CIVIL AVIATION PUBLICATION

OPS 11

RPAS OPERATOR CERTIFICATION 150 KG OR LESS

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CHAPTER 1

GENERAL

1.1 OVERVIEW

This CAP provides guidance for operators of RPA < 150 kg. CAP 25 is applicable for RPA > 150 kg.

Note: For the purpose of this CAP the following applies;

(1) < 25 kg means a MTOM of 25 kg or less

(2) < 150 kg means a MTOM of 150 kg or less

1.1.1 Model Aircraft

Model aircraft do not need authorisation from the CAA-B if;

(a) it is flown for recreational purposes only;

(b) it is flown within the territory of The Bahamas;

(c) the total weight of which does not exceeds 25 kg (55 lbs);

(d) is not designed to carry persons or other living creatures;

(e) is operated less than 120 metres (400 ft) above ground level;

(f) operates outside 1000 metres of an operating aerodrome or heliport;

(g) operates within a maximum range of 500 metres with visual line of sight (VLOS); and

(h) would not jeopardise the safety of people on the ground.

Note: You do not need permission from the CAA-B provided you;

(1) comply with paragraph 1.1.1 above;

(2) do not obtain an economic benefit for the operation of the aircraft; or

(3) do not fly the aircraft closer than 30 metres away from vehicles, boats, buildings or people; or

(4) do not fly the aircraft over any populous area.

1.1.2 RPA Operations

The remainder of the CAP is intended to provide guidance to an operator that cannot operate a model aircraft in accordance with paragraph 1.1.1 above or intends to operate RPA < 150 kg on aerial work operations for an economic benefit. These operations require an authorisation from the CAA-B.

It is essential that unmanned operations be conducted safely and in accordance with any approval issued by the CAA-B.

Under CAR OPS 0, the PIC is responsible for the operation of the aircraft in compliance with the rules of the air. This also extends to having final authority as to the disposition of the aircraft while in command as a remote pilot.

1.2 PURPOSE

The purpose of this CAP is to provide guidance on technical and operational issues to be considered before making application to the CAA-B. At present the CAA-B will only approve operations in segregated airspace (i.e airspace of specified dimensions allocated for exclusive use to a specific user) and the material contained herein is consistent with current ICAO, EASA and JARUS standards already adopted for RPAS.

Note: This CAP will be amended to reflect ICAO Standards when they are further developed.

1.3 APPLICABILITY

(a) The procedures in this CAP apply to the following RPAs;

(1) Model aircraft which do not meet the criteria of paragraph 1.1.1; or

(2) RPAs < 150 kgs used for aerial work operations within the territory of The Bahamas or in another State under an agreement.

(b) The following unmanned aircraft are not addressed:

(1) autonomous unmanned aircraft and their operations including unmanned free balloons or other types of aircraft which cannot be managed on a real-time basis during flight; and

Note: An operator of an autonomous unmanned aircraft shall not fly over the territory of The Bahamas without a specific authorisation from the CAA-B.

(2) model aircraft, which meet the criteria of paragraph 1.1.1.

1.4 REFERENCES

(a) CAR OPS 4 – Remotely Piloted Aircraft System (RPAS) Operations

(b) ICAO Doc.10019

1.5 ABBREVIATIONS AND ACRONYMS

Note: Refer also to CAR OPS 4 for RPAS specific definitions and CAR DEF for general definitions.

ACP	Aeronautical Communications Panel
BRLOS	beyond radio line-of-sight
BVLOS	beyond visual line-of-sight
C2	command and control
CA	collision avoidance
CNS	communication, navigation and surveillance
CPA	closest point of approach
DAA	detect and avoid
HALE	high-altitude, long-endurance
HMI	human-machine interface
ICA	continuing airworthiness
LIDAR	light detection and ranging
MA	manoeuvre advisories
MAC	mid-air collision
MAWS	minimum altitude warning system
NMAC	near mid-air collision
RCP	required communication performance
RLOS	radio line-of-sight
ROC	RPAS operator certificate
RPA	remotely piloted aircraft
RPAS	remotely piloted aircraft system(s)
RPASP	Remotely Piloted Aircraft Systems Panel
RPS	remote pilot station(s)
RWC	remain-well-clear
SWIM	system-wide information management
TLS	target level of safety
Tsloss	time (sustained loss of link)
VLL	very low level
VLOS	visual line-of-sight

