ORGANISATIONS NAME

Sample Exposition

CAR Part 102 Unmanned Aircraft Operators Certificate

Document Version 0

29 July 2015

NOTE TO READERS:

This outline sample exposition has been prepared to assist applicants in the development of an exposition that will help them meet the requirements of a Part 102 Unmanned Aircraft Operator exposition.

Further assistance can be found in Advisory Circular 102-1 Unmanned Aircraft – Operator Certification.

It consists mainly of headings and subject titles with little details as to the types of operation and equipment since this detail is so diverse we could not always give a good example to act as guidance.

In developing your exposition you will need to expand on each section, as appropriate to your operation.

When complete you will need to delete all CAA guidance notes which in most cases are easily identified by the red italic text.

Copy 1

Contents

Section 0 Preface

0.1 Compliance Requirement

A typical compliance statement may read something like this. You should use your words and add anything you feel relevant.

The instructions, procedures and information contained in this manual have been devised to ensure safety and standardisation in the conduct of operations. They are to be observed by all operating personnel. Personnel are also reminded of their obligation to comply with the Civil Aviation Act and Civil Aviation Rules, aeronautical information and notices that CAA and Airways New Zealand publish.

Nothing in this manual takes precedence over a CAA rules or permits unsafe operation

Where in the light of operating experience, errors are found in the manual or deficiencies in the manner in which operations are conducted, recommendations for amendment action shall be submitted to the Chief Executive Officer.

Signed:_____ Chief Executive Date:_____

0.2 Exposition Copies

Copies of this exposition are held by the following employees.

Copy No	Title of Holder	Name
1	Chief Executive	J Bloggs
2	Operations Controller	F Smith
3	*Etc.*	*Etc.*
4		
5		
6		

0.3 Amendment Status

Amendment	Effective Date
Initial issue	17 June 2015
Amendment 1	27 June 2015

0.4 Summary of amendments

Amendment Number	Change detail
Amendment 1	*The list of aircraft operated was changed to remove xyz and add abc*
Amendment 2	*Para 4.3 training standard amended.*

0.5 List of effective pages

This is what a List of Effective Pages (LEP) would look like. The effective date of each page must be able to be identified.

Page	Effective Date

Section 0 Preface

1	June 2015
2	June 2015
3	June 2015
4	June 2015
5	June 2015

Etc.

Section 1 General

1	May 2012
2	May 2012
3	May 2012
4	May 2012

Etc.

Section 2 Risk & Hazard Procedures

1	May 2012
2	May 2012
3	May 2012
4	May 2012

Etc.

Section 3 Reporting to CAA

1	May 2012
2	May 2012
3	May 2012
4	May 2012

Etc.

Section 4 Training & Competency

1	May 2012
2	May 2012
3	May 2012
4	May 2012
5	May 2012

Etc.

Section 5 Aircraft Details

Etc.

Section 6 Control System Details

Etc.

Section 7 Maintenance Procedures

Etc.

Section 8 Standard Operating Procedures

Etc

Section 9 Directors Requirements

Etc.

Section 10 Safety Management System

Etc.

This section optional but highly recommended.

0.6 Signature Sheet

This is a typical way of verifying to management and CAA that your employees understand their obligations to comply with your written procedures.

- All personnel employed or contracted by this organisation must sign this sheet as evidence of having read, understood and agreed to apply the procedures and data contained in this Operations Manual.
- If this manual is reissued or revised they must resign, acknowledging review of the revision.

Amendment No	Printed Name	Signature	Date
Initial Issue			

0.7 Amending this document

The following section would provide an acceptable way of showing exposition control as required by 102.11(b)(13)

This manual is a living document for the guidance of all company personnel and as such is to be continuously reviewed and updated as necessary. All company personnel are encouraged to make constructive submissions on the content of this manual as operational and technical content changes. All suggested amendments to this manual are to be submitted in writing to the CEO complete with supportive evidence to help achieve the maximum safety and efficiency. The company office holds amendment forms and the procedures for submitting amendments to this and other publications. The company will annually review these manuals to comply with CAA rule Part 102

Prior CAA acceptance is required for certain amendments to this manual:

In accordance with Part 102.23(b) if the holder of an unmanned aircraft operator certificate proposes to change any of the following, the certificate holder must notify the Director prior to the change and receive notification of acceptance from the Director before being incorporated into the certificate holder's exposition:

- The person identified as the prime person
- The title or name of any other person with control over the exercise of any privileges under the certificate
- The locations referred to in rule 102.15(b)(4)(ii) from which the certificate holder conducts unmanned aircraft operations:

