

SOUTH AFRICAN



*CIVIL AVIATION
AUTHORITY*

**Remotely Piloted Aircraft Systems (Part 101) Regulations
Workshops**

RPAS regulations (Part 101)



RPAS regulations (Part 101) Overview



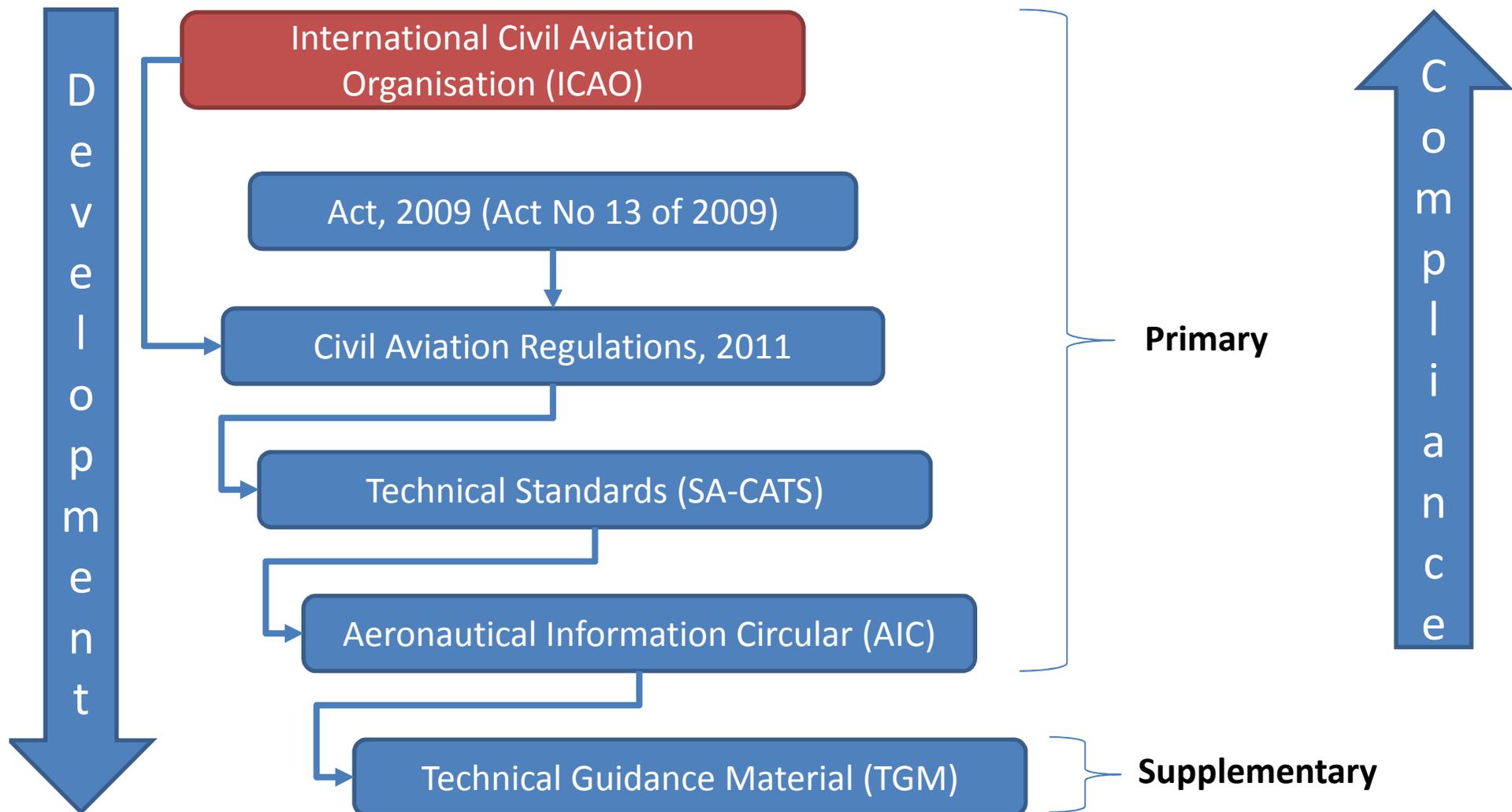
Objectives of the workshop:

1. To highlight the importance of a regulatory framework for RPAS
2. To share International Civil Aviation Organisation plans
3. To educate and discuss the compliance process flow for Part 101 with the industry
4. To gather inputs on areas of improvement and the future development of Part 101.



RPAS regulations (Part 101) Overview

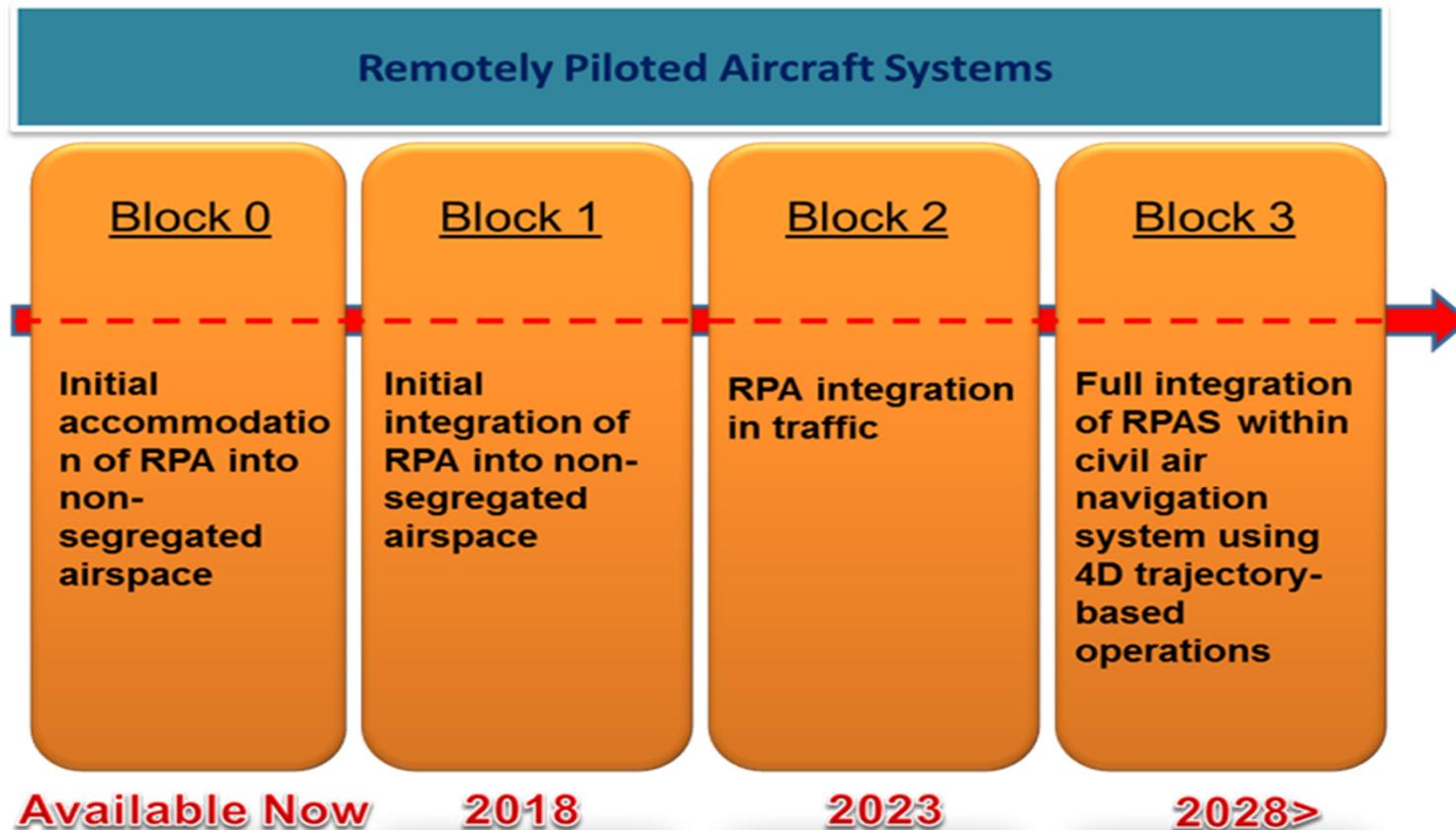
Regulatory Hierarchy:





RPAS regulations (Part 101) Overview

ICAO – Standards and Recommended Practices (SARPS) Development Plan





RPAS regulations (Part 101) Overview



EIGHTH AMENDMENT OF THE CIVIL AVIATION REGULATIONS, 2015

Part 101: Remotely Piloted Aircraft Systems

Consists of Six Sub-parts:

Subpart 1: General provisions

Subpart 2: Approval and registration

Subpart 3: Personnel licensing

Subpart 4: RPAS operating certificate

Subpart 5: RPAS operations

Subpart 6: Maintenance



RPAS regulations (Part 101) Overview



Civil Aviation Regulations (CARs) and Technical Standards (CATS)

- Remotely Piloted Aircraft Systems – Part 101
- South African Technical Standards – SA-CATS 101

Aeronautical Information Circular (AIC) and Technical Guidance Material (TGM)

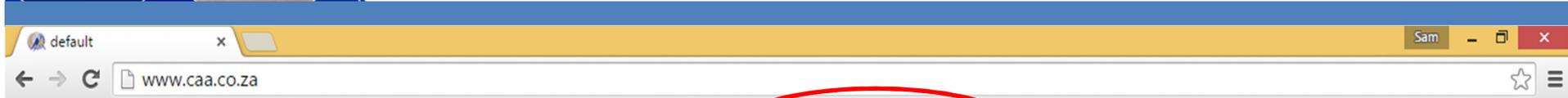
AICs:

- AIC 007-2015: Remotely Pilot's Licence: Training, Examination and Application for RPL Requirements
- AIC 008-2015: Aviation Training Organisations Conducting RPAS Training
- AIC 009-2015: General exemption granted by the Director of Civil Aviation from the requirements of Part 101 pertaining to private operations

TGMs

- TGM for RPAS PART 101
- TGM for Part 101 RPAS Letter of Approval (Sub-part 2)
- TGM for Personnel Licensing Part 101 (Sub-part 3)
- TGM for the RLA Maintenance Programme (Sub-part 6)

SACAA website



UPCOMING RPAS WORKSHOPS

Remotely Piloted Aircraft Systems (Part 101) Regulations Workshops

The SA Civil Aviation Authority cordially invites you to attend the Remotely Piloted Aircraft Systems (Part 101) Regulations Workshops taking place as follows:

- 19 August 2015: KwaZulu-Natal (Durban) – Protea Hotel Edward
- 2 September 2015: Mpumalanga (Nelspruit) – Protea Hotel Malaga
- 16 September 2015: Free State & Northern Cape (Bloemfontein) – Protea Hotel Bloemfontein Central
- 22 September 2015: North West (Rustenburg) – Protea Hotel Hunters Rest
- 30 September 2015: Limpopo (Polokwane) – Bolivia Lodge

NOTE: Kindly indicate which workshop you would like to attend.
All the workshops will take place from 08h00 to 16h00.

RSVP to Thembi Ngwenya - ngwenyat@caa.co.za or 011 545 1040

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- Corporate Communications
- Frequently Asked Questions
- Applications for Exemption
- Vacancies
- Careers in Aviation

Supply Chain Management

- Tenders
- Supplier Registration Forms

Legal

- Notices
- Legislation
- Enforcement
- Fees

Reporting

- CSSR
- CAHRS
- Lasers
- Anonymous Tip-offs

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News update >> 5 dead in crash of ambulance aircraft [Read more](#)

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- Corporate Communications
- Frequently Asked Questions
- Applications for Exemption
- Vacancies

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- Tenders
- Supplier Registration Forms

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REPORT

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- CAHRS
- Incidents
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- Aeronautical information
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- Airworthiness
- Aviation Environmental Protection
- Aviation Medicine
- Aviation Personnel Standards
- Aviation Security
- Flight Inspection
- Flight Operations
- Licensing and Examinations
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- SMS
- Communication, Navigation, and Surveillance
- Remotely Piloted Aircraft Systems**

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SACAA website



General Information x Sam - [Close] [Maximize] [Refresh] [Home] [Back] [Forward] [Address bar: www.caa.co.za/Pages/RPAS/Remotely%20Piloted%20Aircraft%20Systems.aspx] [Star] [Menu]

Remotely Piloted Aircraft Systems



News update >> [5 dead in crash of ambulance aircraft](#) [Read more](#)



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General Information

Definitions:

"Remotely piloted aircraft" (RPAS) means an unmanned aircraft which is piloted from a remote pilot station, excluding model aircraft and toy aircraft.

"Toy aircraft" means a product falling under the definition of aircraft which is designed or intended for use in play by children.

"Model aircraft" means a non-human-carrying aircraft capable of sustained flight in the atmosphere and used exclusively for air display, recreational use, sport or competitions.

Acceptable uses of RPAS

For private use –

- (a) The RPAS may only be used for an individual's personal and private purposes where there is no commercial outcome, interest or gain;
- (b) The pilot must observe all statutory requirements relating to liability, privacy and any other laws enforceable by any other authorities.

For all other use –

- (a) an RPA must be registered and may only be operated in terms of Part 101 of the South African Civil Aviation Regulations.

Important Links

- [Information for owners & operators](#)
- [Registration of RPAS](#)
- [Letter of approval for the RPA](#)
- [RPAS pilot licensing](#)
- [RPAS operators certificate](#)
- [RPAS maintenance](#)
- [Private Operations](#)
- [Sale and resale of RPAS](#)
- [ATO](#)
- [Legislation](#)
- [Forms](#)
- [Fees](#)
- [FAQ](#)

PDFs will require latest version of Adobe Reader

Windows taskbar: [Start] [IE] [Folder] [Excel] [Word] [PowerPoint] [VLC] [Chrome] [Opera] [PDF] [Mail] [Cone] [System tray: ? [Volume] [Network] [Power] [Time: 10:11 AM 2015-08-18]]

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**RPAS regulations (Part 101)
Sub-part 1, General**



Part 101: Sub-part 1 - General

Gatewing x100



Weight: 2.2 kg
Cruise: 80 km/h
Range: 50km
Ceiling: 750 m AGL

Discoverer



Weight: 21.5 + 10 kg
Cruise: 76 km/h
Range: 30 km
Ceiling: 16000 ft.



Weight: 1000g
Max speed: 15m/s
Flight Time: 25mins

Hawkeye UAV



Weight: 4.2 kg,
Cruise: 55-60 km/h

Black Hornet Nano helicopter



Weight: 14 g ,Speed: 35.4 km/h

Dassault nEUROn



Weight: 7000 kg
Speed 980 km/h
Ceiling: 45900 ft.



Part 101: Sub-part 1 - General



RPAS grouping and classification: Document SA-CATS 101

Class	Table 1: RPAS Classification			
	Line-of-sight	Energy (kJ)	Height (ft)	MTOM (kg)
Class 1A	R-VLOS/VLOS	E < 15	h < 400	m < 1.5
Class 1B	R-VLOS/VLOS	E < 15	h < 400	m < 7
Class 1C	VLOS/E-VLOS	E < 34	h < 400	m < 20
Class 2A	VLOS/EVLOS	E > 34	h < 400	m < 20
Class 2B	Experimental/Research			
Class 3A	BVLOS	E > 34	h < 400	m < 150
Class 3B	VLOS/EVLOS	Any	h > 400	m < 150
Class 4A	BVLOS	Any	h > 400	m < 150
Class 4B	Any	Any	Any	m > 150
Class 5	Reserved	Reserved	Reserved	Reserved
Reserved - means to be defined in the future				
h - means height above the surface				
E - Energy at impact				
Note: All operations are limited to radio line-of-sight				

