Intended purpose for RPAS operations manual template for small and medium-sized RPAS/UAS/drone companies.

This template is prepared by the Civil Aviation Authority to standardize the operative documentation that must be present for commercial, research, or new operations with RPAS in Norway in the categories RO2 and RO3. RO1 operators are advised to use this template as their operational documentation. This template is based on the previous template of RPAS operations manual published in 2012, which is updated according to the requirements in "Regulations concerning aircraft without a pilot on board etc." (From now on referred to as RPAS Reg. The regulation came into effect on 01.01.2016.)

Text in blue color and italics is to be seen as information and explanation of the template, and thus not to be included in the completed operations manual. Also included in the manual is a short summary of requirements for main categories and sub categories of input sections. The individual company may decide to keep the completed manual in a) only English, b) only Norwegian or c) both English and Norwegian manuals. Important: If the company is operating outside of Norway - or plan to do so, documentation in English may be necessary.

If the company is subject to, or is part of a larger company or corporation/company, the customization and integration of this completed manual by your company, into the larger company`s existing quality system could be necessary. This must be formulated where needed. If your company already has an approved operations manual for manned aviation, it is recommended that the operations manuals be kept separate and possibly refer to one another where it is needed. This to avoid full approval for both operations manuals - when/if only minor differences occur in the two separate manuals.

The template has parts/sections and a chapter buildup. It is recommended to use this document as a template, and utilize the modern word processing systems precedence to make the manual user friendly.

The company’s task is to fill in relevant information where it belongs, so that the manual is adapted to each separate company’s unique operational needs.

The sequence and the content in the sections should not be changed. This is to ensure standardization.

The operations manual must adequately describe:

a) The operations performed by the company.

b) The equipment used in the given operations.

Remember to include all relevant agreements regarding cooperation with other operators and internal cooperation within the company. If relevant to your manual: Add a short informative notification about this in the application`s cover letter sent to the Civil Aviation Authority.

All relevant personnel should be able to easily and precisely comprehend:

a) The operations manual as a whole.

b) How the individual operations are executed.

c) The requirements and restrictions that apply for the company's relevant equipment.

d) The different types of operations.

e) Maintenance routines.

f) Training requirements to successfully complete all the different and relevant missions.

g) The checklists used, and

h) All processes and potential situations one should be aware of before and when one executes the operations for which one has been approved. Remember to include point h) in your risk analysis.

|  |
| --- |
| Make sure your application is submitted in accordance with the official guidelines.  Guidelines: www.<http://www.luftfartstilsynet.no/selvbetjening/allmennfly/Droner/>  In the Subject field is printed: "[Company Name] - Application for permission to RPAS operations in Norway RO2 or RO3 category." Those already assigned a case file number must include this in parenthesis after the company`s name, ensuring your application is archived correctly and timely.  Submit the complete application with its attachment(s) to [postmottak@caa.no](mailto:postmottak@caa.no). |

According to §40 RPAS Reg and guidelines issued by the Civil Aviation Authority the company must prepare an operations manual within the organization, containing the following data:

1. Application form with official data concerning your business and individual personnel data. It should be logged and submitted under the exact same name and manner it appears in the Brønnøysund Registry.
2. An operations manual according to this template should contain at least the following:
   1. Description of the company's organizational structure,
   2. The description of the nature and purpose of the company's relevant operations, as well as the equipment intended for usage. (See part A, C and B),
   3. Procedures that describe the operations in detail,
   4. Risk Analysis for the planned and/or intended operations, as well as the equipment included in the before mentioned operations (See A, B, C and possibly D). Including (the list is not exhaustive):
      1. Description of compensatory measures (with an assessment of the anticipated effect) to reduce risk and/or consequence(s).
      2. Description of which systems for "fail safe" that are used (§14).
      3. Description of how it is intended that any minimum heights and distances, (§13), as well as the maximum heights and distances, will be able to be observed. (This is very important in the event of a scheduled EVLOS or BLOS operation, as well as if a RO3 permit is necessary).
      4. Description of how to make sure that conflict with manned aviation is to be avoided.
      5. Description of the security detection measures warning about unwanted events such as the loss of link or overview to RPA ("Remotely Piloted Aircraft");

Other relevant attachments.

1. The requirements for competence and maintenance training for the pilots and the aircraft Description managers. (Part D.)
2. Maintenance of the systems (Part E.)
3. List and short outline of all the company`s aircrafts in operation.
4. Documentation of valid liability insurance for damage to 3rd parties according to EC 785/2004. (<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:138:0001:0006:EN:PDF>  See table in Article 7, Item 1: Indicated a minimum coverage limit of 0.75 million SDR for aircraft with MTOW under 500 kg).
5. For those who will operate the EVLOS, BLOS over limited areas and use a different form of sensors, a still image or daylight film in connection with their operations, there should also be documentation on the valid Aerial view license from the National Security Authority. Foreign operators must always have permission from NSM. <https://www.nsm.stat.no/aktuelt/videreforer-praksis-foto-fra-luft/>.

Remember that if this is not the type of operation described and approved by the Civil Aviation Authority, you do not have permission to perform the relevant task.

