment or room where the RPS is operated should be equipped with a door capable of being locked. This door shall be closed and locked during operation, except when necessary to permit access and egress by authorized persons.
- (b) The RPAS operator should ensure that unauthorised access to RPS is reasonably prevented and means shall be provided for monitoring from RPS the entire door area outside compartment to identify persons requesting entry and to detect suspicious behaviour or potential threat.

ORR.SEC.120 Physical security of the installed RPS when not in use

The RPAS operator should ensure the physical protection of the RPS when no personnel is inside the room or compartment.

ORR.SEC.130 Security of portable RPS

In the case of portable RPS the operator should ensure that:

- (a) they are only released for use to authorised personnel and only for the time necessary;
- (b) means are in place to restrict unauthorized access in the proximity of the RPS during the flight time in order to keep the pilot flying safe from any intervention or distraction;
- (c) when not in use they are stored in a secure place.

7.4. **Subpart CRW – RPAS crew**

7.4.1. *Section 1 –RECOMMENDATIONS FOR RPAS ORGANISATIONS EMPLOYING OR ENGAGING RPAS CREW*

ORR.CRW.110 Scope

This Subpart contains recommendations to be met by the RPAS operator related to RPAS crew training, experience and qualification, when the RPAS operator employs such personnel.

ORR.CRW.120 Composition of remote crew

(a) The RPAS crew should include a number of RPAS crew members not below the number(s) specified in the instructions provided by the RPAS manufacturer or in the RPAS operations manual, including:

- (1) one or more remote pilots;
- (2) one or more RPA observers in case of extended-VLOS operations;
- (3) additional technical RPAS crew members when required by the RPAS type;
- (4) additional RPAS crew members when required by the type of operation.

(b) The composition of the RPAS crew and the number of RPAS crew members, excluding the RPA observers, at RPAS crew stations should be not less than the minimum specified in the RPAS flight manual or operating limitations prescribed for the type.

(c) All remote pilots should hold a remote pilot licence and associated ratings issued or accepted by the competent authority of the State of the Operator and appropriate to the duties assigned to them.

(d) The remote crew member may be relieved during the flight of his/her duties at the operating site or RPS, by another suitably qualified RPAS crew member.

(e) When engaging the services of RPAS crew members who are working on a freelance or part-time basis, the RPAS operator should verify that all applicable requirements on personnel competence, including the requirements on recent experience, are complied with, taking into account all services rendered by the RPAS crew member to other RPAS operator(s) to determine in particular:

- (1) the total number of RPAS types or variants operated; and
- (2) the applicable duty time limitations and rest requirements.

ORR.CRW.130 Designation as RPIC

(a) One qualified remote pilot should be designated by the RPAS operator as RPIC at any given time.

(b) The RPAS operator should only designate a RPAS crew member to act as RPIC if he/she has:

- (1) the minimum level of experience specified in the RPAS operations manual,;
- (2) adequate knowledge of the route or area to be flown and of the aerodromes, including alternate aerodromes, other operating sites, facilities and procedures to be used;
- (3) in the case of multi-crew operations, completed a command course appropriate for the envisaged operations.

(c) The RPIC or the remote pilot, to whom the conduct of the flight may be delegated, shall have had initial familiarisation training of the route or area to be flown and of the aerodromes, operating sites, facilities and procedures to be used.

(d) This route or area and aerodrome or operating site knowledge should be maintained by operating at least once on the route or area within a 12 month period.

(e) If applicable, the RPAS operator should define procedures for transfer of the responsibility during operations from:

- (1) one remote pilot to another remote pilot;
- (2) one RPIC to another RPIC;
- (3) one remote pilot to one RPIC or vice versa.

ORR.CRW.140 Technical RPAS crew members

When positions separate from those of remote pilots or RPICs, are incorporated in the design of the RPS, the RPAS crew should include one or more RPAS crew members who are suitably qualified.

ORR.CRW.150 RPA observers

The RPAS operator should designate and position a sufficient number of competent crew members, qualified as RPA observers, when carrying out E-VLOS operations.

ORR.CRW.160 Relation among remote crew members

(a) There should not be more than one inexperienced remote crew member in any RPAS crew.

(b) The RPIC of an RPAS BVLOS operation, under procedures contained in the RPAS operations manual, may:

- (1) delegate the conduct of the flight to another remote pilot suitably qualified provided that the recommendations of ORR.CRW.015 (b)(1), (b)(2) and (c) are complied with;
- (2) handover his/her responsibility at a different RPIC at the end of his/her duty period, or under other specified circumstances;
- (3) handover his/her responsibilities when the flight is handed over to an RPS at a different location.