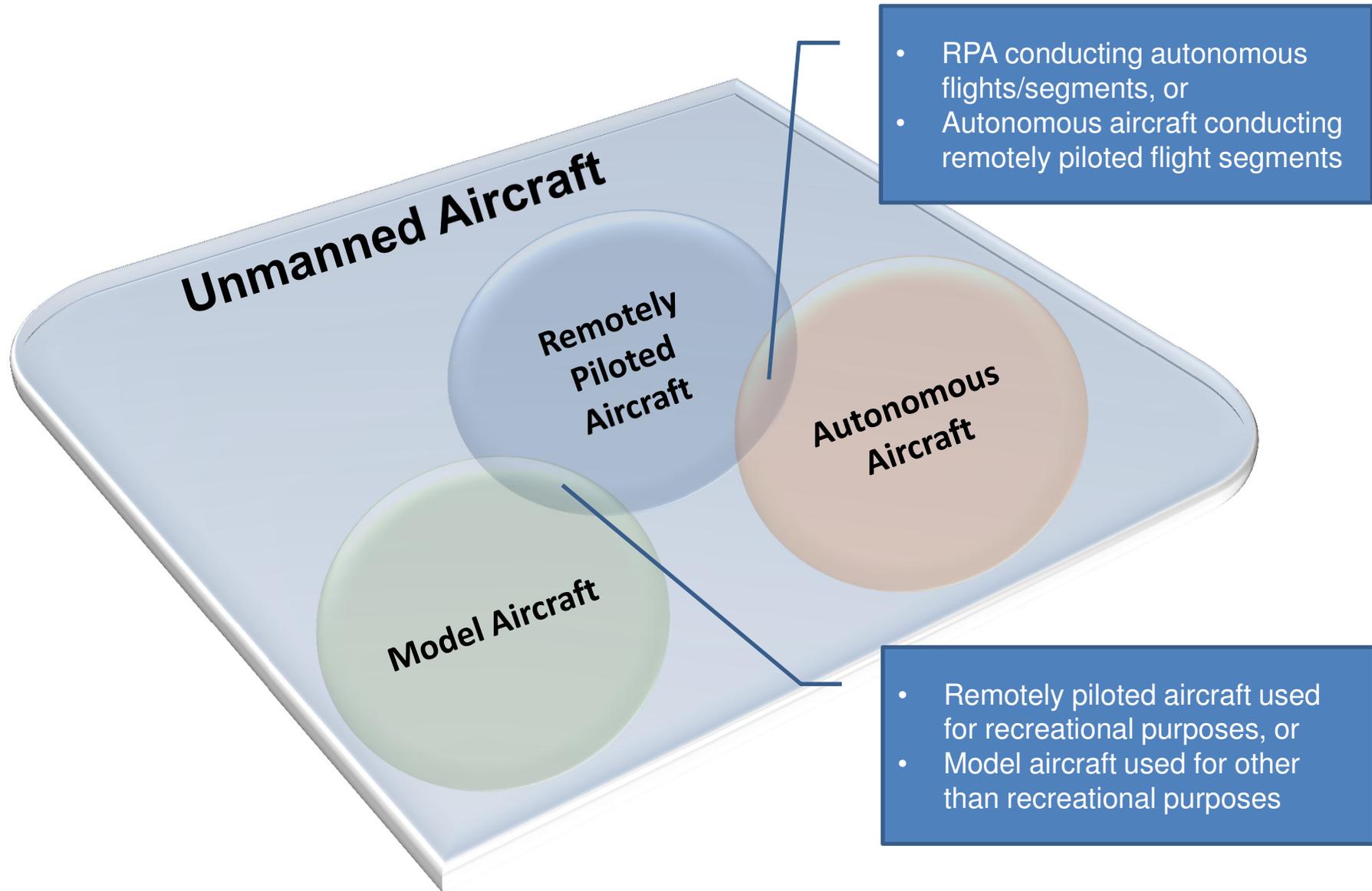


Part 101: Sub-part 1 - General

- 101.01.1**(1) This Part applies to –
- (a) Class 1 and 2 of remotely piloted aircraft, unless otherwise approved by the Director; and
 - (b) persons acting as owners, operators, observers, pilots and who are in the performance of maintenance of RPA.
- (2) For the purposes of this Part, RPAS may be operated for –
- (a) commercial operations;
 - (b) corporate operations;
 - (c) non-profit operations; and
 - (d) private operations.
- (3) This Part does not apply to –
- (a) autonomous unmanned aircraft, unmanned free balloons and their operations or other types of aircraft which cannot be managed on a real-time basis during flight;
 - (b) an aircraft operated in terms of Part 94;
 - (c) a model aircraft; and
 - (d) toy aircraft.



Part 101: Sub-part 1 - General





Part 101: Sub-part 1 - General



Private operations:

means the use of an RPA for an individual's personal and private purposes where there is no commercial outcome, interest or gain.

101.01.2 (1) Subject to sub-regulation (2), the provisions of Subparts 2, 3, 4 and 6 of this Part do not apply to the private operation of RPAS.

(2) Notwithstanding sub-regulation (1), the provisions of regulations 101.05.5(2); 101.05.8(1)(b), (c) and (d); 101.05.9(1)(a) and (b) do not apply to the private operation of RPAS.

(3) Private operations of RPAS shall be conducted only in R-VLOS with a Class 1A or 1B RPA.

Further exemptions:

Private operations are also exempted from Sub-regulations: 101.05.21 – 25

See AIC 009-2015 General exemption granted by the Director of Civil Aviation from the requirements of Part 101 pertaining to private operations



Part 101: Sub-part 1 - General



Directives

101.01.4 The Director may, from time to time, issue directives which are necessary for the safe and secure operation of RPAS.

RPA sales or re-sales labelling

101.01.5 No RPA shall be sold within the Republic unless the seller has, **by way of a packaging label**, or in the case of the resale thereof, **by way of written notification**, notified the buyer of the requirements as prescribed in Document SA-CATS 101.

Refer to Document SA-CATS 101 for a label sample

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**RPAS regulations (Part 101)
Sub-part 2, RPAS Registration**



Part 101: Sub-part 2 - Approval and Registration



Registration and marking

101.02.4 (1) No RPA shall be operated within the Republic, unless such RPA has been issued with a certificate of registration by the Director.

(2) The format and specification of the nationality mark designated for use on RPA shall be as prescribed in Document SA-CATS 101.

Application for a new registration

The **original** application (Form CA-47R1) must be submitted to the SA Civil Aviation Authority. See page 5 of the Form CA 47-R1 for the required supporting documentation.



Part 101: Sub-part 2 - Approval and Registration



Registration of a new RPA

In the case of an RPA which is imported into the Republic for the first time or returns to the Republic and has to be re-registered on the South African Civil Aircraft Register (SACAR):

An **original** affidavit confirming the following:

- Non-registration or de-registration of the RPA from the State or territory from which the aircraft is imported
- Ownership of the RPA
- Manufacturer, Serial number and model of the RPA

A copy of the Clearance Importation Document issued by SARS (Form SAD500), if applicable.

In the case of ex-military RPA:

- Confirmation issued by National Conventional Arms Control Committee (NCACC) that the aircraft is not fitted with any armaments.



Part 101: Sub-part 2 Approval and Registration



Registration of a new RPAS (continued)

If the aircraft is to be registered in the name of a company:

- A copy of the latest register of directors approved in terms of the Companies Act, 2008 (Act No. 71 of 2008). (Form COR39)
- The authorising resolution on page 4 hereof
- Any of the following certified documents: SA identity document, SA passport, valid SA driver's licence, as authorised on page 4 of the resolution.

If the aircraft is to be registered in the name of a close corporation:

- A copy of the latest founding statement approved in terms of the Close Corporation Act, 1984 (Act No.69 of 1984). (Form CK1/ CK2)
- The authorising resolution on page 4 hereof
- Any of the following certified documents: SA identity documents, SA passport, valid SA driver's licence, as authorised on page 4 of the resolution.



Part 101: Sub-part 2 - Approval and Registration

Registration of a new RPAS (continued)

If the aircraft is to be registered in the name of a trust:

- A certified copy of the appropriate letter of appointment as trustee, issued by the Master of the High court. (Form J246)
- The authorising resolution on page 4 hereof
- Any of the following certified documents: SA identity document, SA passport, valid SA driver's licence, as authorised on page 4 of the resolution.