Short description of the contents of the operations manual

1. Each page in the document should have a header/bottom text that indicates "pages/of," version/revision reference, date, and chapter indication. This document's header is only an example and customization is necessary of the header/bottom text so that the chapters etc. are correct.
2. Each part must include a table of contents (index). Also, include a full table of contents in the beginning of the document.
3. Common revision list for all parts should be included at the beginning of the manual.
4. Overview of the relevant abbreviations and definitions must be added in the beginning of the manual.

5. The operations manual should have the following sections:

* 1. Part A: General: Description of the company's history and general information about the company practices and procedures.
  2. Part B: Operating documentation: Description of the company's material (User Manuals and descriptions).
  3. Part C: Approved operations: Risk analysis and SOP - "Standard operating procedures" for the operations the company are to perform. Each type of operation can be/should have its own SOP, including customized checklists.
  4. Part D: Fitness and qualification requirements for the company's personnel.
  5. Part E: Technical/maintenance routines.
  6. Attachments.

The operations manual will describe the way operations should be performed and the company's operational personnel must follow the company's approved operations manual.

There are many regulatory requirements for manned aviation that may affect your operation. Take a look at the Norwegian Civil Aviation Authority’s home page under the section regarding regulations. (<http://www.luftfartstilsynet.no/regelverk/>).

RPAS Operations manual for

[Company Name]

Part A

THIS PAGE

INTENTIONALLY

LEFT BLANK

Table of Contents

1. Responsibility for maintenance and revisions 3

1.1. Revision list 3

1.2. Glossary, abbreviations and definitions 3

2. Introduction 3

2.1. Marking of special moments 3

3. Organization and responsibility (OM) 3

3.1. Management 3

3.1.1. Director 3

3.1.2. Operating manager 3

3.1.3. Technical manager 3

3.1.4. Quality control manager 3

3.2. The company's approved types of operations 3

3.3. Risk analysis model 3

3.4. The company's quality control system 3

3.4.1. The purpose of the company's quality control system 3

3.4.2. Areas the quality control system should cover 3

3.4.3. The company's long-term objective 3

3.5. Service and rest time 3

3.6. General operational procedures and limitations 3

3.6.1. Preparations before flying 3

Routine for approval/acceptance of the task 3

3.6.1.1. Verification of the task is located within the given permissions 3

3.6.1.2. General weather information 3

3.6.1.3. Operations area consistency 3

3.7. Operations in the vicinity of the airports 3

3.8. Operations in aontrolled airspace and airspace with RMZ 3

3.9. Operations in connection with restrictions and hazardous areas 3

3.10. VLOS: 3

3.11. EVLOS: 3

3.12. BLOS: 3

3.13. BRLOS: 3

3.14. The company's policy on any FPV (First Person View) operations 3

3.15. Procedures for the use of the VHF radio 3

3.16. General procedures for flying 3

3.16.1. Procedures before the flight 3

3.16.2. Procedures after flying 3

3.16.3. Accidents, mishaps and occurrences 3

3.16.4. Action instructions for accidents, mishaps and occurrences 3

3.16.4.1. Warning procedures 3

3.16.4.2. Documentation routines 3

3.16.4.3. Reporting procedures after accidents, mishaps and occurrences 3

3.17. Operations types 3

3.18. Attachments

4. Introduction 3

5. [System 1]  3

5.1. General Information 3

5.2. RPS (Remote Pilot Station) 3

5.3. Performance and limitations 3

5.4. Emergency procedures 3

5.5. Normal procedures 3

5.6. Authorized load/sensors 3

6. [System 2] 3

7. Introduction 3

8. Approved types of missions 3

9. SOPs for our approved mission types 3

9.1. VLOS Operations 3

9.1.1. [Training] 3

9.1.1.1. Risk analysis 3

9.1.1.2. SOP 3

9.1.1.3. [Other] 3

9.1.2. [Line inspection] 3

9.1.3. Real estate photo, rural 3

9.1.4. Real estate photo, urban 3

9.1.5. Film production 3

9.2. BLOS Operations 3

9.2.1. Training 3

9.2.1.1. Other relevant information 3

9.2.2. Monitoring 3

9.2.3. Sensor testing 3

9.2.4. Land measurements 3

9.2.5. The IR-filming 3

*10.* About our training and maintenance of competency 3

11. Procedures for maintenance of certificates/skills 3

11.1. Pilots 3

11.2. Technical personnel 3

*11.3.* Assistants, observers and other crew members 3

11.4. Simulators or other equipment that can be used 3

12. [System 1] 3

*12.1.* General information 3

3

12.2. Theoretical training and training program for the new operators should include: 3

12.3. Practical training program for the new operators should include: 3

12.4. Simulator (if applicable) 3

13. Special maintenance requirements and training for the company's operators. 3

14. Introduction 3

15. The maintenance program contents 3

15.1. Revisions in the maintenance program: 3

15.2. Responsibility of the signer for air quality: 3

15.3. Testing and modifications: 3

15.4. Logging of flight time, errors and defects. 3

15.5. The description of maintenance: 3

15.6. Critical components maintenance periods: 3

15.7. Revision: 3

15.8. Service bulletins from manufacturer: 3

16. [System 1] 3

16.1. General information 3

Attachments **Error! Bookmark not defined.**

# 1. Responsibility for maintenance and revisions

Please indicate who is responsible for maintenance and revisions, the precise schedule for maintenance and revisions, and also the manner of which maintenance and revisions are to be followed up on. (Who/when/how)