0.8 Abbreviations, Acronyms & Definitions

AC	Advisory Circular
AGL	Above Ground Level
AIP	Aeronautical Information Publication
ATC	Air Traffic Control
ATM	Air Traffic Management
CAR	Civil Aviation Rules 1990
CAA	Civil Aviation Authority
ICAO	International Civil Aviation Organisation
IAW	In accordance with
NM	Nautical Miles
RP	Remote Pilot
RPA	Remotely Piloted Aircraft
RPAS	Remotely Piloted Aircraft System
SC	Support Crew
UA	Unmanned Aircraft
UAS	Unmanned Aircraft System(s)
UAV	Unmanned Aerial Vehicle
UAOC	Unmanned Aircraft Operators Certificate
VLOS	Visual Line of Sight
VMC	Visual Meteorological Conditions

You may add any of your own if needed

Definitions:

Aerodrome means an aerodrome that is promulgated in the current AIPNZ:

Controlled aerodrome means an aerodrome at which air traffic control service is being provided to aerodrome traffic:

Remotely piloted aircraft means an unmanned aircraft that is piloted from a remote station and:

(1) includes a radio controlled model aircraft, but

(2) does not include a control line model aircraft or a free flight model aircraft:

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

Section 1 General

1.1 Company Operations

This heading should be used to describe the company's purpose and intentions. This is the opportunity for the applicant to promote the business.

1.2 Business Address

As the heading states the company's business is required to be inserted here.

1.3 Geographic Area of Operation

Again this heading is self-explanatory. This should reflect the area you described in the application for Part 102 certification.

1.4 Part 102 Operator Certificate – Privileges

All operations must be carried out within the privileges and conditions specified in the Operation Specifications attached to the UAOC.

Your privileges may look something like the following. Generally they will be operations that are not permitted under Part 101. In addition to the privileges the operations permitted within the scope of the privileges will be listed. Add to or reduce as necessary for your operation.

Note: include a statement that all other 101 rules will be complied with

XYZ Ltd is permitted to conduct operations:-

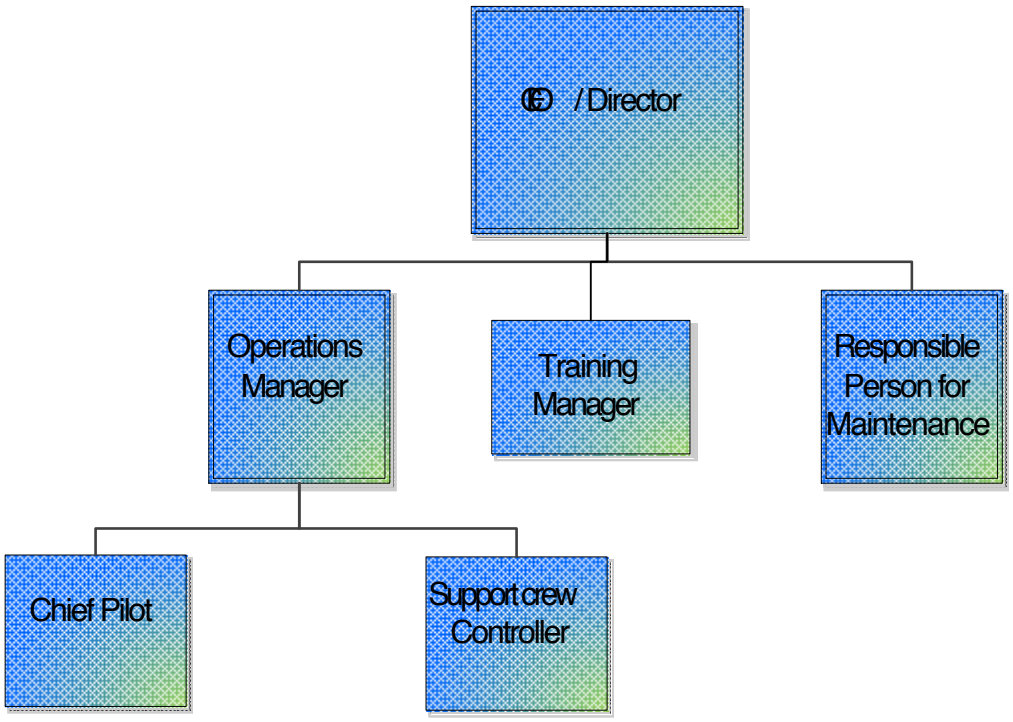
- *above 400 feet AGL*
- *at night*
- *with unmanned aircraft over 25kg MAUW*
- *etc.*

The operations permitted under these privileges:-

- photography
- power line inspection
- agricultural operations
- etc.

1.5 Organisation Structure

Amend the following structure to best suit your organisation. You may wish to add the names of each key person to the labelled boxes or have a separate list of names.



1.6 Responsibilities of Company Personnel

The duties and responsibilities of key personal should be identified as per the examples below.

These include the identification of the person who has primary responsibility for the operation and the identification of any person who is to have or is likely to have control over the exercise of the privileges under the certificate.

The wording and titles used here is typical but you should review and use your own wording as necessary. It may be that with a small operation one person may hold multiple positions however it is still necessary to spell out what the responsibilities are for each function.