Other possible registration transactions

- Form CA-47R2 - for change of ownership
- Form CA-47R3 - for deletion due to accident or export
- Form CA-47R4 - amendment of C of R
- Form CA-47R5 - for duplicate C of R

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**RPAS regulations (Part 101)
Sub-part 2, RPAS Approval**



Part 101: Sub-part 2 - Approval and Registration



RPAS letter of approval

101.02.1 (1) No RPAS shall be operated within the Republic, unless such RPAS has been issued with a letter of approval by the Director.

(2) An application for the issuing or renewal of an RLA shall be made to the Director on the appropriate form and accompanied by the appropriate fee.

(3) The Director shall issue an RLA if the applicant complies with all prescribed requirements

(4) An RLA shall be valid for a period of 12 months from date of issue.



Part 101: Sub-part 2 - Approval and Registration



RPAS system safety

101.02.2 (1) An applicant for the issue of an RLA, shall provide the Director with –

- (a) documentation regarding the standard to which the RPAS was designed; **or**
- (b) equivalent documentation that demonstrates a level of safety acceptable to the Director; **or**
- (c) documentation demonstrating system safety as prescribed in Document SA-CATS 101.



Part 101: Sub-part 2 - Approval and Registration



Evaluation process

Submitted documentation should substantiate that the RPAS in question is capable of being operated safely for the work it will be deployed for. The evaluation process will consider the contents of Operational Specifications (OpsSpec) issued by the Director as part of RPAS Operators Certificate (ROC).

Credits

The SACAA will consider documentation for previously approved RLA for similar RPAS. Should operational conditions change, SACAA may request more documentation or substantiation to cover the differences.

Altimeter

An RPA that is not equipped with an altimetry system or equivalent shall be operated under R-VLOS only.

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**RPAS regulations (Part 101)
Sub-part 6, Maintenance**



Part 101: Sub-part 6 - RPAS Maintenance



RPAS maintenance

Due to the fact that there are currently no certification standards for RPAS, the applicant should maintain the RPA in accordance with the manufacturer's instructions, whether it is through actions or inspections. The maintenance programme has to be submitted to the SACAA for the Director's approval.

101.06.2 (1) The maintenance on an RPA or any component thereof shall be carried out by the following persons:

- (a) In respect of an RPA classified as a Class 3 and higher, the holder of a valid RMT authorisation; or
- (b) In respect of an RPA classified as Class 2 and lower, the ROC holder: provided that the holder can demonstrate to the satisfaction of the Director, its ability to perform the required maintenance on the RPA.

See the Technical Guidance Material (TGM) for the Maintenance programme for guidance.



Part 101: Sub-part 6 - RPAS Maintenance



Maintenance Engineers

A person making application should:

- Be no less than 18 years of age
- Be a South African citizen or in possession of a valid permanent residence permit or valid temporary work permit with a letter of employment
- Have successfully completed appropriate training, provided by (i) an organisation approved by the competent authority in the country where the training organisation is located; (ii) an approved original equipment manufacturer, or (iii) a training facility approved by the Director, or
- Demonstrate the ability to perform maintenance functions where no training for the particular RPA is offered or available.

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**RPAS regulations (Part 101)
Sub-part 3, Personnel Licensing**



Part 101: Sub-part 3 - Personnel Licensing



101.03.1 (1) No person shall act as a remote pilot, except when undergoing a skills test or receiving flight instruction, unless he or she is in possession of a valid remote pilot's licence (RPL) in the relevant category.

Pilot's Licence:

Prior to making any application with SACAA, an applicant should obtain aviation training from an approved training organisation (ATO).

Some requirements

- An applicant should not be less than 18 years of age
- Applicant must hold current medical assessment
- Applicant must meet theoretical requirements as per SA-CATS 101
- Applicant must pass the RPL practical assessment
- Applicant must also pass at least restricted Radiotelephony Examination
- Applicant should achieve English Language Proficiency (ELP) level 4 or higher.

** See Part 101 Civil Aviation Regulations (CARs) and Civil Aviation Technical Standards (CATS) for complete list of requirements*



Part 101: Sub-part 3 - Personnel Licensing

Remote Pilot's Licence:

A remote pilot's licence may be issued for the following categories:

- Aeroplane
- Helicopter
- Multi-rotor

The following ratings may be endorsed on the licence:

- Visual line-of-sight operations (VLOS)
- Extended visual line-of-sight operations (EVLOS)
- Beyond visual line-of-sight operations (BVLOS)

An applicant should successfully complete:

- Theoretical knowledge examination
- Flight training

Revalidation check:

- An RPL is valid until the last day of the 24th month from the date of issue.
- A revalidation check shall be conducted in the 90-day period before the expiry date of the validity period by an examiner accredited by the Director. The revalidation shall be valid from the expiry date for a period of 24 months.



Part 101: Sub-part 3 - Personnel Licensing



Instructors:

- A holder of an RPL should apply to the SACAA for instructor rating
- Remote pilot instructors shall apply to the SACAA for designation as remote pilot examiners.

Credits

Prior learning will be recognised and applies to and including the following:

A person who holds or have held:

- A Pilot's Licence
- A military qualification equivalent to a licence and rating; or
- An air traffic control licence, or a military qualification equivalent to an air traffic control licence
- Commercial air, unmanned aircraft operations experience.

** See AIC 007-2015 Remotely Pilot's Licence: Training, Examination and Application for RPL requirements for more information*



Part 101: Sub-part 3 - Personnel Licensing



Foreign RPL training:

Theoretical knowledge examination

- Approval shall be obtained from the Director **before** any foreign theoretical training or theoretical knowledge examination is undertaken if such training or knowledge is to be accredited towards a South African RPL.

Flight training

- Approval shall be obtained from the Director **before** any foreign flight training is undertaken, if such training is to be accredited towards a South African RPL.

Pilot's logbook:

- The holder of an RPL must maintain in a pilot's logbook a record of all his or her flight time, instrument time, simulation time and instruction time
- The holder of an RPL must make the logbook available for inspection upon a reasonable request by an authorised officer, inspector or authorised person.

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RPAS Training Organisations



RPAS Training Organisations



HOW
does the
approval
process
work?

WHAT is an RTO?

WHERE do I
apply?

WHO do I
contact?

WHY the need for
RTO's?



RPAS Training Organisations



WHAT is an RTO?

Remotely Piloted Aircraft System **T**raining **O**rganization

An approved organization that conducts the theoretical and practical training required for the issue of an RPAS Licence



RPAS Training Organisations



All commercially operated RPAS's require Licenced Pilots

RTO's will provide the training towards the issue of an RPL Pilots licence

WHY the need for RTO's?



RPAS Training Organisations



WHERE do I
apply?

SACAA



RPAS Training Organisations



Existing ATO's





RPAS Training Organisations



Existing ATOs RPAS Training Organisations

- Credits For Existing ATOs
 - Submit the Following:
 - Amendments to Manuals
 - Fees Required as Per Part 187
- Current ATO Operation Specification will be amended to reflect RPAS Training *IF* the amendments are compliant and approved.



RPAS Training Organisations



Existing ATOs RPAS Training Organisations

- Existing ATO Amendments Required:
 - General
 - Aircraft operating information
 - Routes
 - Staff training
 - Training plan
 - Training syllabus
 - Simulation training syllabus
 - Theoretical knowledge syllabus
 - Tests and checks conducted for the issue of a licence or a rating
 - Records
 - Safety management system
 - Quality assurance system
 - Appendices.