ORR.CRW.170 Relief of RPAS crew members other than the RPIC

(a) The RPIC may be relieved by another suitably qualified remote pilot at the same position at the RPS or at a different RPS.

(b) A technical RPAS crew member may be relieved during flight by a RPAS crew member suitably qualified.

(c) An additional RPAS crew member may be relieved during flight by a RPAS crew member suitably qualified.

ORR.CRW.180 Single-pilot operations under IFR or at night

In order to be able to fly an RPA BVLOS under IFR or at night with a minimum RPAS crew of one remote pilot, the RPAS operator should ensure that the remote pilot is qualified for such single-pilot operation.

ORR.CRW.190 Crew resource management (CRM) training

- (a) Before operating as member of the RPAS crew composed by more than one person, the person should have received CRM training, appropriate to his/her role.
- (b) Elements of CRM training should be included in the RPAS type or class training and recurrent training as well as in the command course.

7.4.2. Section 2 –RECOMMENDATIONS FOR ORGNISATIONS EMPLOYING OR ENGAGING REMOTE CREW – RPAS OPERATOR TRAINING

ORR.CRW.205 Operator conversion training

- (a) The remote crew member shall complete the RPAS operator conversion training course before commencing unsupervised flying:
 - (1) when changing to an RPAS for which a new type or class rating is required;
 - (2) when joining an RPAS operator.
- (b) The RPAS operator conversion training course should include training on the equipment installed on the RPA and RPS and on related services as relevant to crew members' roles.

ORR.CRW.210 Differences training and familiarisation training

- (a) RPAS crew members should complete differences or familiarisation training when changing equipment or procedures requiring additional knowledge on types or variants currently operated.
- (b) The RPAS operations manual, if applicable, should specify when such differences or familiarisation training is required.

ORR.CRW.215 Recurrent training and checking

- (a) Each RPAS crew member involved in CAT operations should complete annual recurrent theoretical and practical training relevant to the type or variant of RPAS on which he/she operates, including training on all the emergency procedures.
- (b) Each RPAS crew member involved in CAT operations should be periodically checked to demonstrate competence in carrying out normal, abnormal and emergency procedures.

ORR.CRW.220 Crew qualification to operate at different positions

RPAS crew members who may be assigned to operate at different positions at the RPS should complete appropriate training and checking, if applicable, as specified in the RPAS operations manual.

ORR.CRW.225 RPAS Operation on more than one type or variant

- (a) RPS crew members operating more than one type or variant of RPA or RPS should comply with the recommendations in this Subpart for each type or variant, unless credits related to the training, checking, and recent experience requirements are defined in the data established for the relevant types or variants.
- (b) Appropriate procedures and operational restrictions should be specified in the RPAS operations manual, for any operation on more than one type or variant.

ORR.CRW.230 Provision of training

- (a) All the training and checking required in this Subpart should be conducted:
 - (1) in accordance with the applicable training programmes and syllabi;
 - (2) by appropriately qualified personnel for both the case of practical and flight simulation training and checking.

(b) When establishing or selecting the training programmes and syllabi, the RPAS operator should include the mandatory elements for the relevant type as defined in the data established by the RPAS TC holder.

(c) Training and checking programmes, including syllabi and use of individual (FSTDs should be approved by the competent authority.

(d) The FSTD should replicate the RPAS used by the RPAS operator, as far as practicable. Differences between the FSTD and the RPAS should be described and addressed through a briefing or training, as appropriate.

(e) The RPAS operator should establish a system to adequately monitor changes to the FSTD it manages and to ensure that those changes do not affect the adequacy of the training programmes.

ORR.CRW.235 RPIC course

The RPIC course for RPAS, should include at least the following elements:

- (a) training in segregated airspace or in an FSTD, which includes line oriented flight training (LOFT) or flight training;
- (b) the RPAS operator proficiency check, operating as RPIC;
- (c) commanders responsibilities training;
- (d) on-the-job training as RPIC under supervision, for a minimum of 10 flights;
- (e) completion of a practical check as RPIC and demonstration of adequate knowledge of standard and emergency procedures, the route or area to be flown, the landing sites, including alternate landing sites and other operating sites, facilities and procedures to be used; and
- (f) crew resource management training.

ORR.CRW.240 Initial RPAS operator's crew resource management (CRM) training

(a) The RPAS crew member should have completed an initial CRM training course before commencing unsupervised RPAS flying.

(b) Initial CRM training should be conducted by at least one suitably qualified CRM trainer who may be assisted by experts in order to address specific areas.

(c) If the RPAS crew member has not previously received theoretical training in human factors to the ATPL level, he/she shall complete, before or combined with the initial CRM training, a theoretical course provided by the RPAS operator and based on the human performance and limitations syllabus applicable for the ATPL.