The responsibilities shown under each title are illustrations typical of each role however they are by no means exhaustive so the applicant will need to develop each role responsibility themselves.

CEO/Director

The CEO/Director has the overall responsibility for the company's business performance, rule compliance and safety management. The nominated person will provide the necessary resources so that all operations and maintenance can be conducted to meet company obligations, goals and objectives whilst maintaining rule compliance, safe operations and a safe workplace.

Note: *Although Part 102 does not require an Organisational Management System CAA is introducing Safety Management Systems as a requirement for all operators and the CEO is responsible for ensuring a system is introduced and maintained. The Safety Management System will ensure all risks are identified, mitigated and managed. New Zealand OSH Requirements will also be observed and enforced by the CEO. Refer to notes in Section 10 for further guidance.*

The CEO is also responsible for amending this exposition to ensure it accurately reflects the operation of the organisation and that all changes are tracked and controlled

Operations Manager

The Operations Manager is the person appointed by the operator, accepted by CAA, via the acceptance of this exposition and is responsible for all remote pilot (RP) and support crew (SC) operational matters affecting the safety of the UAOC holder's operation.

The role and responsibilities of the Chief Controller are:

a) Ensuring that the operator's air operations are conducted in compliance with The Civil Aviation Act, the Rules and this exposition,

b) Monitoring operational standards, supervising and training for pilots (RP) and support crew (SC) employed by the operator,

c) Maintaining a complete and up-to-date reference library of operational documents, eg charts and AIP subscription as required by CAA for the class of operations conducted; and

e) Being the point of contact between the operating company and CAA.

Training Manager

The role and responsibilities of the training Manager:

a) Ensuring that all pilots (RP) and support crew (SC) are trained to the standards required by this exposition.

b) Maintaining a record of qualifications held by each RP and SC,

c) Ensuring competency assessments are carried out in accordance with this exposition.

The Responsible person for Maintenance

The Responsible Person for Maintenance(commonly called the Maintenance Controller) is the person appointed by the operator, accepted by CAA, via the acceptance of this

exposition and is responsible for ensuring the maintenance of company Remotely Piloted Aircraft Systems (RPAS) in accordance with the manufacturer specifications.

The role and responsibilities of the Responsible Person for Maintenance are:

a) Control all company RPAS equipment maintenance, either scheduled or unscheduled;

b) Ensure personnel performing maintenance on the RPAS equipment are competent. The Responsible Person for Maintenance must keep a record of personnel permitted to perform maintenance.

- ***Note:****The company should keep a record of qualifications;*

c) Develop, enforce and monitor RPAS equipment maintenance standards,

d) Maintain a record of RPAS equipment unserviceability's,

e) Ensure that specialist equipment items are serviceable,

f) Maintain a thorough technical knowledge of the company RPAS,

g) Ensure maintenance activities are conducted in accordance with the procedures specified in the Maintenance section; and

h) Investigate all defects in the RPAS equipment.

Note: depending on your organisation, other responsibilities may also be required to be added to this list.

Chief Pilot

The Chief Pilot of the flying operation is responsible for:

a) Over sight of RP conducting operation

b) Over sight of SC during operations

c) Conduct of flight – start to end; and

d) Safe operation of the RPAS equipment

Note: depending on your organisation, other responsibilities may also be required to be added to this list

Remote Pilot

The Remote Pilot in command of the aircraft is responsible for:

a) Conduct of the flight, from start to end; and

b) Safe operation of the aircraft.

c) Maintaining direct contact with SC

Support Crew

The support crew are responsible for:

a) Maintaining line of sight the RPA

b) Maintain direct contact with the RP

c) Ensuring RP advised if intruder enters operation space.

1.7 Drug & Alcohol Policy

The CAA and indeed the Minister of Transport have very strong views on drug and alcohol abuse during activities under any certificate issued under the New Zealand Civil Aviation Act 1990. All certificate holders must establish policies and procedures that will ensure the operation conducted under the certificate can be done so clear of any drug or alcohol use.

The CAA web site has a sample Drug & Alcohol policy which will assist you to develop your own.

Go to this link http://www.caa.govt.nz/HSE-CAA/sample_policy.doc

1.8 Privacy Provisions

The very nature of the operating mode of RPA makes them a target for "privacy" complaints. As a company you should develop very clear guidelines for operating crew to ensure the provisions of the Privacy Act 1993 are not breached.

Section 2 Risk & Hazard Procedures

2.1 General

This guidance material has been put together from various sources and should be used to formulate your own procedures.

The CAA web site has two useful sources of information relating to risk management (as the collective process is often called).

The first is HSE found here http://www.caa.govt.nz/HSE-CAA/HSE_Info.htm#Build and the second is Safety Management Systems (SMS) found here http://www.caa.govt.nz/SMS/index.htm

Two further useful documents have been published by the UK CAA and Australian CASA. The links respectively are; http://www.caa.co.uk/application.aspx?catid=33&pagetype=65&appid=11&mode=detail&id=5612 and http://www.casa.gov.au/scripts/nc.dll?WCMS:STANDARD::pc=PC_101001

All risks in the day to day operation need to be identified. All persons involved in the RPAS operation are part of the risk collection process and are encouraged to report any apparent perceived risk. Effective risk identification requires good knowledge of the subject and lateral imaginative thinking.