RPAS Training Organisations



Prospective
ATO's





RPAS Training Organisations



HOW do
I apply
for
approval
of an
RTO

The application process follows the five phase process

Phase 1 Initial Meeting

Discussion between Prospective Operator and SACAA

Phase 2 Formal Application

Submit formal application and fees

Phase 3 Documentation Phase

Submit manuals for approval

Phase 4 Evaluation Phase

Base Inspection

Phase 5 Final Certification

Final Approvals Issued



RPAS Training Organisations



Phase 1
Initial Meeting Phase



RPAS Training Organisations



Phase 1 Initial Meeting

Contact Details to Set Up Initial Meeting

- Kirsty Barker BarkerK@caa.co.za
- Zia Meer MeerZ@caa.co.za



RPAS Training Organisations



Phase 1

Initial Meeting

Before Arriving at the Initial Meeting

- Complete Prospective Operator's Pre-Assessment Statement Form



RPAS Training Organisations



Phase 1

Initial Meeting

What to expect at the Initial Meeting

- Information pack will be provided containing:
 - Application Forms
 - Technical Guidance Material
 - Fees payable as per Part 187



RPAS Training Organisations



Phase 1 Initial Meeting What to expect at the Initial Meeting

- Discussions will include
 - Post holders
 - Previous Experience
 - Suitability
 - Roles and Responsibilities
 - Training
 - Where will training take place?
 - What training do you plan on conducting?
 - Who will be conducting the training?
 - How will the training be conducted?



RPAS Training Organisations



Phase 1 Initial Meeting What to expect at the Initial Meeting

- Discussions will include
 - Facilities
 - Environment conducive to training
 - OHAS considerations
 - Appropriate training aids
 - Documentation to be submitted for Phase 2
 - Application Form
 - Fees Payable



RPAS Training Organisations



Phase 2
Formal Application



RPAS Training Organisations



Phase 2

Formal Application

What is required for the Formal Application

- Completion of the Application Form
- Fees as per Part 187
 - Application Fee
 - Initial Approval of TPM Fee
 - Fee per tail number



RPAS Training Organisations



Phase 2 Formal Application What to expect

– ATO Number



RPAS Training Organisations



Phase 3 Documentation Phase



RPAS Training Organisations



Phase 3

Documentation Phase

What is required during the Documentation Phase

- Training and Procedures Manual
 - CATS 141.02.2
 - Excluding Exemptions listed in ATO AIC
 - Quality Management System Manual
 - CATS 141.02.3
- Safety Management System Manual
 - CATS 140.01.3
- All manuals to be submitted in duplicate



RPAS Training Organisations



Phase 3

Documentation Phase

Approval of Documentation

- Approval of Manuals
 - Service level agreement for approval is 90 days.



Phase 3

Documentation Phase

Approval of Documentation

- Manuals which are Not Approved
 - Manuals will be returned to the operator along with a checklist.
 - The operator will be required to amend the relevant areas and resubmit for approval.



RPAS Training Organisations



Phase 4 Evaluation Phase





Phase 4

Evaluation Phase

Base Inspection

- Quality Management System
- Flight Training
- Student Files and Records
- Instructor Files and Records
- Safety Management System
- Accident and Incident Reporting System
- Emergency Response Plans
- Infrastructure
- Publications



RPAS Training Organisations



Phase 5 Final Certification





RPAS Training Organisations



Phase 5

Final Certification

Documentation Pack to be Submitted by the Inspector

- Base Inspection Report
- Base Inspection Checklist
- POPS Form
- Application Form
- Proof of Payment
- Schedule of Events
- Manuals



RPAS Training Organisations



Phase 5 Final Certification What to Expect

- Aviation Training Organisation Certificate
- Aviation Training Organisation Ops Spec
 - Endorsed for RPAS Training
- Approved and Stamped Manuals



RPAS Training Organisations



In Conclusion



Conclusion

RPAS Training Organisations

- General Advice and Guidance
 - Familiarize yourself with:

Part 12

Part 91

Part 101

Part 140

Part 141

Part 185

Part 187

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**Remotely Piloted Aircraft Systems (Part 101) Regulations
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**RPAS regulations (Part 101)
Sub-part 4, RPAS Operators'
Certificate**



Part 101: Sub-part 4 - RPAS Operating Certificate (ROC)



General requirements

101.04.1 (1) No person shall operate an RPAS in terms of this Part unless such person is the holder of –

- (a) in the case of commercial, corporate and non-profit operations, a valid ROC including the operations specifications attached thereto; and
- (b) in the case of commercial operations, an air services licence issued in terms of the Air Services Licensing Act, 1990 (Act No. 115 of 1990).

Application

101.04.2 (1) An application for the issuing of an ROC or renewal or an amendment thereto, shall be –

- (a) made to the Director on the appropriate form;
- (b) accompanied by –
 - (i) the appropriate fee as prescribed in Part 187;
 - (ii) a copy of the certificate of registration of each RPA to be operated;
 - (iii) a copy of the RLA for each device to be operated; and
 - (iv) for an initial issue, an original operations manual as required by this Part.



Part 101: Sub-part 4 - RPAS Operating Certificate (ROC)



Validity

101.04.3 (1) An ROC shall be valid for 12 months from the date of issue unless

—

- (a) it is surrendered by the holder thereof; or
- (b) it is suspended by an authorised officer, inspector or authorised person or cancelled by the Director.

(2) The holder of an ROC shall, at least 60 days immediately preceding the date on which such certificate expires, apply for the renewal of such certificate.

(3) The holder of an ROC which is cancelled shall, within seven days from the date on which the ROC is cancelled, surrender such document to the Director.

Duties of the holder of an ROC

101.04.4 (1) The holder of an ROC shall —

- (a) conduct the activities granted by such certificate and ensure compliance with the provisions authorised therein;
- (b) ensure compliance with any other requirements which the Director may impose;

(2) For operations approved for E-VLOS, the operator shall ensure that each observer has completed the training prescribed by the operator and as approved by the Director in their operations manual.



Part 101: Sub-part 4 - RPAS Operating Certificate (ROC)



Operations manual

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

(2) An ROC holder shall set out the type and scope of operations, including the manner in which each type of RPAS and operation will be safely conducted.

(3) The operations manual, or system of manuals, should reflect all operational and legislative activities and obligations which the ROC holder is obliged to meet, such that the content is commensurate with the size and scope of the operation.

(4) The operator shall submit amendments to the Director for approval –

(a) prior to a change in any proposed aspect, type or scope of the operator's operation;

(b) where the operations manual no longer meets the requirements of these regulations or associated technical standards;

(c) on determining that any part or component thereof is, or becomes, inadequate; or

(d) as required by the Director.



Part 101: Sub-part 4 - RPAS Operating Certificate (ROC)



Operations manual

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

(6) The structure and contents of the operations manual shall be as prescribed in Document SA-CATS-101.

Safety management

101.04.7 (1) The holder of an ROC shall establish a safety management system commensurate with the size of the organisation or entity and the complexity of its operations.

Insurance

101.04.12 An ROC holder shall at all times be adequately insured for third party liability.

Refer to CARs Part 101 and Technical Standards SA-CATS 101 for all requirements.



Part 101: Sub-part 4 - RPAS Operating Certificate (ROC)



ROC application process

The process will follow the ICAO 5-phase process

Phase 1: Pre-application

- The applicant submits a “Letter of Intent” to the SACAA’s Flight Operations Department (FOD)
- The applicant will be guided on the entire Five-phase Process. Depending on the application, this meeting may, at the discretion of the inspector, be conducted via telephone and/or email correspondence.

Phase 2: Formal application

- The applicant needs to submit a formal application (for commercial operations, attach licence issued by the ASLC)
- The applicant will be invited to attend a formal meeting. Depending on the application, the formal meeting may, at the discretion of the inspector, be conducted via telephone and/or email correspondence.



Part 101: Sub-part 4 - RPAS Operating Certificate (ROC)



Phase 3: Document evaluation

- Once the formal application has been accepted, the applicant will need to submit all the required manuals to the CAA for approval.
- The CAA will complete a thorough review of the manuals.
- A fully completed Statement of Compliance must be included within the manuals submitted.

Phase 4: Demonstration and inspection

- The applicant will need to demonstrate its ability to comply with regulations, the company operations manual and safe operating practices
- The demonstration and inspection phase includes onsite evaluations of all policies, procedures, methods and instructions as described by the regulation and operations manual.