ORR.CRW.245 RPAS operator conversion training and checking

(a) CRM training should be integrated into the RPAS operator conversion training course.

(b) Once an RPAS operator conversion course has been commenced, the RPAS crew member should not be assigned to RPAS flight duties on another type or class of RPAS until the course is completed or terminated.

(c) The amount of training required by the RPAS crew member for the RPAS operator's conversion course should be determined in accordance with the standards of qualification and experience specified in the RPAS operations manual, taking into account his/her previous training and experience.

(d) The RPAS crew member should complete:

- (1) the RPAS operator proficiency check and the emergency training and checking before commencing flying under supervision (FUS); and
- (2) the practical check upon completion of flying under supervision.

ORR.CRW.250 Recurrent training and checking

- (a) Each RPAS crew member should complete recurrent training and checking relevant to the type or variant of RPAS on which they operate.
- (b) Proficiency check:
 - (1) Each RPAS crew member should complete RPAS operator proficiency checks as part of the normal RPAS crew complement to demonstrate competence in carrying out normal, abnormal and emergency procedures.
 - (2) The validity period of the RPAS operator proficiency check should be 12 calendar months, unless differently approved by the competent authority.
 - (3) The check may be conducted by a suitably qualified RPIC nominated by the RPAS operator, trained in CRM concepts and the assessment of CRM skills. The RPAS operator should notify the competent authority about the persons nominated.
- (c) Practical check
 - (1) Each RPAS crew member shall complete a practical check during RPAS flight to demonstrate competence in carrying out normal operations described in the RPAS operations manual. The validity period of the practical check should be 12 calendar months, unless differently approved by the competent authority.
 - (2) Practical checks may be conducted by a suitably qualified RPIC nominated by the RPAS operator, trained in CRM concepts and the assessment of CRM skills.
- (d) Each RPAS crew member should complete training and checking on the emergency procedures and equipment related to the RPS. The validity period of an emergency and safety equipment check shall be 12 calendar months, unless differently approved by the competent authority.
- (e) Elements of CRM should be integrated into all appropriate phases of the recurrent training.
- (f) Each RPAS crew member should undergo specific modular CRM training. All major topics of CRM training should be covered by distributing modular training sessions as evenly as possible over each three year period.
- (g) Each RPAS crew member should undergo RPAS flight training in an FSTD or in segregated airspace, or a combination of both, at least every 12 calendar months, unless differently approved by the competent authority.
- (h) The validity periods mentioned in (b)(2) and (c) should be counted from the end of the month when the check was taken.
- (i) When the training or checks required above are undertaken within the last 3 months of the validity period, the new validity period should be counted from the original expiry date.

ORR.CRW.255 RPIC qualification to operate at different RPS positions

- (a) RPICs whose duties require them to operate at different RPS positions and carry out the duties of a co-pilot, or RPICs required to conduct training or checking duties, should complete additional training and checking as specified in the RPAS operations manual.
- (b) The additional training and checking should include at least the following:
 - (1) emergency procedures for engine failure cases;

- (2) loss of command and control link; and
 - (3) traffic avoidance manoeuvres and collision avoidance procedures.
- (c) When engine-out manoeuvres are carried out with the RPA in flight, the engine failure should be simulated.

ORR.CRW.260 Operation on more than one type or variant

The procedures or operational restrictions for BVLOS operation with more than one RPAS, RPA or RPS type or variant established in the RPAS operations manual and approved by the competent authority should cover:

- (a) the RPAS crew members' minimum experience level;
- (b) the minimum experience level on one type or variant before beginning training for and operation of another type or variant;
- (c) the process whereby RPAS crew qualified on one type or variant will be trained and qualified on another type or variant; and
- (d) all applicable recent experience requirements for each type or variant.

ORR.CRW.265 Alternative training and qualification programme

- (a) The RPAS operator having appropriate experience may substitute one or more of the following training and checking requirements for RPAS crew by an alternative training and qualification programme (ATQP), approved by the competent authority:
- (1) conversion training and checking;
 - (2) differences training and familiarisation training;
 - (3) command course;
 - (4) recurrent training and checking; and
 - (5) operation on more than one type or variant.
- (b) The level of RPAS crew training and qualification proficiency should be demonstrated prior to being granted the ATQP approval by the competent authority.
- (c) The RPAS operator applying for an ATQP approval should provide the competent authority with an implementation plan, including a description of the level of RPAS crew training and qualification proficiency to be achieved.