The key questions for identifying risk are "what can happen", "how can it happen" and "why would it happen". These risks when identified should be recorded on some kind of form and passed to the person responsible for evaluation.

It should be noted that as well as aviation operational issues there may well be other elements such as local bylaws, DOC requirements or the privacy act that may be a risk to the operation.

The responsible person will enter these onto the hazard register form before carrying out an evaluation of each risk.

The evaluation of risk is the process known as "Risk Assessment".

2.2 Hazard Register

As the name implies the register (it may be electronic or hard copy) is a means of capturing all the identified risks associated with your operation. It further allows a risk factor to be developed based on severity and likelihood of the event actually occurring using a "risk assessment matrix". Risk Level = consequence x likelihood. The next use of the register is to identify suitable risk mitigation or "risk treatment".

The mitigation measure might be simply to cease the particular operation (risk level far too high) or put things in place to lower the risk to an acceptable level. Whatever is done should be recorded on the hazard register. Finally the identified risks should be monitored to ensure the risk level has not increased and that the mitigation treatment is still

working. The review cycle should be recorded on the hazard register. A sample Hazard Register can be found in Appendix E

2.3 Risk Assessment

As mentioned above this is the process of evaluating the identified hazards and establishing the risk level. This is where the Risk Assessment Matrix comes into play.

2.4 Mitigation Measures

Also linked to the use of the hazard register.

Section 3 Reporting to CAA

3.1 Requirements

The intention of 102.11(b)(5) is to ensure operators have procedures for the reporting of serious incidents or accidents.

You will need to develop a process that captures occurrences, investigates any cause and reports to CAA.

It is suggested that the standard Part 12 occurrence report form CAA005 is used. While many sections of the form are not applicable its use provides for a standard reporting format across the entire aviation spectrum.

Additional to the occurrence reporting you will need to have a process that ensures you report flight statistics. I.e. number of flights and nature of the flights

Section 4 Training & Competency

4.1 Required Qualifications

Under this heading the certificate holder should describe the minimum qualifications required by pilots and support crew in order to conduct operations under their certificate. AC102-01 includes levels of qualification that are acceptable to the Director.

In here you will need to specify recency requirements (ie. 3 take off and 3 landings within 60 day period) and the fact that all pilots must maintain a RPA log book.

4.2 Training

Under this heading you need to describe what training is undertaken for pilots and support crew. An operator may choose to conduct in house training from initiation (meeting the requirements of 4.1 above) or only take pre-qualified staff and take them through the following.

You may also choose to contract out certain training. (See 4.4 below)

The minimum expectation here would be training covering:

- *Induction*
- *Transition training*
- *Continuation training*

Induction: You have set the entry qualifications in 4.1 so this training should specify the additional training required to meet your operational requirements. This could cover such things as but not limited to:

- *Aircraft type, model, variant, you use.*
- *The type of operation*
- *Areas of operations and any limitations*
- *Pilot and support crew assignments, functions and responsibilities*
- *Location and operation of emergency equipment and plans*
- *Your own policies and procedures*

Transition: This type of training occurs in between regular training and would include such things as but not limited to:

- *Introduction of a new aircraft type*
- *A new type of operation to be conducted*

- *A new area of operation*
- *New risks identified*
- *Changes to your exposition*

4.3 Competency

Under this heading you must describe the checks that are to be carried out to assess the pilot or support crew as competent to continue to carry out assigned duties.

This competency check must be carried out by someone who meets the requirement of an "approved person" in accordance with Part 101.202.

The competency check (on an appropriate form) should be based on but not limited to:

- *Typical unmanned aircraft operation*
- *Ground based procedures, risk assessment, preparation*
- *Use of check sheets*
- *Flight check, launch procedures, recovery procedures, communication with support crew*
- *Establishing pilot/support crew can satisfactorily perform their duties and responsibilities for the particular RPA operation*
- *Knowledge of appropriate CAA rules*
- *Knowledge of certificate holders Operation Specifications and exposition*
- *Knowledge of airspace designation*
- *Knowledge of emergency plans.*

4.4 Contractors

The rule permits an operator to contract out training and competency checks. If you chose to do so then you need to identify the organisations and what they are permitted to do.

4.5 Training Records

It is probably self-evident what this section is about. You need to specify that records shall be kept for each pilot and support crew.

The records will cover the training identified above, the dates the training occurred and the results of the training.

Someone should be identified as having the responsibility to maintain the records and make update as necessary.

Section 5 Unmanned Aircraft Details

5.1 Technical Data

The purpose of the RPAS technical data/system specification is to detail key information about the RPAS which is operated.