Part 101: Sub-part 4 - RPAS Operating Certificate (ROC)



Phase 5: Certification

- After the document compliance and demonstration and inspection phase has been completed satisfactorily, the application will be issued with an RPAS Operating Certificate (ROC) as well as the Operational Specifications (Ops Spec).
- The Ops Spec will contain the authorisations, limitations and provisions applicable to the operation.
- The certificate holder is responsible for continued compliance with the regulations, authorisations, limitations and provisions of its certificate and operational specifications.
- The CAA will conduct periodic inspections on the operator's operation to ensure continued compliance with the regulations and safe operating procedures.

Credits

- If an applicant is a holder of a valid Class III licence, Category A4 - Type G16 or G-class as applicable to the operation, he/she may begin the process from Phase 2.

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**RPAS regulations (Part 101)
Sub-part 5, RPAS Operations**



Part 101: Sub-part 5 RPAS Operations



- The regulations regarding the actual operation of RPAS
 - What you need
 - What you are allowed to do
 - What you are not allowed to do
 - Where you can operate, etc

- **Unfamiliar with Civil Aviation Regulations???**
 - All regulations are numbered, for example:
CAR 101.05.2
 - Referenced to by their number



Part 101: Sub-part 5 RPAS Operations

OPERATIONAL LIMITATIONS AND PROHIBITIONS

Limitations	Notes	Prohibitions	Notes
Class 1 and 2 RPA	Except by the holder of an ROC and as approved by the Director of Civil Aviation	For private operations Class 1A and 1B	Unless exempted as per Part 11
No person shall use a public road as a place of landing or take-off of an RPA		No RPA shall: <ul style="list-style-type: none"> Tow another aircraft perform aerial or aerobatic displays be flown in formation or swarm 	
No RPAS may be operated in controlled airspace		RPAS to be operated in radio line-of-sight	
No object or substance shall be released, dispensed, dropped, delivered or deployed from an RPA			
no RPA shall carry dangerous goods as cargo			
no RPA shall be operated: <ul style="list-style-type: none"> above 400 ft above ground level within a radius of 10 km from an aerodrome within restricted or prohibited airspace adjacent to or above a nuclear power plant, prison, police station, crime scene, court of law, national key point or strategic installation. 			
An RPA shall not be operated beyond visual-line-of-sight			
An RPA may not be operated at night			
No person shall operate an RPA directly overhead any person or group of people or within a lateral distance of 50 m			
No RPA shall be operated within a lateral distance of 50 m from any structure or building			
No person shall operate an RPA over a public road, along the length of a public road or at a lateral distance of less than 50 m from a public road			
NOTE: Other than the approval of the Director of Civil Aviation, approval from other governmental departments/authorities may be required (e.g. municipality)			

Table 2:

Found on Page 8 of the TGM: RPAS Part 101

Covers **10 of the 25** regulations under Part 5

- Reference guide
- Refer to the regulations under Part 5 for further information on each limitation and prohibition
- Limitations in the first column (yellow) – need to be a ROC holder and need approval from the Director of Civil Aviation
- Prohibitions in the third column (red) – you may apply for exemption as per Part 11 of the Civil Aviation Regulations



Part 101: Sub-part 5 RPAS Operations



Regulations not covered in Table 2: What do you need?

- **101.05.1** **Weather conditions** allowing for unobstructed visual contact to be maintained with the RPA unless in B-VLOS or Night operations as approved by the Director
- **101.05.8** Comply with **C2 operational requirements** as prescribed in SA-CATS 101
- **101.05.9** **Precautions and Safety Considerations**
 - RPA - fit-to-fly condition
 - Pilot - hold a valid license issued in terms of Part 101
 - RPS – compatible and interoperable with the aircraft to which it is connected
 - RPA – controlled by only one RPS at any given moment in time
 - RPAS operation – shall not endanger the safety of any person, property or other aircraft



Part 101: Sub-part 5 RPAS Operations

Regulations not covered in Table 2: What do you need? (continued)

- **101.05.16** **Radio communications** – air band radio, radio calls, maintain radio contact with the relevant ATSU
- **101.05.22** **Flight folio** or similar document :
 - accessible at the remote pilot station at all times during flight
 - kept up to date and legible
 - maintenance shall be recorded
 - fuel, charging and oil records
- **101.05.23** **Power reserves:**
 - VLOS and B-VLOS: enough fuel/charge to complete the flight PLUS a reserve of at least 10%



Part 101: Sub-part 5 RPAS Operations

Regulations not covered in Table 2: What do you need? (continued)

- **101.05.24** **First aid kit** – contents as per SA-CATS 91
 - within the RPS
 - within 300m of the take off and landing points

- **101.05.25** **Hand-held Fire Extinguisher**
 - within RPS
 - within 300m of the take off and landing points



Part 101: Sub-part 5 RPAS Operations



Regulations not covered in Table 2: Remote Pilot Duties/Responsibilities?

- **101.05.17** Complete Pre-flight preparations as per SA-CATS 101
- **101.05.18** Accountable for the safe operation of the RPAS
Operate the aircraft according to the manual
Separation and avoidance
- **101.05.19** Ensure the take-off and landing area is safe and suitable for the type of operation and aircraft
- **101.05.20** An RPA shall give way to manned aircraft
Further provisions regarding “**right of way**”
- **101.05.21** Report and record time in UTC, expressed in hours and minutes
24-hour day beginning at midnight



Part 101: Sub-part 5 RPAS Operations



Regulations not covered in Table 2: You shall NOT

- **101.05.7** **Consume alcohol and drugs:**
 - Applicable to the remote pilot, observer and RMT
 - no consumption of alcohol less than 8 hours prior to reporting for duty
 - concentration of alcohol in any specimen of blood taken may not exceed 0.02g/100ml
 - no consumption of alcohol or psychoactive substance during duty
 - duty shall not be commenced if under the influence of alcohol or any psychoactive substance having a narcotic effect



Part 101: Sub-part 5 RPAS Operations



Regulations not covered in Table 2: Accidents and Incidents

- **101.05.6**

All accidents and incidents involving an RPA shall be reported as per the procedure stipulated in Part 12 of the Civil Aviation Regulations where there is:

- a. any injury or death to a person;
- b. damage to property; or
- c. destruction of the RPA beyond economical repair

All incidents involving an RPA where loss of control occurred shall be reported to the holder of the ROC.

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**RPAS regulations (Part 101)
Sub-part 5, Security**



Part 101: Sub-part 5 - Security



Security

101.04.8 (1) The holder of an ROC issued under this Part shall –

- (a) conduct background checks on all personnel recruited for deployment, handling and storage of any RPAS;
- (b) conduct criminal record checks every 24 months on all personnel employed in the deployment, handling, and storage of RPAS;
- (c) ensure that RPAS not in use are stored in a secure manner to prevent and detect unauthorised interference or use;
- (d) ensure that the RPAS is protected from acts of unlawful interference;
- (e) ensure that the RPA is stored and prepared for flight in a manner that will prevent and detect tampering and ensure the integrity of vital systems;



Part 101: Sub-part 5 - Security



- (f) designate a security coordinator responsible for the implementation, application and supervision of the security controls; and
 - (g) ensure that all personnel employed in the deployment, handling, and storage of RPAS have received security awareness training as prescribed in Part 109. 19
- (2) The holder of an ROC shall include in the operations manual referred to in regulation 101.04.5 the security aspects of the RPA operations as prescribed in this regulation and Document SA-CATS 101.



Part 101: Sub-part 5 - Security



Surveillance, safety and security audits and inspections

101.04.9 (1) An applicant for the issuing of an ROC shall permit an authorised officer, inspector or authorised person to carry out such safety and security inspections, audits and oversight

Including;

partners or subcontractors, as may be necessary to determine continued compliance with the provisions of regulations and the privileges granted by the certificate.

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**RPAS regulations (Part 101)
Compliance Process Flow**



Part 101: Compliance Process Flow

Compliance process flow (as an example)

Concept of Operation:

My company is a small organisation. I'm planning to conduct commercial operations all over South Africa, mainly in the major cities, mines and farming community. My intended operation involves the following:

1. Taking aerial videos and pictures for outdoor sporting codes
2. Taking videos for the film industry in Cape Town (centre city) and Durban (beaches)
3. Perform aerial displays
4. Chemical spraying for vineyards in Stellenbosch
5. Delivery of pizzas in major cities across South Africa
6. Transportation of medical samples from remote clinics to laboratories.