7.4.3. Section 3 –RPAS CREW RESPONSIBILITIES

ORR.CRW.300 RPAS crew responsibilities

- (a) The RPAS crew member should be responsible for the proper execution of his/her duties that are:
- (1) related to the safety of the RPAS flight in relation to third parties in the air and on the ground; and
 - (2) specified in the instructions and procedures and in the RPAS operations manual.
- (b) The RPAS crew member should:
- (1) report to the RPIC any fault, failure, malfunction or defect which the RPAS crew member believes may affect the airworthiness or safe operation of the RPAS including emergency systems, if not already reported by another RPAS crew member;
 - (2) report to the RPIC any incident that endangered, or could have endangered, the safety of the operation, if not already reported by another RPAS crew member;
 - (3) comply with the relevant requirements of the RPAS operator's occurrence reporting schemes;
 - (4) comply with all duty time limitations (DTL) and rest requirements applicable to their activities;
 - (5) when undertaking duties for more than one RPAS operator:
 - (i) maintain his/her individual records regarding duty times and rest periods as referred to in applicable DTL requirements; and
 - (ii) provide each RPAS operator with the data needed to schedule activities in accordance with the applicable DTL requirements.
- (c) The RPAS crew member should not perform duties related to RPAS flights:
- (1) when under the influence of psychoactive substances or alcohol or when unfit due to injury, fatigue, medication, sickness or other similar causes;
 - (2) until a reasonable time period has elapsed after deep water diving or following blood donation;
 - (3) if applicable medical requirements are not fulfilled;
 - (4) if he/she is in any doubt of being able to accomplish his/her assigned duties.

ORR.CRW.310 Responsibilities of the RPIC

- (a) The RPIC, in addition to the responsibilities in ORR.CRW.300, should:
- (1) be responsible for the safety of RPAS operations as soon as the RPIC initiates its duty at the RPS, until the RPIC leaves the RPS at the end of the flight or at the end of its duty period;
 - (2) be responsible for the operation and safety of the RPA from the moment the command and C2 link is established between the RPA and the RPS for the purpose of conducting a flight prior to take-off, until the moment the RPA finally comes to rest at the end of the flight and the propulsion unit(s) is (are) shut down or the rotors arrested and the C2 link is terminated;
 - (3) have authority to give all commands and take any appropriate actions for the purpose of safety of the RPAS and of persons on board of other aircraft or on the ground;

- (4) not allow a person to be at the RPS or acting as RPA observer, who appears to be under the influence of alcohol or drugs;
 - (5) ensure that all operational procedures and checklists are complied with in accordance with the RPAS operations manual or other instructions;
 - (6) not permit any RPAS crew member to perform any activity during critical phases of flight, except duties required for the safe operation of the RPAS or for hand over;
 - (7) ensure that recorders, installed in the RPA or at the RPS:
 - (i) are not disabled or switched off during flight; and
 - (ii) in the event of an accident or an incident that is subject to mandatory reporting:
 - (A) are neither intentionally nor accidentally erased;
 - (B) are deactivated immediately after the flight is completed; and
 - (C) are reactivated only with the agreement of the investigating authority;
 - (8) decide on acceptance of the RPAS with unserviceabilities in accordance with the configuration deviation list (CDL) or the minimum equipment list (MEL);
 - (9) ensure that the pre-flight inspection has been carried out for the RPA and all the RPS intended to be used during the flight;
 - (10) Ensure that the command and control link is available;
 - (11) be satisfied that relevant emergency equipment at the RPS remains easily accessible for immediate use.
- (b) The RPIC, or the remote pilot to whom conduct of the flight has been delegated, should, in an emergency situation that requires immediate decision and action, take any action he/she considers necessary under the circumstances. In such cases he/she may deviate from rules, operational procedures and methods in the interest of safety.
- (c) Whenever its RPA in flight has been commanded or has manoeuvred in response to intervention of the detect and avoid system, or when an intruder aircraft has manoeuvred in response to an airborne collision avoidance system (ACAS) resolution advisory (RA), the RPIC should submit a missed collision report to the competent authority.

ORR.CRR.320 Authority of the RPIC

The RPAS operator should take all reasonable measures to ensure that all persons involved in the RPAS operation obey all lawful commands given by the RPIC for the purpose of securing the safety of the RPAS, of persons and property overflown and of other aircraft in flight.

ORR.CRR.330 Common language

The RPAS operator should ensure that all RPAS crew members can communicate with each other in a common language.

ORR.CRW.340 Admission to the RPAS

- (a) The RPAS operator should ensure that no person is admitted to the RPAS unless that person is:
- (1) an RPAS crew member;
 - (2) a representative of the competent authority, required to be there for the performance of his/her official duties; or
 - (3) permitted by and in accordance with instructions contained in the RPAS operations manual.
- (b) The RPIC shall ensure that admission to the RPS does not cause distraction or interference with the operation of the flight.