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CHAPTER 2

INTRODUCTION TO RPAS

2.1 OVERVIEW

2.1.1 General

This chapter provides a brief description of RPA and their associated components, categorisation of RPA, flight rules and operations, e.g. instrument and visual flight rules (VFR), VLOS and beyond visual line-of-sight (BVLOS).

Note: Requirements may change once ICAO Standards are published in 2021.

2.1.2 Categorisation for licence issue

Licences are not required for RPA with MTOM of less than 25 kg. However the pilot must demonstrate competency. A remote pilot licence is required for a RPA with MTOM of greater than 25 kg and are categorised as follows;

(a) aeroplane;

(b) airship;

(c) rotorcraft

Note: Refer to CAR LIC Chapter 16 and CAP PEL 01 for licensing requirements.

2.1.3 Categorisation by weight

There are presently three categories of RPA.

(a) 25 kg or less

(b) 25 – 150 kg (pilots must be licensed in accordance with CAR LIC or hold a validation of a foreign licence).

(c) Greater than 150 kg (RPA must be registered, hold type certificate or equivalent, and pilots/engineers licensed in accordance with CAR LIC)

Note: Refer to CAP OPS 12 for application process and certification requirements for RPA >150 kg.

2.1.4 Categorisation by operation

There are presently three categories of RPA operation that apply and these are determined by the CAA-B.

(a) 'Open' category (low risk): Safety is ensured through compliance with operational limitations, mass limitations as a proxy of energy, product safety requirements, and compliance with operational rules contained in an authorisation.

Note: Operations in this category presently applies only to The Bahamas airspace with VLOS operations generally below 400 feet above ground level.

(b) 'Specific' category (medium risk): Authorisation by the CAA-B, following a risk assessment performed by the operator. A manual of operations lists the risk mitigation measures and operating rules. The pilot will require a licence if the MTOM of the RPA is more than 25 kg.

Note: Operations in this category presently applies only to The Bahamas airspace with either VLOS/BVLOS operations in segregated airspace.

(c) 'Certified' category (higher risk): Oversight by the CAA-B (issue of licences and approval of maintenance, operations, training, ATM/ANS and aerodromes organisations required for RPAS >150 kg. RPAS > 25 kgs require ROC if operated in another State).

Note: Unrestricted operations in this category presently applies to RPA operated in segregated airspace.

2.1.5 Summary

	ROC	Licence	C of R	C of A	Operations Manual	Maintenance Manual	Insurance	SMS
< 25 kg	*For operations in The Bahamas territory only*							
- Open	✓	x	x	x	Note[1]	x	✓	Note[2]
- Specific	✓	x	x	x	Note[1]	x	✓	Note[2]
- Certified	*Not available*							
25 – 150 kg	*For operations in The Bahamas territory or with other State agreement only*							
- Open	*Not available*							
- Specific	✓	✓	x	x	Note[3]	✓ Note[4]	✓	Note[2]
- Certified	*For operations worldwide with other State agreement*							
	✓	✓	x	x	Note[3]	✓ Note[4]	✓	Note[2]
> 150 kg	*For operations worldwide*							
- Certified	✓	✓	✓	✓	✓	✓	✓	✓

Note 1: The manufacturer's instructions may be adequate.

Note 2: An SMS manual is not required but a risk assessment must be conducted using SMS principles.

Note 3: The operations manual must also include procedures/limitations and training of personnel.

Note 4: The manufacturer's maintenance instructions may be adequate.

2.2 DESCRIPTION OF RPA AND ASSOCIATED COMPONENTS

2.2.1 Remotely piloted aircraft

An aircraft is defined as any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface. An aircraft which is intended to be operated with no pilot on board is classified as unmanned. An unmanned aircraft which is piloted from a remote pilot station is an RPA. All remotely piloted aircraft are classified as aeroplane, rotorcraft or airship.