The Maximum Take-off Mass of my RPAS ranges from 7kg – 19.99 kg and it will be operating at an altitude of 700 ft. or lower.

Where do I start?



Part 101: Compliance Process Flow



Follow 5-step process:

Step one:

1. Read the following:

**Civil Aviation Regulations Part 101,
associated Civil Aviation Technical
Standards SA-CATS 101 and
Aeronautical Information Circulars**



Part 101: Compliance Process Flow

2. Determine type of operation

- See par 4 of TGM for RPAS, Part 101 for guidance

	Type of Operation	Commercial	Corporate	Non-profit	Private
Required approval					
ASL		✓	N/A	N/A	N/A
ROC		✓	✓	✓	N/A
RLA		✓	✓	✓	N/A
RPL		✓	✓	✓	N/A
C of R		✓	✓	✓	N/A

NOTE: RMT is required for maintenance on RPAS classified as class 3 and higher

Required Approvals:

ASL - Air Service Licence: Air Service Licence Council (Department of Transport)

ROC – RPAS Operator’s Certificate: CAR Part 101, Sub-part 4

RLA – RPAS Letter of Intent: CAR Part 101, Subpart 2

RPL – Remote Pilot’s License: CAR Part 101, Sub-part 3

CofR – Certificate of Registration: CAR Part 101, Sub-part 2

RMT – RPAS Maintenance Technician: CAR Part 101, Subpart 6.



Part 101: Compliance Process Flow

3. Determine classification of RPAS operation (Class 1A, Class 3A, etc.)
 - See Regulation 101.01.3 and associated Technical Standards (CATS), also see par 6 of TGM for RPAS Part 101 and SA-CATS 101 for guidance.

Class	Table 1: RPAS Classification			
	line-of-sight	Energy(kJ)	Height (ft)	MTOM (kg)
Class 1A	R-VLOS/VLOS	E < 15	h < 400	m < 1.5
Class 1B	R-VLOS/VLOS	E < 15	h < 400	m < 7
Class 1C	VLOS/E-VLOS	E < 34	h < 400	m < 20
Class 2A	VLOS/EVLOS	E > 34	h < 400	m < 20
Class 2B	Experimental/Research			
Class 3A	BVLOS	E > 34	h < 400	m < 150
Class 3B	VLOS/EVLOS	Any	h > 400	m < 150
Class 4A	BVLOS	Any	h > 400	m < 150
Class 4B	Any	Any	Any	m > 150
Class 5	Reserved	Reserved	Reserved	Reserved
Reserved - means to be defined in the future				
h - means height above the surface				
E-Energy at impact				
Note: All operations are limited to radio line-of-sight				



Part 101: Compliance Process Flow

4. Determine applicable limitations and prohibitions of RPAS operations (See par 7 of TGM for RPAS and CAR Part 101)

Limitations	Notes	Prohibitions	Notes
Class 1 and 2 RPA		For private operations Class 1A and 1B	
No person shall use a public road as a place of landing or take-off of an RPA		No RPA shall:	Unless exempted as per Part 11
No RPAS may be operated in controlled airspace		• Tow another aircraft	
No object or substance shall be released, dispensed, dropped, delivered or deployed from an RPA		• perform aerial or aerobatic displays	
no RPA shall carry dangerous goods as cargo	Except by the holder of an ROC and as approved by the Director of Civil Aviation	• be flown in formation or swarm	
no RPA shall be operated:		RPAS to be operated in radio line-of-sight	
• above 400 ft above ground level			
• within a radius of 2 km from an aerodrome			
• within restricted or prohibited airspace			
• adjacent to or above a nuclear power plant, prison, police station, crime scene, court of law, national key point or strategic installation.			
An RPA shall not be operated beyond visual-line-of-sight			
An RPA may not be operated at night			
No person shall operate an RPA directly overhead any person or group of people or within a lateral distance of 50 m			
No RPA shall be operated within a lateral distance of 50 m from any structure or building			
No person shall operate an RPA over a public road, along the length of a public road, within a lateral distance of less than 50 m from a public road			
NOTE: Other than the approval of the Director of Civil Aviation, approval from other governmental departments/authorities may be required (e.g. municipality)			

CONOPS:
No RPAS shall perform aerial displays

Unless exempted as per Part 11 outdoor sporting codes

1. Take aerial videos and pictures for

2. Taking videos for film industry in Cape Town (centre city) and Durban (beaches)

No object or substance shall be released, dispensed, delivered or deployed from an RPA

3. Perform aerial displays
4. No RPA shall carry dangerous goods as cargo

5. Delivery of pizza in major cities across South Africa

Except by the holder of an ROC and as approved by the Director of Civil Aviation

No RPA shall be operated above 400ft. AGL

6. Transportation of medical samples from remote clinics to regional hospitals

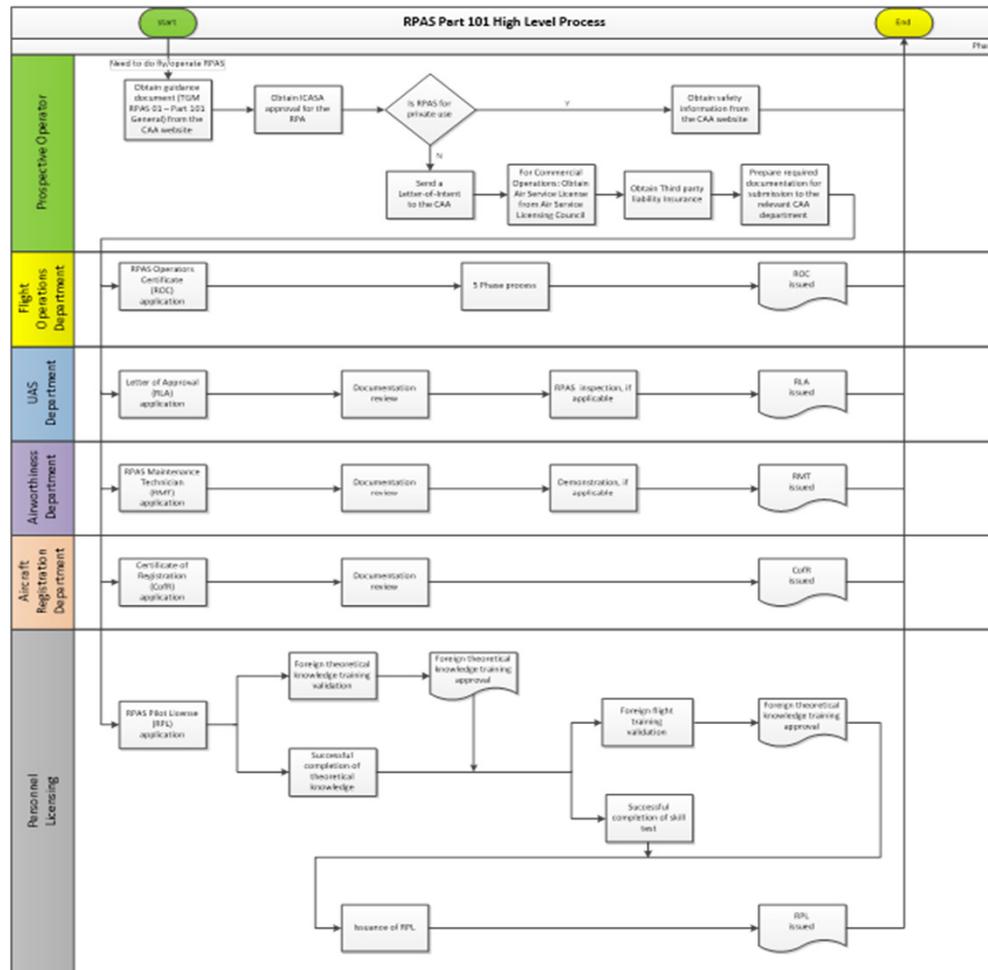
The Maximum Take-off Mass of any RPAS range from 7kg to 10.99kg and will be operating at an altitude of 700ft. or lower.