This information should include the format of the aircraft (rotorcraft/fixed wing), the dimensions and weight. Any role equipment should also be listed

The format of the RPAS technical data/system specification is up to you. A RPAS technical data/system specification is needed for each type you operate.

Should you upgrade your machine, for example fitted different motors, your RPAS technical data/system specification would need to be updated in your manual.

Develop your RPAS Technical data/system specification using the relevant data for your aircraft and insert here in place of the red text.

5.2 Identification

Use this space to identify each of your aircraft. If the Director has required you to register your aircraft under Part 47 then use that along with make and model.

For small machines not requiring registration under Part 47 a good coloured photo may be acceptable. In these cases they should also have an indelible label attached in a location that can be read without the removal of any fairing or cover.

The label shall clearly identify who the certificate holder is. You may also wish to add a contact number to aid recovery in the event a "fly away" occurs.

5.3 Initial Airworthiness Standards

Although no airworthiness standards for small RPAS currently exist there are some underway via ASTM in the USA.

These are likely to be referenced by the FAA in the future. For now this company will only use unmanned aircraft that have demonstrated a good safe operating history in New Zealand or overseas.

Section 6 Control System Details

6.1 System Standards

Currently, there are no international recognised design standards, configuration requirements that apply to unmanned aircraft control systems for command and control (C2) links.

The command and control link refers to the data link between the RPA and its remote pilot station for the purposes of managing the flight.

Work is progressing internationally by the Radio Technical Commission for Aeronautics (RTCA) to develop standards in this area, but this is yet to be completed.

Whatever you use should be specified here.

Section 7 Maintenance

7.1 Maintenance

To gain an Unmanned Aircraft Operator Certificate the operator will need to establish a maintenance programme that is acceptable to the Director.

This programme should be based on the manufacturer's maintenance instructions and must also cover at least:

- *Pre-flight inspection instructions or checklist*
- *Post-flight inspection instructions or checklist*
- *Periodic: i.e. regular scheduled inspection schedules*
- *Component finite or retirement lives*
- *Actions in regard to service information.*
- *Person responsible for maintenance on the unmanned aircraft*
- *Damage tolerance criteria i.e. when components such as propellers must be changed.*

Details of all maintenance actions must be recorded in the aircraft logbook.

A typical Maintenance Programme could look like this:

This **Maintenance Programme** applies to the following unmanned aircraft:

Identification system	Make and model	Serial number
Your system	*Your aircraft*	*Your serial number*

Conditions

THIS MAINTENANCE PROGRAMME IS APPROVED ONLY WHILE THE UNMANNED AIRCRAFT IS OPERATED BY (THE OPERATOR)

Responsibilities and Standards

Operator Responsibilities

The Responsible Person for Maintenance will ensure that the maintenance requirements as detailed in this Maintenance Programme are complied with, and in respect of this programme is responsible for:

- The accomplishment of the maintenance prescribed in the programme.
- Continuity of the programme.
- Compilation and retention of records, reports, and technical reference material.

Unmanned Aircraft Manufacturer's Manual References

This programme refers to the following manuals:

- *Owner's Manual – (enter your aircraft Owner's Manual XXXX, latest revision)*
- *Service Manual – (enter your aircraft Service Manual XXXX, latest revision)*
- *Installed equipment Instructions – List documents (this is for installed equipment not covered by aircraft manufacturer)*

General Maintenance Standards

Maintenance standards will be in accordance with the manufacturer's instructions for continued airworthiness.

Practices and procedures necessary to accomplish the requirements of this schedule, or work resulting from its application, should be, as a minimum, to the standards contained in the relevant instructions for continued airworthiness; and, where applicable, the New Zealand Civil Aviation Authority (CAA) advisory circulars.

Service Information

Service information (which includes service documents such as service bulletins, service information letters, as supplied by the unmanned aircraft manufacturer etc.) will be formally technically assessed, and the outcome documented by the ***Responsible Person for Maintenance***.

Where the adoption of the service information impacts on the maintenance of the aircraft this programme must be amended.

Compliance with implemented service information must be recorded in the appropriate maintenance logbook.

Repairs or Modifications

Repairs or modifications which have been carried out to the aircraft, engine, propeller, components or radio after original manufacture, must be recorded in the appropriate maintenance log book.

Any repair or modification that contains ***Instructions for Continued Airworthiness*** (ICA's) shall have the ICA's included in this programme.

Scheduled Inspection Checklists and Worksheets shall be amended to include the additional ICA instructions.

Scheduling Maintenance

The person responsible for scheduling maintenance will check the aircraft technical log and maintenance logbooks to determine the scope of each scheduled inspection as it arises.

That person will ensure a work package for the inspection is raised.