# Revision list

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Rev.  No. | Affected part | Approved  date: | Revision performed by | Notes |
| 0 | RPAS OM | 01.06.2016 | [Name of responsible party for OM] | First time approved by Civil Aviation Authority: |
| 1 | OM A | 01.08.2016 | [Name] | Operations line inspection approved by the Civil Aviation Authority |
| 2 | OM A, B | 01.12.2016 | [Name] | RPA type XX included |
| 2.1 | OM A, B | 15.12.2016 | [Name] | Layout changed, copy sent to the Civil Aviation Authority |
| Etc. |  |  |  |  |
|  |  |  |  |  |

Remember last completed version should always be sent electronically to the Civil Aviation Authority.

# Glossary, abbreviations and definitions

Relevant general and system-specific abbreviations and definitions

# Introduction

All types of general information about the company. Context and location in the parent structure can also be found here.

# Marking of special moments

Warnings, cautions, and notes:

Highlight the important aspects about the manual here:

***Warnings/warning***

Covers a procedure, or procedures, that if not carefully followed, can result in severe damage to the personnel and equipment or loss of human life.

***Cautions/risk***

Covers a procedure, or procedures, that if not carefully followed, can result in damage to, or destruction, of the equipment.

Note/statement

Covers a procedure as carefully highlighted.

As a minimum, the operations manual part A must contain:

# Organization and responsibility (OM)

* The document/operations manual’s main purpose.
* Scope (manual’s relevance to the company, the operation(s) and the relevant people involved). Any block diagram.
* Short description of the operational organization.
* References to the regulations.

# Management

Descriptions of responsibilities relating to the various functions can be found in § 30 RO2 and § 38 RO3. Refer to attachment to the document for details about names and personal information concerning those involved. In order to avoid revising the entire document, please submit only the attachment in case of changes to the company`s personnel data concerning this section.

# Director

**Description of position:**

Text Here

**Responsibilities:**

Text Here

**Authority:**

Text Here

# Operating manager

**Description of position:**

Text Here

**Responsibilities:**

Text Here

**Authority:**  
*Text Here*

**Particular Requirements:**   
Must pass exam given by the Civil Aviation Authority by the time the Civil Aviation Authority sets a date.

# Technical manager

**Description of position:**

Text Here

**Responsibilities:**

Text Here

**Authority:**

Text Here

# Quality control manager

Description of position:

Text Here

Responsibilities:

Text Here

Authority:

Text Here

# The company's approved types of operations

* Short overview of the types of operations the company has received approval to perform.
* If a new type of operation is to be implemented, operation description and risk analysis should be presented to the Civil Aviation Authority for approval. This can result in several types of measures such as special equipment, special expertise, training, or other conditions. In general, the more complex, the more prerequisites are to be in place to achieve sufficient security standards (there are some exceptions to this).

# Risk analysis model

According to § 29 RO2 and § 37 RO3, a risk analysis inside the operations manual must be in place. A description of what risk analysis is utilized, while the actual risk analysis can be added where relevant, or added as attachments for the various operations types. What is important is that the relevant individuals understand the risk analysis, its model and can relate to it.

# The company’s quality control system

Description of the quality control system processes and procedures the company uses. It must outline how the company ensures that errors, defaults, and exposed experiences are utilized to improve the company's routines and documentation. The company that powers manned flying must describe how RPAS relates to the existing quality system.  
In the case of larger adjustments, a new approval of the entire operations manual by the Civil Aviation Authority may be required.

Remember- The latest version of the operations manual shall be submitted to the Civil Aviation Authority.

# The purpose of the company’s quality control system

The purpose of the company`s quality control system. Describe how the company is to safeguard or improve the quality of the company’s function and what procedures the company has in place to ensure that the exposed errors are corrected (system for closing of nonconformities).

# Areas the quality control system should cover

The company's quality control policy in relevant areas such as technical maintenance, operative procedures, training etc.

# The company's long-term objective

The company's long-term quality control objectives and strategy.

# Service and rest time

Company policy and rules for service and rest time. Even for small entities with short haul flights, awareness of the pilot’s mental condition is important - to avoid unnecessary events as a result of inattention and interference. Companies that also operate staffed flying must describe how RPAS service time relates to the manned service time.

# General operative procedures and limitations

The general operative procedures that are applicable for the company, and those that have not been specified for certain types of platforms that the company uses.

# Preparations before flying

### Routine for approval/acceptance of the task

* + - I.e. the authority of flight manager if the task is special in some way.
    - Is the equipment suitable for the task?
    - VLOS, EVLOS, or BLOS?
    - General restrictions the company has adopted.
    - Other*.*

# Verification of the task is located within the given permissions

# General weather information

* + - The company's information (regardless of platforms), individual limitations may differ.
    - Wind.
    - Precipitation.
    - Visibility.
    - Other.