Section 4 –ADDITIONAL RECOMMENDATIONS FOR ORGNISATIONS EMPLOYING OR ENGAGING ADDITIONAL RPAS CREW

ORR.CRW.400 Scope

This Section contains recommendations to be met by the RPAS operator when operating an RPAS with additional RPAS crew members.

ORR.CRW.410 Conditions for assignment to duties

- (a) Additional RPAS crew members should only be assigned duties if they:
- (1) are physically and mentally fit to safely discharge assigned duties and responsibilities;
 - (2) have completed all applicable training required by this Section to perform the assigned duties;
 - (3) have been checked as proficient to perform all assigned duties in accordance with the procedures specified in the RPAS operations manual.
- (b) Before assigning to duties additional RPAS crew members who are self-employed or working on a freelance or part-time basis, the RPAS operator should verify that all applicable requirements of this Section are complied with, taking into account all services rendered by the additional RPAS crew member and the possible actions of the additional RPAS crew member which could be detrimental to flight safety, to determine in particular:
- (1) the total number of RPAS, RPA or RPS types and variants operated;
 - (2) the applicable duty time limitations and rest requirements.

ORR.CRW.420 Training and checking

- (a) The RPAS operator should establish a training programme in accordance with the applicable recommendations of this Section to cover the duties and responsibilities to be performed by additional RPAS crew members and the duties and responsibilities of the additional RPAS crew members, which could have an impact on the safety of flight.
- (b) Following the completion of initial, RPAS operator conversion, differences and recurrent training, each additional RPAS crew member should undergo a check to demonstrate their proficiency in carrying out normal and emergency procedures.
- (c) Training and checking should be conducted for each training course by personnel suitably qualified and experienced in the subject to be covered. The RPAS operator should notify the competent authority about the personnel conducting the checks.

ORR.CRW.430 Initial training

Before undertaking the RPAS operator conversion training, each additional RPAS crew member should complete initial training, including:

- (a) general theoretical knowledge on aviation and aviation regulations covering all elements relevant to the duties and responsibilities required of RPAS technical crew;
- (b) RPAS functions and related hazards;

ORR.CRW.440 RPAS operator conversion training

Each additional RPAS crew member should complete:

- (a) RPAS operator conversion training, including relevant CRM elements,
 - (1) before being first assigned by the RPAS operator as a technical or additional RPAS crew member; or
 - (2) when changing to a different RPAS type or class, if any of the equipment or procedures mentioned in (b) are different.
- (b) RPAS operator conversion training shall include all normal and emergency procedures related to the RPAS crew member duties and responsibilities.

ORR.CRW.450 Differences training

- (a) Each additional RPAS crew member should complete differences training when changing equipment or procedures on RPAS types or variants currently operated.
- (b) The RPAS operator should specify in the RPAS operations manual when such differences training is required.

ORR.CRW.460 Recurrent training

- (a) Each additional RPAS crew member should undergo recurrent training relevant to the type or class of RPAS and equipment that the technical or additional RPAS crew member operates. Elements of CRM should be integrated into all appropriate phases of the recurrent training, within every 12 month period, unless a different period is agreed by the competent authority,
- (b) Recurrent training should include theoretical and practical instruction and practice.

ORR.CRW.470 Refresher training

- (a) Each additional RPAS crew member who has not undertaken duties in the previous 6 months should complete the refresher training specified in the RPAS operations manual.
- (b) The additional RPAS crew member who has not performed duties on one particular RPAS, RPA or RPS type or class during the preceding 6 months should, before being assigned on that type or class, complete refresher training on the type or class.

7.5. Subpart ATR - Air Transport

Reserved in first edition of JARUS ORG.

JARUS-ORG Annex VII

8. PART-CSP

Recommendations for of C2 link Service Providers (CSP)

Reserved

JARUS-ORG Annex VIII

9. PART-RPS

Recommendations for Providers of remote pilot station services

Reserved

JARUS-ORG Annex IX

10. PART-ATO

Recommendations for Approved Training Organisation

10.1. Subpart GEN

GENERAL RECOMMENDATIONS

10.1.1. Section 1 GENERAL

ATO.GEN.100 Scope

- (a) The general recommendations in Part GOR should apply to ATOs training:
 - (1) remote pilots requiring a remote pilot licence; or
 - (2) staff requiring an aircraft maintenance licence to maintain validity of the RPA certificate of airworthiness;
- (b) The ATO in paragraph (a) should comply with the technical recommendations and administrative procedures laid down in Annex II and in this Annex.
- (c) The ATO in paragraph (a) should be approved by the competent authority.