No RPA shall be operated directly over any person or structure



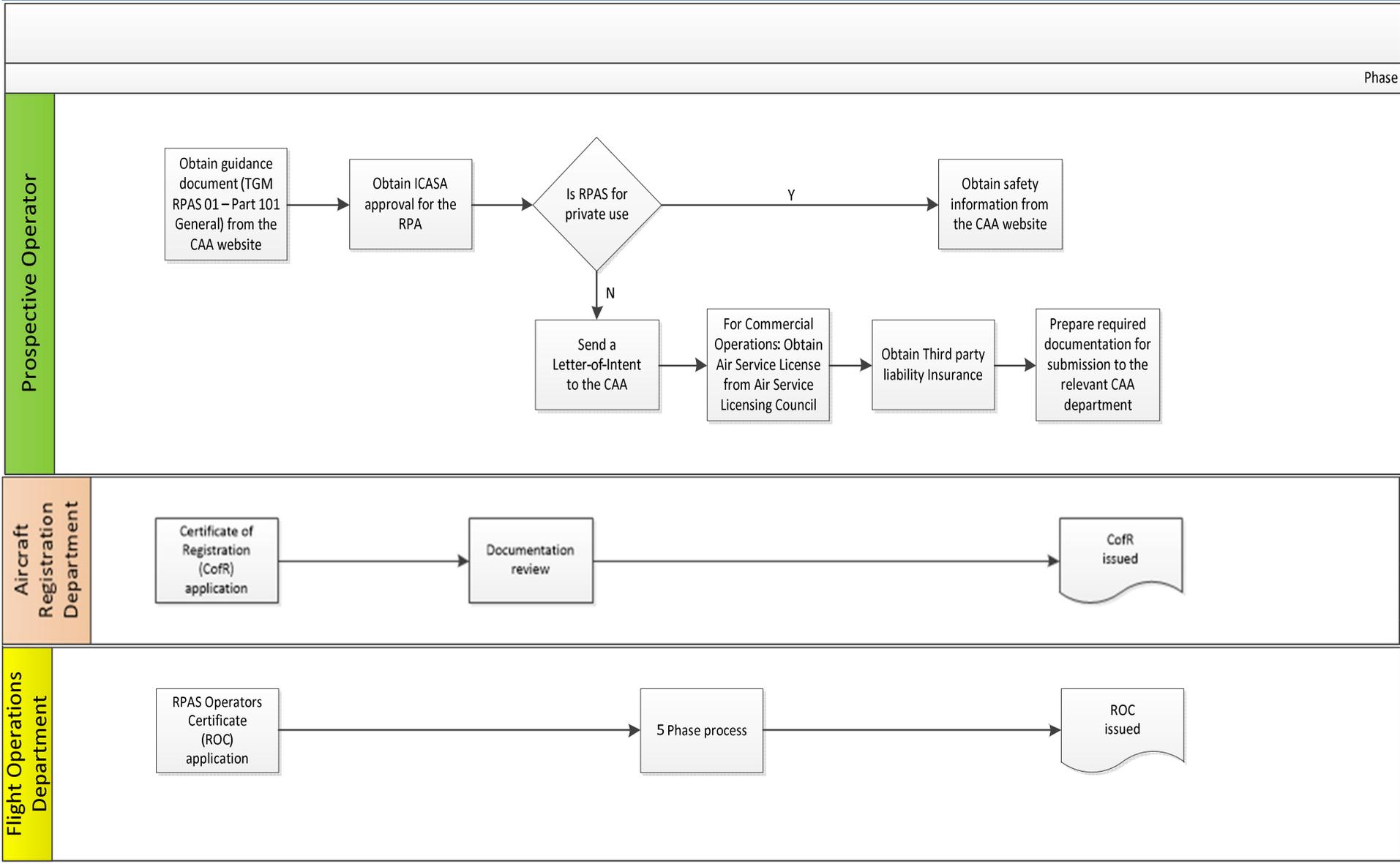
Part 101: Compliance Process Flow

5. Submission of applications with supporting documentation (See par 5 of TGM for RPAS).



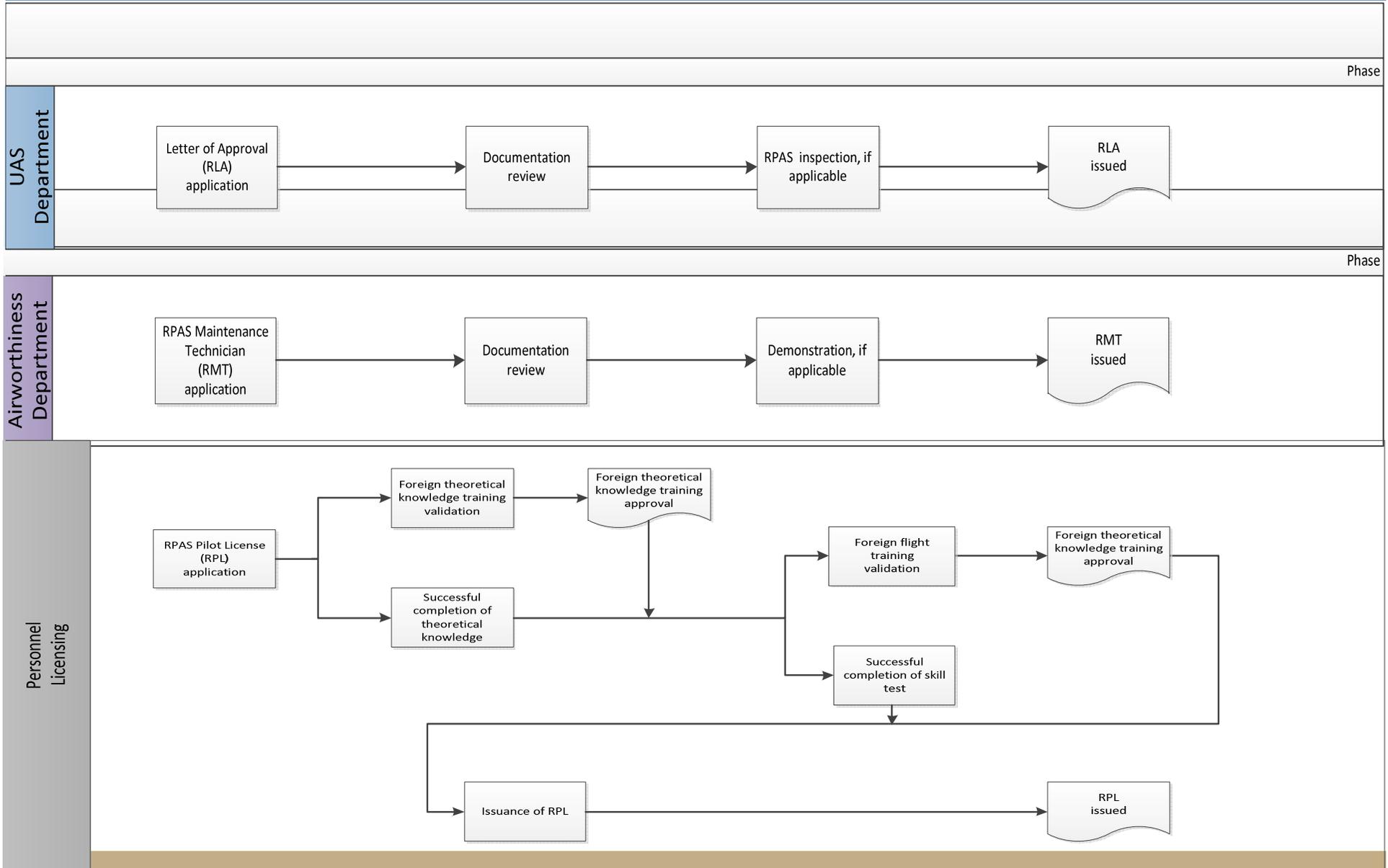


Part 101: Compliance Process Flow





Part 101: Compliance Process Flow



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