# Operations area consistency

Here are all points regarding the operations area where consistency must be considered. RO2 and RO3 without special permit, applicable requirements for safety distances and flight altitudes from § 51.

* + - The buildings (minimum 50 meters from the 3rd person’s property)
    - Population (minimum 50 meters from 3rd person.
    - Traffic (minimum 50 meters from other public traffic).
    - Air traffic/Airport.
    - Block-offs.
    - Criteria for suitable emergency landing areas.
    - Determining the pre-planned and recognized emergency landing areas. As many current emergency landing areas as possible are to be identified and prioritized by a flight. If possible, they can either be programmed into the system, or noted mentally by the pilot so that you already have done a coarse assessment of fitness before an event occurs.
    - Other.

# Operations in the vicinity of airports

* + - Restrictions closer than 5 km from the airport.
    - By flying near controlled airports and controlled airspace, see designated point.
      * Who to contact: air traffic control, airport owner, airport user(s), and landowner.

# Operations in controlled airspace and airspace with RMZ

* + - Pre-coordination of flying in controlled airspace.
    - Requirements for two-way radio communication.
    - Opening for BLOS without creating a hazardous area by the issuance of Notam, this applies under 120 meters (400 feet).

# Operations in connection with restrictions and hazardous areas

* + - Where are those responsible for their operations?
    - Where to find the overview of restriction and hazardous areas (AIP, AIP SUP, Notam, etc.).
    - Approval procedures.
    - Applications and application deadlines. (Airspace regulations, BSL G 4-1 applies today, but will probably be updated.)

# VLOS:

* + - Max 120 meters AGL.
    - The maximum distance from the pilot is defined.
    - For each system the company uses, define the maximum distance from the operator according to the appropriate platform visibility.
    - Weather and lighting conditions will be factors that may limit the distance and should be compensated for.
    - Flight will be completed so that the aircraft can at all times be observed with the naked eye without the aid of binoculars, camera, etc.
    - The aircraft shall at all times be in condition to be maneuvered manually by the aircraft manager, thus ensuring non-interference with other aircrafts, people, aircrafts, vehicles and designed objects on the ground.
    - Limitations in controlled airspace.

# EVLOS:

* Outside the maximum distance and height from the autopilot defined for VLOS.
  + - Own risk analysis of EVLOS operations.
    - Description of how the flight is to be performed so that the aircraft can at all times to be maneuvered manually by the aircraft manager, thus ensuring non-interference with other aircrafts, people, vessels, vehicles and designed objects on the ground  
      (i.e., use of the observer in connection to the aircraft manager, the size of the aircraft that indicate that it can be operated over 120 meters, etc.).
    - Requirements for a radio license for monitoring and notification of other air traffic in the operations area.
    - Define the maximum height and distance at which the aircraft manager without observer can maintain positive control.
    - Define the maximum range of the system (sender, receiver equipment, relay solutions, or other physical limitations).
    - The Civil Aviation Authority should approve EVLOS procedures.

# BLOS:

* + - Expanded risk analysis for each mission (There is a more extensive description in operations manual part C, with a short description of the special hazards associated with the BLOS).
    - Define the range of the system or other relevant restrictions
    - The application procedure (see BSL G 4-1).
    - Requirements for the particular airspace/operations area.
    - Applications (See BSL G 4-1 Attachment 1 and 3 or 2).
    - Deadlines (See BSL G 4-1 §16).
    - References to the relevant documents.

# BRLOS:

* + - "Beyond Radio Line of Sight."
    - If a specific form of relay is to be used, this solution must be described and approved by the Civil Aviation Authority particularly if it is either BLOS or VLOS. See also EVLOS and BLOS.

# The company's policy on any FPV (First Person View) operations

* + - 2 persons, i.e. an aircraft manager and a camera/sensor operator who uses "video glasses" or other display for the flight. The person who sees the aircraft without camera should be the aircraft manager and have responsibility for the flight.

The instructor-student cable solution or equivalent should be used if the aircraft manager is not available to take control of the aircraft.

# Procedures for the use of VHF radio

The minimum requirements are a valid radio license issued by the Civil Aviation Authority.

* + - Phraseology.
    - Relevant situations/policy for use (BLOS/EVLOS/FPV).
    - Other.

# General procedures for flying

# Procedures before the flight

* Crew tasks.
* Criteria for assessment of the aircraft airworthiness.
* NOTAM, other activity in the operations area.
* Weather conditions.
* MEL list (Minimum equipment list). The smallest of the aircraft equipment/components that must be operative for a flight to be performed. Can indicate in another section in the operations manual if relevant, i.e. operations manual B or C. Different types of task can have different MEL lists
* The use of sunglasses?
* Cordoning off areas, i.e. how, why and how much.
* Special considerations regarding high/low temperature (Battery capacity, engine power, personal reasons, cold fingers, etc.).
* Mobile phone procedures.
* Clothing/uniforms.
* Internal/external trunk line.
* Briefing of the affected personnel, assistants, employer, or others that will be in danger to stay in the aircraft if something goes wrong.
* Assessment of other known hazards, mobile master, magnetic field, radio radiation, bird flock, etc.
* Tollbooths have been reported to cause problems for RC equipment (Risk).
* Other.