ATO.GEN.110 Application

- (a) Applicants for the issue of a certificate as an ATO should provide the competent authority with:
 - (1) the following information:
 - (i) name and address of the training organisation;
 - (ii) date of intended commencement of activity;
 - (iii) personal details and qualifications of the Head of Training (HT), the flight instructor(s), flight simulation training instructors and the theoretical knowledge instructor(s);
 - (iv) name(s) and address(es) of the aerodromes(s) and operating site(s) at which the training is to be conducted;
 - (v) list of RPAS to be operated for training, including their group, class or type, registration, owners and category of the certificate of airworthiness, if applicable;
 - (vi) evidence that the RPAS are appropriately maintained;
 - (vii) demonstration of compliance with the applicable recommendations of Part ORR;
 - (viii) list of FSTDs or other equipment that the ATO intends to use, if applicable;
 - (ix) the type of training that the ATO wishes to provide and the corresponding training programme; and
 - (2) the RPAS operations and training manuals.
- (b) In the case of a change to the certificate, applicants shall provide the competent authority with the relevant parts of the information and documentation referred to in (a).

ATO.GEN.120 Personnel recommendations

(a) The HT should be nominated. The HT should have extensive experience as an instructor in the areas relevant for the training provided by the ATO and should possess sound managerial capability.

(b) The HT's responsibilities should include:

- (1) ensuring, as applicable, that the training provided is in compliance with Part RPL and relevant JARUS Part for training of maintenance staff;
- (2) ensuring that training programmes have been established;
- (3) ensuring the satisfactory integration of flight training or FSTD or practical training and theoretical knowledge instruction; and
- (4) supervising the progress of individual students.

(c) Theoretical knowledge instructors should have:

- (1) practical background in aviation in the areas relevant for the training provided and have undergone a course of training in instructional techniques; or
- (2) previous experience in giving theoretical knowledge instruction and an appropriate theoretical background in the subject on which they will provide theoretical knowledge instruction.

(d) Flight instructors and flight simulation training instructors should hold the qualifications required by Part RPL for the type of training that they are providing.

(e) Practical instructors for maintenance should have held the qualifications required by the relevant JARUS Part for RPAS maintenance and continuous airworthiness, for the type of training that they are providing, or equivalent experience.

ATO.GEN.130 Record-keeping

The following records shall be kept for a period of at least 3 years after the completion of the training:

- (a) detailed and regular progress reports from instructors including assessments, and theoretical examinations; and
- (b) information on the licences and associated ratings and certificates of the students, including their expiry dates while the students attend courses at the ATO.

ATO.GEN140 Training programme

(a) A training programme should be developed for each type of course offered.

(b) The training programme should comply with the recommendations of Part RPL or the relevant JARUS Part for training of maintenance staff.

ATO.GEN.150 RPAS Training manual

(a) The ATO should establish and maintain a RPAS training manual containing information and instructions to enable personnel to perform their duties and to give guidance to students on how to comply with course requirements.

(b) The ATO should make available to staff and, where appropriate, to students the information contained in the RPAS training manual and the ATO's approval documentation.

10.1.2. Section 2 MANAGEMENT

ATO.MAN.200 Management system

(a) The ATO should establish, implement and maintain a management system that includes:

- (1) clearly defined lines of responsibility and accountability throughout the organisation, including a direct safety accountability of the accountable manager;
- (2) a description of the overall philosophies and principles of the organisation with regard to safety, referred to as the safety policy;
- (3) the identification of aviation safety hazards entailed by the activities of the organisation, their evaluation and the management of associated risks, including taking actions to mitigate the risk and verify their effectiveness;
- (4) maintaining personnel trained and competent to perform their tasks;
- (5) documentation of all management system key processes, including a process for making personnel aware of their responsibilities and the procedure for amending this documentation;
- (6) a function to monitor compliance of the organisation with the relevant requirements. Compliance monitoring shall include a feedback system of findings to the accountable manager to ensure effective implementation of corrective actions as necessary; and
- (7) any additional recommendations that are prescribed in the relevant subparts of this JARUS-ORG.

(b) The management system should correspond to the size of the ATO and the nature and complexity of its activities, taking into account the hazards and associated risks inherent in these activities.

ATO.MAN.210 Personnel recommendations

(a) The ATO should appoint an accountable manager, who has the authority for ensuring that all activities can be financed and carried out in accordance with the applicable requirements. The accountable manager shall be responsible for establishing and maintaining an effective management system.

(b) A person or group of persons should be nominated by the organisation, with the responsibility of ensuring that the organisation remains in compliance with the applicable requirements. Such person(s) should be ultimately responsible to the accountable manager.

(c) The ATO should have sufficient qualified personnel for the planned tasks and activities to be performed in accordance with the applicable requirements.