Attention shall be paid to verifying the currency of the data in use: e.g. *Service/Owner manual revision, as well as any latest maintenance information.*

Programme Description

This maintenance programme consists of:

- Pre-Flight Inspection
- Post Flight Inspections *(if applicable)*
- Routine inspections (*E.g. 5 hour, 10 hour and 20 hour etc.*)
- Special inspections *(required by Mods or ICA's etc.)*
- Abnormal occurrence/Over-limit inspections *(if applicable)*
- List of components with a finite life.
- Operator's variations to manufacturer recommendations. *(if applicable)*

Inspection Cycle

The Maintenance Inspection Cycle

Check title	Content	Period
Pre-flight	Pre-flight inspection	Prior to each flight
Post-Flight *(If required)*	Post-Flight Inspection	After each flight
5 hour	*All 5 hour check items*	*5 flight hours or 1 month whichever occurs first*
10 hour	*All 5 and 10 hour check items*	*10 flight hours or 6 months whichever occurs first*
20 hour	*All 5, 10 and 20 hour check items*	*20 flight hours or 12 months whichever occurs first*

***NOTE**: Amend the red text to add or delete checks and values as required then remove italics and change to black print.*

Inspection Schedules

Manufacturer requirements

Item	Periods	Standard
Pre-flight inspection	*Before each flight*	*E.g.: Owner's Manual figure XX*
5 hour inspection	*5 flight hours or 1 months*	*E.g.: Service Manual section X inspection charts*
10 hour inspection	*10 flight hours or 6 months*	*E.g.: Service Manual section X inspection charts*
20 hour inspection	*20 flight hours or 12 months*	*E.g.: Service Manual section X inspection charts*
Special inspections	*As listed*	*E.g.: Service Manual section X inspection charts*

Lifed Items

(If any. Make a statement if there are none)

Item	Period	Action
E.g. Propellers	*25 hours*	*Replace*
Batteries	*Xx hrs*	*Replace at 80% capacity*

Fitted equipment requirements

This might include such items as recovery systems either ballistic or mechanical or role equipment. If there are servicing requirements for these then that detail should be added here.

Item	Periods	Standard
Include mods/fitted equipment etc.	*per ICA*	*ICA requirements*
Recovery Parachute	*Repack every 6 months*	*J Bloggs Chute Company Service Manual rev 3*

Records

Maintenance performed is to be recorded in the aircraft logbook. In addition, work packages compiled and/or worksheets as raised by the maintenance contractor form part of the aircraft's maintenance records and are to be retained by the operator.

Contract arrangements may be put in place that allows the maintenance contractor to retain the records on the operator's behalf.

These arrangements shall be documented and form part of this programme.

For guidance on what an aircraft log book should contain, please see AC102-1.

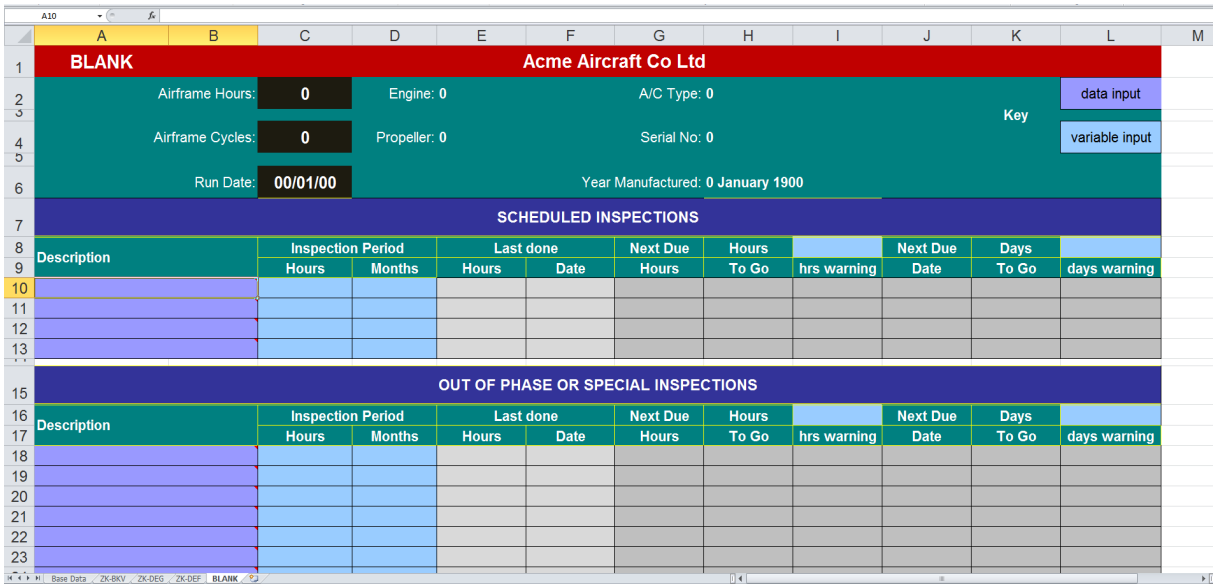
7.2 Maintenance Control

Having developed the maintenance programme above you must now have a system that ensures the required maintenance is carried out at the appropriate time.