# Procedures after Flying

* + Logging
    - Personal logging (to document training/experience/maintenance requirements, etc. also See operations manual E).
    - Equipment (technical) log books. (For runtime/maintenance intervals for the equipment. See description in operations manual C.)
    - Attach template/example of logs as designated attachment.
  + Storage routines for logs/documentation.
    - Training/merits.
    - The system logs.
    - Digital logs.
    - Paper logs.
    - Technical Logs.
    - Completed checklists (if applicable).
    - Backup/paper copies of digital logs?
  + Other.

A formal standard for logs will be developed. Until further notice we recommend that organizations standardize the logs that are used by the various pilots within the entities and make them "track" only. The following information should therefore be at least within a personal flight time log:

* Date and year.
* Serial that used (i.e., serial number or other way to identify UAV serial).
* Own role during the flight (Pilot, sensor operator, etc.).
* Site.
* The time of day for the flight (first departure time and latest landing time in the case of several trips with the same UAV serial).
* Total flight time (add up and transfer to RPA). (I.e. type missions, employer, and/or other relevant information transferred here.)
* Classified (Type of assignment, name of assignor and/or other relevant information).
* The pilot was not available for a signature.

Some operators may find it practical to also have other things in the logs.

# Accidents, mishaps and occurrences

Please inform us about events the operator has experienced in connection to the operations. Please send this information to [postmottak@caa.no](mailto:postmottak@caa.no).

# Action instructions for accidents, mishaps and occurrences

# Warning procedures

* + - Serious personnel injury (outsiders and own personnel)
    - Damage to bystanders and material.
      * Small personal injury.
      * Injury that requires police notification.
      * Damage, which causes a form of liability.
      * See also the relevant points below.

# Documentation routines

* + - * For the Accident Investigation Board Norway and the Civil Aviation Authority Norway.
      * For system development (System Error?).
      * For Insurance.
      * For Police investigations.
        + Any particular storage of system logs if suspected after research.

# Reporting procedures after accidents, mishaps and occurrences

* + Voluntary submission of information to the Aviation Authority. [Postmottak@caa.no](mailto:Postmottak@caa.no)

# Operations types

Short description of the types of operations the company is executing. Complementary description with its associated risk analysis may be found in section C).

Below are SOME relevant tasks. The list is not exhaustive.

* Relevant "Operations Types/Main Groups"
  + VLOS
  + EVLOS
  + BLOS
  + BVLOS
  + BRLOS
  + FPV
* Relevant sub-parts
  + Training
  + Line Inspection
  + Real estate photo, rural
  + Real estate photo, city/town
  + Film production
  + Indoor
  + Monitoring
  + Sensor testing
  + Land measurement
  + IR recording
  + SAR
  + Survey
    - Geological mapping
    - Environment
  + Research
    - Climate
    - Meteorology
    - Tracking of radio tagged animals
* Other

# Attachments

All attachments are to be added at the end of this document. As attachments are added, all lists, overviews and documents must be regularly updated. In case of changes to the attachments, the revision history must be updated. A copy of the document must be sent to the aviation authority for updates to your case folder.

Examples of documents the company can produce and submit as attachments (not exhaustive):

* Templates for logs, personal (see text below).
* Templates for task/activity logging (see text below).
* Protocol deviation form.
* Other relevant attachment.

Part B

Operating Documentation

THIS PAGE

INTENTIONALLY

LEFT BLANK

Part B includes the operating documentation manuals, POH ("Pilots Operating Handbook"), and other relevant technical descriptions of the company's different types of systems, platforms and equipment except the descriptions of maintenance, repairs and remedies that appear in part E. Requirements for system airworthiness, any airworthiness requirements in relation to the operations types may be relevant to part B, but also part C. Operations manual part B should contain:

# Introduction

Brief outline of part B

# [System 1]  Documentation from the manufacturer can be used if it contains the following:

# General Information

* + 1. Components
    2. Characteristics
    3. Risk Analysis for the relevant system (General outline of weaknesses and limitations that are unique/special to this system and the actions/procedures that can be used to compensate for these shortcomings). Examples: inadequate flying ability, weak engines, limitations in "return to home" function, magnetic field, radio noise, etc. The analysis can be added as attachments).
    4. Other

# RPS (Remote Pilot Station)

If the same RPS is used for multiple systems, refer to this section for relevant systems. Any unique procedures, settings, and usage should be described where relevant.

# Performance and Limitations

* + 1. Weight and balance limitations
    2. Flight time
    3. Weather restrictions
    4. Any unforeseen events
    5. Further restrictions that can be put on special or demanding missions. Elaborate on and describe in operations manual part C for the relevant operation

# Emergency procedures

* + 1. Relevant background and description of procedures (Reasons for actions-system understanding), any "Expanded Emergency Check List."
    2. This does not include the HSE-related events.