(d) The ATO should maintain appropriate experience, qualification and training records to show compliance with paragraph (c).

(e) The ATO should ensure that all personnel are aware of the rules and procedures relevant to the exercise of their duties.

10.2. Subpart PTO – Recommendations for Remote Pilot Training Organisations

10.2.1. Section 1 RECOMMENDATIONS FOR PTO

ATO.PTO.100 RPAS Operations manual

- (a) The PTO providing instruction in flight, should establish and maintain an RPAS operations manual containing information and instructions to enable personnel to perform their duties and to give guidance to students on how to comply with course requirements.
- (b) The PTO should make available to staff and, where appropriate, to students the information contained in the RPAS operations manual.
- (c) The RPAS operations manual should establish flight time limitation schemes, including maximum flying duty hours and minimum rest time between instructional duties.

ATO.PTO.110 Record-keeping

The following records shall be kept for a period of at least 3 years after the completion of the training:

- (a) details of ground, flight, and simulated flight training given to individual students;
- (b) detailed and regular progress reports from instructors including assessments, and regular progress flight tests and ground examinations; and
- (c) information on the licences and associated ratings and certificates of the students, including the expiry dates of medical certificates and ratings, while there are attending courses at the PTO.

ATO.PTO.120 Training RPAS and FSTDs

- (a) The PTO should use an adequate fleet of RPAS or FSTDs appropriate to the courses of training provided.
- (b) The PTO should only provide training in FSTDs when it demonstrates to the competent authority:
 - (1) the adequacy between the FSTD specifications and the related training programme;
 - (2) that the FSTDs used comply with the relevant recommendations of Part-RPL; and
 - (3) that it has put in place a system to adequately monitor changes to the FSTD and to ensure that those changes do not affect the adequacy of the training programme.

ATO.PTO.130 Aerodromes and operating sites

When providing flight training, the PTO should use aerodromes or operating sites that have the appropriate facilities and characteristics to allow training of the manoeuvres relevant, taking into account the training provided and the category and type of RPAS used.

ATO.PTO.140 Pre-requisites for training

The PTO should ensure that the students meet all the pre-requisites for training established in Part-RPL.

10.3. Subpart FSTD - RECOMMENDATIONS FOR ATO OPERATING (FSTDs AND THE QUALIFICATION OF FSTDs

10.3.1. Section 1 RECOMMENDATIONS FOR ORGANISATIONS OPERATING FSTDs

ATO.FSTD.100 General

(a) The applicant for an FSTD qualification certificate should demonstrate to the competent authority that it has established a management system in accordance with ORA.ATO.200 . This demonstration should ensure that the applicant has, directly or through contract, the capability to maintain the performance, functions and other characteristics specified for the FSTD's qualification level and to control the installation of the FSTD.

(b) If the applicant is the holder of a qualification certificate issued in accordance with this Part, the FSTD specifications should be detailed:

- (1) in the terms of the ATO certificate; or
- (2) in the case of a ROC holder, in the RPAS training manual.

ATO.FSTD.110 Maintaining the FSTD qualification

(a) In order to maintain the qualification of the FSTD, an FSTD qualification certificate holder should run the complete set of tests contained within the master qualification test guide (MQTG) and functions and subjective tests progressively over a 12-month period.

(b) The results should be dated, marked as analysed and evaluated, and retained, in order to demonstrate that the FSTD standards are being maintained.

(c) A configuration control system should be established to ensure the continued integrity of the hardware and software of the qualified FSTD.

ATO.FSTD.120 Modifications

(a) The holder of an FSTD qualification certificate should establish and maintain a system to identify, assess and incorporate any important modifications into the FSTDs it operates, especially:

- (1) any RPAS modifications that are essential for training, testing and checking, whether or not enforced by an airworthiness directive; and
- (2) any modification of an FSTD, including visual systems, when essential for training, testing and checking, as in the case of data revisions.

(b) Modifications of the FSTD hardware and software that affect handling, performance and systems operation or any major modifications of the visual system should be evaluated to determine the impact on the original qualification criteria. The organisation should prepare amendments for any affected validation tests. The organisation should test the FSTD to the new criteria.

(c) The organisation should inform the competent authority in advance of any major changes to determine if the tests carried out are satisfactory. The competent authority should determine if a special evaluation of the FSTD is necessary prior to returning it to training following the modification.

ATO.FSTD.130 Installations

(a) The holder of an FSTD qualification certificate should ensure that:

- (1) the FSTD is housed in a suitable environment that supports safe and reliable operation;
- (2) all FSTD occupants and maintenance personnel are briefed on FSTD safety to ensure that they are aware of all safety equipment and procedures in the FSTD in case of an emergency; and
- (3) the FSTD and its installations comply with the local regulations for health and safety.