An .xls spread sheet is often used for this purpose and if set up correctly it will calculate when the next inspection is due each time the daily flight hours are input.

An image of what it looks like is below.

A copy of the file can be requested by emailing: RPAS@caa.govt.nz .



BLANK				Acme Aircraft Co Ltd							
Airframe Hours:	0	Engine: 0		A/C Type: 0						Key	data input
Airframe Cycles:	0	Propeller: 0		Serial No: 0							variable input
Run Date:	00/01/00			Year Manufactured: 0 January 1900							

SCHEDULED INSPECTIONS											
Description	Inspection Period		Last done		Next Due	Hours		Next Due	Days	
	Hours	Months	Hours	Date	Hours	To Go	hrs warning	Date	To Go	days warning

OUT OF PHASE OR SPECIAL INSPECTIONS										
Description	Inspection Period		Last done		Next Due	Hours		Next Due	Days	
	Hours	Months	Hours	Date	Hours	To Go	hrs warning	Date	To Go	days warning

For very simple unmanned aircraft, a white board may be all that is needed.

Whatever method you use it should be detailed here including who is responsible for updating and when.

7.3 Defect Control

This section should detail the procedures necessary for controlling defects. This process should include capturing daily defects, rectification and recording that rectification.

A daily flight record should be developed to capture flight hours and any defects occurring. Supporting this record should be a rectification sheet that identifies the defect, shows what was done to correct the defect.

The person correcting the defect must sign off the sheet to close the defect. Examples of a daily flight record and defect rectification sheet can be found at Appendix A & B.

7.4 Maintenance Contractors

If you contract out your maintenance then identify who that organisation is here.

Remember the Maintenance Controller will always be responsible for scheduling the maintenance and instructing the contractor as to what work is required.

You will need to document how you will instruct the contractor and how the maintenance paperwork is controlled.

7.5 Maintenance Records

Regardless of who does the maintenance, all records of maintenance belong to the operator and form the maintenance records for each aircraft operated.

Procedures should be developed to ensure these records are retained, maintenance and defect rectification details are transferred to the aircraft log book and that these records are retained for the life of the aircraft.

Section 8 Standard Operating Procedures

8.1 General

Section 8 is all about actual operation of the RPAS system. In here we would expect to see the procedures for pre-flight of machine and pre-flight preparation and post flight checks.

We would expect to see utilisation of manufacturer's check-lists/sheets specific to your aircraft type. These may be in the Flight Manual or in the Maintenance Manual.

If check-lists are not supplied by the manufacturer you will need to provide your own.

8.2 Hazards

Your processes for assessing the actual flight should be included here.

A sample assessment sheet can be found in APPENDIX D. This will be linked into the headings below as you work through the job assessment.

8.3 Consents

Your process for obtaining consent for flight over persons or property should be detailed here. This includes aerodromes as wells as private property.

8.4 Airspace

Your process for establishing airspace requirements should be inserted here.

- ✓ *Do you need to issue a NOTAM?*
- ✓ *What are your processes for issuing a NOTAM?*

8.5 Cargo & Dropping Procedures

If you intend to conduct these types of operation then you will need procedures that explain how you go about establishing a risk assessment, the completion of the flight can be assured without a premature release and the actual drop shall not endanger any person or property.

Agricultural chemicals shall not be dispensed unless the company has the privilege included on the Operations Specification and has processes and procedures that comply with Part 137 requirements.

8.6 Emergency Procedures

Emergency procedure should be developed in the form of a response checklist for each type of emergency situation you could expect with your operation.

The subjects might include the following but not limited to:

- *Fly away*
- *Injury to crew or public*
- *Incursion by manned aircraft*
- *Loss of control*

- *Other.*

Once you have decide what you need you should then decide who is responsible to activate the emergency checklists and what responsibilities each pilot or support crew have.

All this should be documented in this section along with follow up procedures.ie what went wrong, how did it happen, why did it happen, corrective actions and links to hazard register.

Example SOP:

Standard Operating Procedure (SOP) 001

Operation: Commercial Real Estate Photography

Authorised by:	Date:	Rev:	Effective Date:

Purpose:
This SOP is provided to establish a standardised procedure for performing photography missions of Commercial Real Estate by Unmanned aircraft.

Personnel:

This SOP applies to the pilot operating the RPAS and shall be followed by the pilot at all times unless a safety of flight occurrence emerges that requires a deviation from the procedure in the interest of aviation safety.

In such a case the SOP shall be amended to cover the details of the occurrence in the future.

Pre-Flight:

The following steps must be complied with prior to flight.