# Normal procedures

* + 1. Background and description of procedures. (Reasons for actions-system understanding). (Any "Expanded normal Check List.")
    2. The following rules apply if an emergency occurs:
       1. MAINTAIN AIRCRAFT CONTROL
       2. ANALYZE THE SITUATION AND TAKE PROPER ACTION
       3. LAND AS SOON AS POSSIBLE/PRACTICAL

# Authorized Load/sensors

If the operation includes transportation of goods, according to §12, the type of goods must be described here.

* + 1. The description of the assembly/use of each load/sensor.
    2. Sensor’s weight.
    3. Any special considerations regarding CG ("Center of gravity") by the different types of load and sensors.

Special considerations to be included in the planning. Can also be described in operations manual part C in the SOP for the appropriate task.

# [System 2]

As above - in case of multiple systems.

System documentation, checklists, POH, and other documentation for the various systems are to be included/conjoined with the other attachments at the end of the document.

Many inventory check lists are very descriptive and text heavy. We call them procedures or "Expanded check lists," and they belong in the part B of the operations manual. Check lists should be simple to-do lists concerning the specific task(s). Check List should only list one or two words. Procedures to be completed before or during flight, preferably with the operations manual as a reference. It is advisable to have the checklist(s) laminated or otherwise readily available and manageable during the operation(s).

Example:

1. Battery status….checked

2. Landowner's permit ……………Ok

3. Wind………………Below xx m/s

4. Distance to the public…………..Minimum 150 m

5. Propellers………………secured with lock nut ( XXN/m)

6. Camera…………………On

7. Auto Focus…………(not applicable in case of X or by Y)

(The operations manual describes the background of the different types of actions that should be checked. Easier operations often mean less restrictions. Individual checklists for special operations can also be found in SOP in the operations manual part C.)

Part C

Authorized operations

THIS PAGE

INTENTIONALLY

LEFT BLANK

Please conjoin the analysis and SOP for the different types of approved missions.   
A "General Risk Analysis" that is applicable for all/multiple types of missions can be made, should similar risk factors appear for multiple types of missions (thus avoiding superfluous repetitions). Main groups and sub-groups can be defined for every operation. Training is one example of such a sub-group. However, Training VLOS will not be equal to the Training BLOS and must therefore be described according to its relevance.

# Introduction

Brief outline of part C.

# Approved types of missions

Type of tasks already approved:

Listed below are main groups and sub-groups of missions that may be applicable. The list is not exhaustive.

* Relevant "Operations types/main groups"
  + VLOS
  + EVLOS
  + BLOS
  + BVLOS
  + BRLOS
* Relevant "sub-groups"
  + Training
  + Line inspection
  + Real estate photo, rural
  + Real estate photo, urban
  + Film production
  + Indoor (Outside Civil Aviation Authority’s area of responsibility, but should be described for insurance purposes)
  + Monitoring
  + Sensor testing
  + Land measurement
  + Use of IR equipment
  + The SAR
  + Survey
    - Geological
    - Mapping
    - Environment
  + Research
    - Climate
    - Meteorology
    - Radio tagged animals
* Other

# SOPs for our approved mission types

SOP is an abbreviation for Standard Operational Procedure. It must provide a description of how the task is to be executed in a safe and timely manner. It shall also provide information concerning various key elements, and a brief explanation to why these points are included in the SOP. Please make the SOP easy to read and understand for new pilots. I.e. A new pilot should be able to understand with no delay why it is important to fly with sensor X instead of sensor Y without adjusting the placement of the battery. Any non-compliance should be detailed and justified.

# VLOS Operations

# [Training]

# Risk analysis

A risk analysis for each type of operation should be performed and taken into the SOP as measures. Risk analysis can either be added as attachments or entered here. Actions can be described here or added directly into the SOP.

# SOP

The whole operation should be described in detail, from when the task is approved until the task is completed. Use the illustrations and material from the POH or similar.

* + 1. The application procedure (landowner's permission, aviation authority, air traffic service, Notam, etc.).
    2. Restrictions (weather, distances, weights, CG, overview, etc.).
    3. Relevant areas (distance to nearby buildings, people, objects, emergency landing areas etc.).

# [Other]

Other relevant information and/or key points that must be described to complete the SOP.

# [Line Inspection]

Describe the entire operation in detail. From when the task is approved until the task is terminated. Use the illustrations and material from the POH or similar.

1. The application procedure (landowner's permission, aviation authority, air traffic service, Notam, etc.).
2. Restrictions (weather, distances, weights, CG, overview, etc.).
3. Relevant areas (distance to nearby buildings, people, objects, emergency landing areas, etc.).

# Real estate photo, rural

Describe the entire operation in detail. From when the task is approved until the task is terminated. Use the illustrations and material from the POH or similar.

1. The application procedure (landowner's permission, aviation authority, air traffic service, Notam, etc.).
2. Restrictions (weather, distances, weights, CG, overview, etc.).
3. Relevant areas (distance to nearby buildings, people, objects, emergency landing areas, etc.).

# Real estate photo, urban

Describe the entire operation in detail. From when the task is approved until the task is terminated. Use the illustrations and material from the POH or similar.