2.2.2 Associated components

RPA are piloted from RPS utilising a command and control (C2) link. Together with other components such as launch and recovery equipment, if utilised, the RPA, RPS and C2 link comprise an RPAS.

An RPA can be piloted from one of many RPS during a flight; however, only one RPS should be in control of the RPA at a given moment in time.

2.2.3 Remote pilot station (RPS)

The RPS is the component of the RPAS containing the equipment used to pilot the RPA. The RPS can range from a hand-held device up to a multi-console station. It may be located inside or outside; it may be stationary or mobile (installed in a vehicle/ship/aircraft).

2.2.4 Command & Control (C2) Link

The C2 link connects the RPS and the RPA for the purpose of managing the flight. The link may be simplex or duplex. It may be in direct radio line-of-sight (RLOS) or beyond radio line-of-sight (BRLOS) as described below.

(a) *RLOS:* refers to the situation in which the transmitter(s) and receiver(s) are within mutual radio link coverage and thus able to communicate directly or through a ground network provided that the remote transmitter has RLOS to the RPA and transmissions are completed in a comparable timeframe; and

(b) *BRLOS*: refers to any configuration in which the transmitters and receivers are not in RLOS. BRLOS thus includes all satellite systems and possibly any system where an RPS communicates with one or more ground stations via a terrestrial network which cannot complete transmissions in a timeframe comparable to that of an RLOS system.

The distinction between RLOS and BRLOS mainly concerns whether any part of the communications link introduces appreciable or variable delay into the communications than the architecture of the link.

2.2.5 Other components

The following components may be part of the RPAS:

(a) ATC communications and surveillance equipment (e.g. voice radio communication, controller/pilot data link communications (CPDLC), automatic dependent surveillance — broadcast (ADS-B), secondary surveillance radar (SSR) transponder);

(b) navigation equipment;

(c) launch and recovery equipment — equipment for RPA take-off and landing (e.g. catapult, winch, rocket, net, parachute, airbag);

(d) flight control computer (FCC), flight management system (FMS) and autopilot;

(e) system health monitoring equipment; and

(f) flight termination system; allowing the intentional process to end the flight in a controlled manner in case of an emergency.

Note: Flight termination systems must be designed to minimize the possibility of injury or damage to persons, property or other aircraft on the ground and in the air.

2.2.6 Handovers

Unlike in manned aviation where the cockpit is integral to the aircraft, RPA can be piloted from any approved RPS. When more than one RPS is used for a flight, they may be collocated or they may be spread across the globe. In either case, the safe and effective handover of piloting control from one station to another must be assured.

2.3 RPAS OPERATIONS

2.3.1 General

The operation of RPAS will be determined by the purpose of the flight, the flight rules, areas of operation and the functional levels of the C2 links.

2.3.2 Flight rules

IFR operations within The Bahamas airspace are not permitted for RPA < 150 kg and operations can only be conducted in VMC. Depending on the operation the remote pilot may require a means to comply with the visibility and distance from cloud minima.

2.3.3 Area of operation

RPA may be prohibited from operating in certain areas, such as sensitive areas or above heavily populated areas. Operations are restricted to The Bahamas territory and airspace.

2.3.4 VLOS operations

During VLOS operations, the remote pilot or RPA observer must maintain direct unaided visual contact with the remotely piloted aircraft.

The limits or range within which VLOS operations can be safely conducted are not defined. However, in determining the extent of the range, consideration must be given to the remote pilot and RPA observer capabilities, the meteorological conditions, the size and conspicuity of the RPA and any other relevant factors.

VLOS operations can be performed in a larger horizontal range when one or more RPA observer supports the pilot in keeping the RPA clear of other traffic and obstacles. The vertical range may also be increased depending on the location of the RPA observer.