(b) The FSTD safety features, such as emergency exits and emergency lighting, should be checked at least annually and recorded.

ATO.FSTD.140 Additional equipment

Where additional equipment has been added to the FSTD, even though not required for qualification, it should be assessed by the competent authority to ensure that it does not adversely affect the quality of training.

10.3.2. Section II RECOMMENDATIONS FOR THE QUALIFICATION OF FSTDs

ATO.FSTD.200 Application for FSTD qualification

(a) The application for an FSTD qualification certificate should be made in a form and manner established by the competent authority either by the manufacturer or by the organisation intending to operate the FSTD.

(b) Applicants for an initial qualification should provide the competent authority with documentation demonstrating how they will comply with the recommendations in this JARUS-ORG.

ATO.FSTD.220 Qualification basis

(a) The qualification basis for the issuance of an FSTD qualification certificate shall consist of:

- (1) the applicable Certification Specifications established by the competent authority that are effective on the date of the application for the initial qualification;
- (2) the RPAS approved design data, if applicable; and
- (3) any special conditions prescribed by the competent authority if the related Certification Specifications do not exist or do not contain adequate or appropriate standards for the FSTD because the FSTD has novel or different features to those upon which the applicable Certification Specifications are based.

(b) The qualification basis should be applicable for future recurrent qualifications of the FSTD, unless it is re-categorised.

ATO.FSTD.230 Duration and continued validity

(a) The flight training device (FTD) or flight and navigation procedures trainer (FNPT) qualification should remain valid subject to:

- (1) the FSTD and the operating organisation remaining in compliance with the applicable requirements;
- (2) the competent authority being granted access to the organisation to determine continued compliance with the relevant requirements; and
- (3) the qualification certificate not being surrendered or revoked.

(b) The period of 12 months between inspections may be extended up to a maximum of 36 months, in the following circumstances:

- (1) the FSTD has been subject to an initial and at least one recurrent evaluation that has established its compliance with the qualification basis;
- (2) the FSTD qualification certificate holder has a satisfactory record of successful regulatory FSTD evaluations during the previous 36 months;
- (3) the competent authority performs a formal audit of the management system of the organisation every 12 months; and
- (4) an assigned person of the organisation with adequate experience reviews the regular reruns of the qualification test guide (QTG) and conducts the relevant functions and subjective tests every 12 months and sends a report of the results to the competent authority.

(c) Upon surrender or revocation, the FSTD qualification certificate should be returned to the competent authority.

ATO.FSTD.240 Changes to the qualified FSTD

(a) The holder of an FSTD qualification certificate should inform the competent authority of any proposed changes to the FSTD, such as:

- (1) major modifications;
- (2) relocation of the FSTD; and
- (3) any de-activation of the FSTD.

(b) In case of an upgrade of the FSTD qualification level, the organisation should apply to the competent authority for an upgrade evaluation. The organisation should run all validation tests for the requested qualification level. Results from previous evaluations should not be used to validate FSTD performance for the current upgrade.

(c) When an FSTD is moved to a new location, the organisation should inform the competent authority before the planned activity, along with a schedule of related events.

(d) Prior to returning the FSTD to service at the new location, the organisation should perform at least one third of the validation tests, and functions and subjective tests to ensure that the FSTD performance meets its original qualification standard. A copy of the test documentation should be retained together with the FSTD records for review by the competent authority.

(e) The competent authority may perform an evaluation of the FSTD after relocation. The evaluation should be in accordance with the original qualification basis of the FSTD.

(f) If an organisation plans to remove an FSTD from active status for prolonged periods, the competent authority should be notified and suitable controls established for the period during which the FSTD is inactive.

(g) The organisation should agree with the competent authority a plan for the de-activation, any storage and re-activation to ensure that the FSTD can be restored to active status at its original qualification level.

ATO.FSTD.250 Transferability of an FSTD qualification

(a) When there is a change of the organisation operating an FSTD, the new organisation should inform the competent authority in advance in order to agree upon a plan of transfer of the FSTD.

(b) The competent authority may perform an evaluation in accordance with the original qualification basis of the FSTD.

(c) When the FSTD no longer complies with its initial qualification basis, the organisation should apply for a new FSTD qualification certificate.

ATO.FSTD.260 Record-keeping

The holder of an FSTD qualification certificate should keep records of:

(a) all documents describing and proving the initial qualification basis and level of the FSTD for the duration of the FSTD's lifetime; and

(b) any recurrent documents and reports related to each FSTD and to compliance monitoring activities for a period of at least 5 years.

10.4. Subpart MTO - Maintenance Training Organisations

Reserved in first edition of JARUS-ORG