1. The application procedure (landowner's permission, aviation authority, air traffic service, Notam, etc.).
2. Restrictions (weather, distances, weights, CG, overview, etc.).
3. Relevant areas (distance to nearby buildings, people, objects, emergency landing areas, etc.).
4. Other.

# Film Production

Describe the entire operation in detail. From when the task is approved until the task is terminated. Use the illustrations and material from the POH or similar.

1. The application procedure (landowner's permission, aviation authority, air traffic service, Notam, etc.).
2. Restrictions (weather, distances, weights, CG, overview, etc.).
3. Relevant areas (distance to nearby buildings, people, objects, emergency landing areas, etc.).

# BLOS Operations

# Training

Here the whole operation should be described in relative detail, from when the task was approved until the task is completed. Use the illustrations and material from the POH or similar.

1. The application procedure (landowner's permission, aviation authority, air traffic service, Notam, etc.).
2. Restrictions (weather, distances, weights, CG, overview, etc.).
3. Relevant areas (distance to nearby buildings, people, objects, emergency landing areas, etc.).

# Other relevant information

# Monitoring

Describe the entire operation in detail. From when the task is approved until the task is terminated. Use the illustrations and material from the POH or similar.

1. The application procedure (landowner's permission, aviation authority, air traffic service, Notam, etc.).
2. Restrictions (weather, distances, weights, CG, overview, etc.).
3. Relevant areas (distance to nearby buildings, people, objects, emergency landing areas, etc.).

# Sensor testing

1. Risk analysis
2. SOP

# Land measurements

1. Risk analysis
2. SOP

# The IR-filming

1. Risk analysis
2. SOP

The following must be described and included in the SOP. Be advised that certain types of operations require more detailed descriptions.

### General weather minimums for the relevant types of operations

Required weather minimums for the task to be approved. When several aircrafts are suitable for the same task, consider the main points of this example.

* Aircraft "XX"
  + Wind
  + Precipitation
  + Overview
  + Temperature
  + Other…
* Aircraft "X"  
  + Wind
  + Precipitation
  + Overview
  + Temperature
  + Other…

### Pre-flight procedures

Procedures and checklist to be followed immediately before the flight.

### Procedures during flight

Procedures to be followed during the flight.

### Post-flight procedures

Procedures and checklist to be followed immediately after the flight.

### Choice of aircraft for the given task

Information about approved aircrafts for the given type of tasks. The description of any weaknesses in the aircraft that the aircraft manager must take into account before or during flight under the given operation.

### Risk Analysis

Analysis of operational hazards and the risk level.

### Action taken in the event of accidents, incidents and other mishaps

Described the action plan in the event of accidents, incidents, and other mishaps.

### Service /rest time

All types of operations require limits to service time in order to maintain a necessary level of mental alertness.

Part D

Training/maintenance/ requirements

THIS PAGE

INTENTIONALLY

LEFT BLANK

According to regulations §28 and §46, a pilot must be able to demonstrate sufficient skills to ensure safe flights in accordance with the regulations.

It is also stated that the aircraft manager and pilot must have passed an exam given by the Civil Aviation Authority.

Overview of the company approved pilots and their qualifications are added as an attachment of the personnel overview.

It is the company's responsibility to provide the pilot(s) with sufficient training, including maintenance training to ensure proficiency and currency. Some types of operations may require additional competence or skills.

How all of this will be completed and documented should be described here in Part D, with references to Part B and C.

# About our training and maintenance of expertise

# Regarding part D. A short description of the system(s) that the company uses to collect and maintain the necessary expertise for its pilots.

If you only use one system, the general technical description is added to 9.4.1.

# Procedures for maintenance of certificates/skills

# Pilots

It is the pilot`s responsibility to ensure that the required certificates and qualifications are valid before the flight is commenced. But it is the responsibility of the company that there is a system in place to verify this.  
Here you shall describe the quality control system the company uses to ensure that the company's operators hold the necessary certificates and craft/training to perform the various types of tasks. (Can also be described in the quality control system.) Some things can be a requirement by the government (CAA/EASA), some will be specific for the company and the individual type of task.

# Technical personnel

If your company has its own training program for the technical personnel, this can be described here

# Assistants, observers and other crew members

The description of the company's routines and requirements for assistant, observer, and other crewmember training.

# Simulators or other equipment that can be used

If there are simulators to a system, describe limitations in relation to training here.

# [System 1]

If the manufacturer has published a designated training program, it can be used in its entirety or in part as long as the following points are included.

# General information

# *(If multiple systems, more extensive than in the introduction..*

# Theoretical training and training program for the new operators should include:

* + 1. RX/TX Equipment
    2. Battery and charging equipment/charging routines
    3. Technical review
    4. Camera/sensor rig
    5. Software/autopilot/gyro
    6. GPS
    7. Backup/emergency equipment/RTH (return to home), etc.
    8. Special mission types

ix. The list is not exhaustive.

# Practical training program for the new operators should include:

1. Normal operations
2. Emergency procedures
3. Checking out of the system
4. Checking out of special mission types

# Simulator (if applicable)

1. Normal operations
2. Emergency procedures
3. Checking out of the system
4. Training to special mission types.

# Special maintenance requirements and training for the company's operators.

If the company has operations types with special requirements for the pilot or the crew, these are described here.