2.3.5 BVLOS operations

When neither the remote pilot nor RPA observer(s) can maintain direct unaided visual contact with the RPA, the operations are considered BVLOS. Minimum equipment requirements to support BVLOS operations increase significantly as the range and complexity of such operations increase, as does the cost involved in ensuring the robustness of the C2 link. The ability to detect conflicting traffic or obstacles and take appropriate action to avoid them is essential.

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CHAPTER 3

AUTHORISATION PROCESS FOR RPA < 25 KG

3.1 OVERVIEW

The operation of an RPA of 25 kg or less is categorised as;

(a) 'Open' category (low risk), which requires an RPAS Operating Certificate and the operator demonstrating compliance with operational limitations, mass limitations as a proxy of energy, product safety requirements, and compliance with operational rules contained in an authorisation.

Note: Operations in this category presently applies only to The Bahamas airspace with VLOS operations generally below 300 feet above ground level. CAR OPS 4 may not apply but an authorisation from the CAA-B is required.

(b) 'Specific' category (medium risk), which requires an RPAS Operating Certificate following a risk assessment performed by the operator. A manual of operations lists the risk mitigation measures and operating rules.

Note: Operations in this category presently applies only to The Bahamas airspace with either VLOS/BVLOS operations in segregated airspace. CAR OPS 4 would apply with exemptions available and an authorisation from the CAA-B is required.

(c) 'Certified' category is not available for RPA of 150 kg or less unless operating international with other State agreement..

3.2 GENERAL OPERATING REQUIREMENTS

3.2.1 General

RPA must obtain an authorisation from the CAA-B and the application must be submitted at least 90 days prior to the proposed operations. The application form is available on the CAA-B website.

3.2.2 Open Category

The operating requirements are;

(a) The Bahamas territory only;

(b) Segregated airspace only with maximum altitude normally 120 metres (400 ft);

(c) VLOS;

(d) Normally limited to;

(1) Not within 50 metres from persons, buildings and vehicles;

(2) Not within 1000 metres of the aero club aerodrome or parachute landing ground;

(3) Not over populated areas or crowds;

(4) Day only;

3.2.3 Specific Category

Where a RPA is proposed to be operated in a manner that the CAA-B perceives as a safety risk to persons or damage to buildings or infrastructure, the operation will be placed in this category. For example, typical uses for a RPA may be;

- Media use in urban environment;
- Industrial inspections;
- Precision farming and monitoring;
- Infrastructure inspections (powerline etc.)
- Surveillance.

The operating requirements are;

(a) The Bahamas territory only;

(b) Segregated airspace only with maximum altitude normally 120 metres (400 ft);

(c) VLOS or BVLOS;

(d) Safety risk assessment required using Safety Management System (SMS) principles;

(e) Demonstrated pilot competence;

(f) Operations Manual

Note: A manufacturer's operating handbook may be acceptable

3.3 OTHER CONSIDERATIONS

(a) Compliance with operating specifications and CAR OPS 4 Chapters 1, 2, 3 and 10 is mandatory.

(b) The RPA is not required to hold a Certificate of Registration.

(c) The RPA is not required to hold a Certificate of Airworthiness.

(d) The pilot is not required to hold a Licence for RPA < 25 kg.

(e) The operator shall hold an insurance policy covering 3rd party damage and injury to persons commensurate with the risk.

(f) The operation may be observed by the CAA-B.

(g) Approval from other authorities may be required.

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CHAPTER 4

AUTHORISATION PROCESS FOR RPA 25 – 150 KG

4.1 OVERVIEW

The operation of an RPA of 25 – 150 kg is categorised as;

'Specific' category (medium risk) for operations in The Bahamas territory, which requires an RPAS Operating Certificate following a risk assessment performed by the operator. A manual of operations lists the risk mitigation measures and operating rules/procedures/limitations and training of personnel.

'Certified' category (medium risk) for operations internationally with State agreement and which requires an RPAS Operating Certificate following a risk assessment performed by the operator. A manual of operations lists the risk mitigation measures and operating rules/procedures/limitations and training of personnel.