Action Description	**Y / N / N/A**
Determine location, date and time of operation	
Conduct Task risk assessment and apply appropriate risk mitigation	
Task accepted and authorised by the Chief Pilot	
Gain consents (property owners and persons to be overflown) and aerodrome operator if within 4k of uncontrolled aerodrome. Also includes other consents such as DOC if applicable	
Aircraft allocated is included on company operations specification	
ATC clearance gained	
Notice to Airman (NOTAM) raised	

Take-off area identified and protected	
Landing area identified and protected	
Pilot qualified for mission	
Battery / Fuel status appropriate for flight	
Aircraft Pre-flight carried out and documented (Include range check if appropriate) Carry out compass calibration to set Return to Home point if appropriate.	
Weather conditions appropriate	

In Flight procedures:

The following must be followed during flight:

Activity Description	Y / N / N/A
Appropriate flight mode set	
Retain VLOS	
Aircraft operated IAW Flight Manual and any alarms acted upon	
Direct Communication with observer established	
Risk mitigation prior to flight prevents in flight hazards	
Weather conditions remain acceptable and within limits during flight	
Appropriate signage in place and High Visibility clothing worn by pilot and crew	
Flight creates no privacy issues	
Aircraft remains within the boundaries of consents received	

Post Flight Procedures:

These procedures must be followed after the flight has been completed:

Activity Description	**Y / N / N/A**
Ensure aircraft powered down	
Post flight inspection carried out and documented	
Record any defects and commence rectification action and document	
Record and report any incident, accident or statistical data required IAW company exposition	
Recharge batteries and assess condition	

Note:

A SOP should be developed for each activity the company intends to perform,. Once developed, they should be contained in this section of the exposition.

The sample above may not have addressed items that some operators feel are important, in those cases extra items can be added for the CAA's assessment.

Section 9 Directors Requirements

9.1 Additional Rules

On receipt of an application for a Unmanned Aircraft Operator Certificate, the Director will establish a risk indicator value and determine what mitigation is required by the applicant to satisfy the Director the proposed operation will not cause harm to persons or property.

The mitigation might be the requirement to comply with some rules that Part 102.17(b) has stated do not apply.

Once the Director has made his determination the applicant will be advised so they can add the requirements in this section.

9.2 Part 101 Rules Not Complied With:

Create list here

Section 10 Safety Management System

10.1 Optional

Appendix A

AIRCRAFT FLIGHT LOG AND MAINTENANCE RECORD

Aircraft Type__________________ Aircraft Serial Number__________
Registration *(if applicable)*___________

Date	Pilot	Daily inspection	Post flight inspection	Flight or daily total	Serviceable Y/N	Defect No	Comment	Total Flight Hours
							Brought Forward	
							Carried forward	

Page Number ________of______

Appendix B

Defect Rectification Sheet

Aircraft Type_____ Aircraft Serial Number_____
Registration *(if applicable)* _____
NOTE: When sheet full place in applicable aircraft maintenance folder

Defect Number	Description of defect or maintenance required	Name Signature Date	Rectification	Name Signature Date
Defect Number	Description of defect or maintenance required	Name Signature Date	Rectification	Name Signature Date
Defect Number	Description of defect or maintenance required	Name Signature Date	Rectification	Name Signature Date

APPENDIX C

Flight Briefing

The following briefing is to be given by the controller to all crew members and observers. The controller is also responsible to ensure the emergency contact telephone numbers are to hand.

It is recommended this briefing be laminated, so contact numbers etc. can be written on during the planning stages of the mission

Action	✓
Overview of the mission as planned	
Any specific tasking for crew member. EG. person tasked with observing for people straying into the area of operation	
Possible issues and identification of hazards associated with the mission including planned action	
How the controller will communicate any problem and/or subsequent action	
Identification of alternate landing area	
Identification of a safe zone	
Action following an incident	
Notes/comments specific to mission:	
Emergency contact numbers:	

Any additional requirements for this operation must be added

APPENDIX D

Company	*ABC Aerial Photography*			Date	*Thursday, 18 July 2013*	
Task *Real Estate Images*		Location *Glass Street, Palmerston Nth*		Check the following and address as needed		
					Check as Completed ✓	
✓Sketch of area (if necessary)				Maps and charts available and checked		
				Weather, within limits for machine and operation		
				NOTAMs checked		
				NOTAM required? Issued Y/N		
				Possibility of public moving into area		
				Footpath/right of way		
				Landing area including alternate		
				Ability to maintain 30M of public		
				Obstructions (buildings Trees)		
				Possible interference (Powerlines/antennas)		
				Ability to maintain visual line of sight		
				Controllers ability matches location/task		
				Permission of any landowners		
				Privacy		
				Local restrictions, by laws		
				Need for signage		
				Area to add any additional requirements		
Pilot	*"Biggles"*	Signature				
Crew						

Comments:

JOB SAFETY ASSESSMENT

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No	Hazard	Risk	Severity	Likelihood	Risk factor	Mitigation
1	*Public/person entering operational area*	*Public/person being injured by RPA*	*1*	*2*	*3*	*Ensure sufficient observers available to visually cover area of operation and provide timely warning to pilot.*

APPENDIX E

Risk Register

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