Education and training manuals, other relevant material from the manufacturer(s), checklists for convenient samples, training profiles, etc. can be added as attachments.

Part E

Technical/maintenance

THIS PAGE

INTENTIONALLY

LEFT BLANK

Directions:

Article § 41 in the regulations provides guidelines for air proficiency. It also articulates requirements for establishing a maintenance program for the company`s aircrafts and systems.

In aviation there is a strong focus on preventive maintenance, which means that there is a system to replace or recondition the critical components BEFORE they fail. The maintenance system shall describe what components this applies to, and at what intervals. The intervals can be based on calendar time or runtime. Finally, it should also be described how the other components should be maintained, and how the repairs should be carried out.  
According to the company’s quality control system, experiences are also documented and implemented in the maintenance program and attachment as necessary. Remember to update the revision survey for the operations manual and consider whether the revision is of a nature that it is necessary to send in the operations manual for revision and/or approval by the Civil Aviation Authority.

If the manufacturer has published its own technical description with the maintenance routines, this can be used completely or partly. The version that is used as the starting point should be noted, and updates and revisions should be documented. This can be done i.e.. in the revision history for the operations manual and by displaying the version number and the date in the maintenance program.

The Technical Manager will sign a statement that the maintenance is done according to the manufacturer's recommendations and is performed by personnel who have appropriate rights to do any maintenance. It should also be documented who has the right to sign for the types of maintenance.   
This can be added to a document, and is added as an attachment to the end of the manual.

# Introduction

*Here is a brief technical description of the system(s) that the company uses, focused on technical and maintenance conditions.*

# The maintenance program’s contents

Description of how the maintenance program is designed and what it is based on. (i.e. manufacturer maintenance description, and items from the company experiences, adapted for use in Norwegian conditions.)

The following should, at a minimum, be documented or included in the maintenance program:

# Revisions in the maintenance program:

Where/how to document revisions.  
The technical manager is responsible for ensuring revisions will be made on the basis of their own experiences, the manufacturer's recommendations and/or after Civil Aviation Authority’s requirements. Revisions should be documented.

# Responsibility of the signer for airworthiness:

Before the first departure every day, one will be required to “sign off” that the aircraft and critical system components constitutes an airworthy system. Routines and criteria should be described. Checklists can be in part B or as attachments. (Checklists to operate the system is in addition and can be described in the parts B and C as well as be considered attachments.)  
Article §44 describes that qualified personnel approved by the technical manager should carry out the maintenance and that the aircraft should be documented. Who can sign and after which criteria, should be described and transferred in the designated attachment (above).

# Testing and modifications:

Describe the procedures for testing and modifications.

If there is need for testing, or if larger modifications of a system that is approved are done, it is also needed to get this approved by the Civil Aviation Authority according to article §43. This can apply to all the components in the system and the payload suspension, what can be modified and the changes to be incorporated.  
It can also cause the revision of the maintenance program, or perhaps an entire manual, which also must be documented in the revision history of the operations manual.

# Logging of flight time, errors, and defects.

Describe the procedures for logging of flight time, errors, and defects.  
Each aircraft is to have their own technical log where technical flight time errors, defects, repairs, and maintenance performed will be logged. It is the technical manager who is responsible for ensuring that this work is carried out according to the standard operating procedures.   
As part of this, all detected errors and defects, and the approved technical personnel shall sign off associated repairs.

# The description of maintenance:

The maintenance tasks should be described, any checklists created and added as attachments.

# Critical components maintenance periods:

All critical components maintenance intervals should be listed here, as in i.e. motors, rotors, electronic components and other equipment. It should be specified when they should be tested, overhauled and/ or replaced. Technical flight time for completed maintenance log should be transferred.

# Revision:

Revision intervals and criteria are described in the quality system.

# Service bulletins from manufacturer:

The Manufacturer can give out recommendations about modifications or other service announcements that are of importance for the maintenance program and the operation of the system as such. There should be a list that documents the what, how and when any changes have been implemented.

# [System 1]

Technical conditions and maintenance for each system should be described

# General information

* + 1. As the introduction, but more extensive than the introduction, if multiple systems are used.
    2. The maintenance program for the applicable system relevant to points above and manufacturer recommendation as is best suitable.  
       Documentation routines /logging of maintenance, inspection and repair. (Any reference to the descriptions in the operations manual’s parts A and B and attachments.)
    3. Example:
    4. Components with the technical description and updates/service interval:
       1. RX/TX Equipment.
       2. Battery and charging equipment/charging routines.
       3. Engines.
       4. Server (routines for the interval for replacement/runtime).
       5. Propellers/rotors.
       6. Camera/sensor rig.
       7. Software/autopilot/gyro
       8. GPS Backup/emergency equipment/RTH (return to home).
    5. Inspection journal (Template as attachment?).
    6. Checklists for maintenance (Attachment?).

Other.

Attachments

All attachments are organized and listed here and should be marked according to thelist below:

1. **Organization and personnel overview**
2. **The company’s aircrafts and registration/labeling**
3. **Other**