4.2 GENERAL OPERATING REQUIREMENTS

4.2.1 General

RPA must obtain an authorisation from the CAA-B and the application must be submitted at least 90 days prior to the proposed operations. The application form is available on the CAA-B website.

4.2.2 Specific Category

Where a RPA is proposed to be operated in a manner that the CAA-B perceives as a safety risk to persons or damage to buildings or infrastructure, the operation will be placed in this category. For example, typical uses for a RPA may be;

- Media use in urban environment;
- Industrial inspections;
- Precision farming and monitoring;
- Infrastructure inspections (powerline etc.)
- Surveillance.

The operating requirements are;

(a) The Bahamas territory only or internationally with State agreement;

(b) Segregated airspace only with maximum altitude normally 120 metres (400 ft);

(c) VLOS and BVLOS;

(d) Safety risk assessment using Safety Management System (SMS) principles;

(e) Demonstrated competence of pilot any other involved personnel;

(f) Maintenance programme/control manual acceptable to the CAA-B;

Note: A manufacturer's maintenance programme/control manual may be acceptable.

(g) Operations Manual acceptable to the CAA-B.

Note: A manufacturer's operating handbook may be acceptable plus it must list the risk mitigation measures and operating rules/procedures/limitations and training of personnel.

4.3 OTHER CONSIDERATIONS

(a) Compliance with ROC operating specifications and CAR OPS 4 Chapters 1, 2, 3, 5, 7 and 10 is mandatory.

(b) The RPA is not required to hold a Certificate of Registration

(c) The RPA is not required to hold a Certificate of Airworthiness

(d) The pilot is required to hold a RPA Pilot Licence in accordance with CAR LIC, Chapter 16.

(e) The operator shall hold an insurance policy covering 3rd party damage and injury to persons commensurate with the risk.

(f) The operation may require demonstration flights and will be observed by the CAA-B.

(g) Approval from other authorities may be required.

CHAPTER 5

APPLICATION PROCESS

5.1 INTRODUCTION

5.1.1 General

This Chapter on the application process for a RPAS Operator Certificate (ROC) provides guidance to a prospective applicant for an ROC or for the amendment to an existing ROC when varying the ROC/Operations Specifications (e.g. introduction of new aircraft).

Note: The application form can be found on the CAA-B website http://www.CAA-B.gov.bs.

5.1.2 Charges

The charges payable by organisations/individuals to the CAA-B for the issue/renewal of approvals, licences and authorisations is available from the CAA-B on request. These charges cover the normal ROC process. However there could be additional charges if the applicant fails to meet his/her obligations and additional inspections are required for operations and continued airworthiness.

5.1.3 Operations Not in the National Interest

Applicants are advised that some operations that are proposed, or conducted, under an ROC issued by The Bahamas may not be in the national interest of the government of The Bahamas and may therefore result in the application process being varied or suspended. Operations may include;

(a) Operations of a sensitive nature, which involve religious or political issues;

(b) security issues; or

(c) other issues which have the potential to embarrass persons or institutions.

An applicant, or an operator, is encouraged to firstly research the implications of the proposed operation.

5.2 ROC APPLICATION PROCESS OVERVIEW

5.2.1 Purpose

Applicants will be briefed in as much detail as necessary regarding the preparation of manuals and other required documents during meetings with CAA-B personnel.

5.2.2 Background

To conduct aerial work operations using a RPA, an operator must comply with all CAA-B requirements to ensure operations are conducted with the highest degree of safety.

The certification process is designed to ensure that prospective ROC holders understand and are capable of fulfilling this duty. When satisfactorily completed, the certification process should ensure that the operator is able to comply with CAA-B legislation, which is in accordance with the international best practices.

5.2.3 Application

An initial application should be made at least 90 days prior to the proposed operations. The form is designed as an application form for all RPA operations and must contain as much information as possible for the CAA-B to make a determination. All available supporting documentation must be submitted. It is essential that the operator's liaison person understands the CAR OPS 4 requirements and is familiar with the operation of the RPA.

Note: The application form can be found on the CAA-B website http://www.bcaabahamas.com

The application form and supporting documentation and, unless otherwise advised, all contact during the ROC application should be made to;

Director General
Civil Aviation Authority Bahamas
J.L. Centre, Blake Road
New Providence
The Bahamas

TEL: +242 3974700

FAX: +242 3263591

EMAIL: Use "contact us" on website.

5.2.4 Application Meeting

Once the application is received by the CAA-B, a meeting will be scheduled. The purpose of the application meeting is to confirm the information provided by the applicant and to provide critical certification information to the applicant. It is recommended that the operator's senior management personnel attend the application meeting and be prepared to discuss plans and general aspects of the proposed operation.

Many problems can be avoided by discussing all aspects of the proposed operation and the specific requirements which must be met by the operator in order to be certified.

Minutes of the meeting will be made and distributed to all attendees. If the application meeting is acceptable, the documents and manuals will be retained by the CAA-B. These documents shall be evaluated thoroughly during subsequent phases of the certification process.

If the application is not accepted, the application will be returned with a written explanation of the reasons for its return

The interval between application and grant or variation of a ROC will depend primarily upon matters within the control of the operator as the CAA-B will work towards meeting its obligations in a timely manner.

Nevertheless, if after a period of one month the application process has not been substantially progressed by the operator, the CAA-B will consider the refusal of the application. Fees paid will not be refunded.

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CHAPTER 6

CERTIFICATION

6.1 GENERAL

After the document evaluation and and any demonstrations and inspections have been completed satisfactorily, the CAA-B will prepare the RPAS Operator Certificate (ROC) and its corresponding operation specifications and limitations, which contain authorisations, exemptions, limitations and provisions specific to an operator's operation. The certificate holder is responsible for continued compliance with all CAA-B legislation and the operation specifications and limitations.

The process for amending operation specifications and limitations is similar to the certification process. In some cases it may be a less complex procedure depending on the subject of the amendment. The CAA-B is responsible for conducting periodic inspections of the certificate holder's operation to ensure continued compliance and safe operating practices. It must be noted that operating competence cannot be adequately judged until a sufficient period of demonstration of such competence is completed.

6.2 RPAS OPERATOR CERTIFICATE (ROC)

6.2.1 General

The ROC grants the RPAS operator authority to conduct operations in accordance with the conditions and limitations detailed in the operations specifications attached to the ROC.

The issuance of an ROC by the State of the Operator is dependent upon the RPAS operator demonstrating an adequate organisation, method of control and supervision of flight operations, training programme as well as ground handling and maintenance arrangements consistent with the nature and extent of the operations specified and commensurate with the size, structure and complexity of the organisation.

6.2.2 Amendments to the ROC

Any change to ROC (e.g. addition or change to RPAS models or any changes to the original ROC Operations Specifications must be applied for giving at least 30 days' notice. Addition of aircraft or change to operating area may require further CAA-B inspection.

Note: The application form for a variation of ROC can be found on the CAA-B website http://www.bcaabahamas.com

6.2.3 Renewal of ROC

An application for a subsequent issue of an ROC must be submitted at least 30 days before the expiry of the current ROC. A fee for the renewal of an ROC is required. The ROC will be valid up to 24 months and a re-certification will be conducted by the CAA-B.

Supporting documentation is required to be submitted detailing the continuing airworthiness of the RPA (periodic maintenance, repairs etc.) and documents confirming the operational issues upon which the original ROC was issued.

6.2.4 Oversight

The CAA-B will conduct oversight as follows;

(a) Organisation;

- An inspection of Returned Flight paperwork, Flight and Duty Time and Training Records and SMS within 6 months of the ROC renewal. The inspection will also examine the Safety and Quality activities. This will normally take place in the operator's offices.

(b) Operations;

- For RPAS 25-150 kg an inspection of the Company's operations involving observation of a flight and documentation check within 6 months of the ROC renewal.

(c) Airworthiness;

- An annual inspection of the Company's maintenance arrangements may be required if applicable.

(d) Training;

- A two yearly inspection of training arrangements for RPAS 25-150 kg, where applicable.