



(German Federal Aviation Office)

**Formulation guidelines for an
Operations Manual in the specific category**

Note

This information is issued by the Federal Aviation Office (LBA).

All facts and procedures presented are without a guarantee of completeness.

The LBA shall not be liable for any damages of any kind arising from the use of this document. No legal claim can be derived from the information given in this document.

Unless explicitly stated otherwise, all references to legislation refer to the Implementing Regulation (EU) 2019/947.

The document was written to the best of our knowledge and belief at the time it was prepared.

References

- Implementing Regulation (DVO) (EU) 2019 / 947, Status September 2021
- AMC (Acceptable Means of Compliance) with the Implementing Regulation 2019/947, Status September 2021

Note

This guideline presupposes knowledge of the contents of the LBA's "Guideline on Operating Licences". Therefore, we recommend that you first study this guideline in detail. Furthermore, the structure of the application forms for operating licences in the special category should be known. All documents can be found on the LBA homepage in the drones section under the tab "Operating Licences / LUC (Light UAS Operator Certificate)".

Introduction / Foreword

In order to apply for an operational authorisation in the specific category, in accordance with Implementing Regulation (EU) 2019/947, it is mandatory to prepare an OM and submit to the national competent authority.

The OM must be submitted as part of the application together with the associated risk analysis (SORA (Specific Operations Risk Assessment) form).

The scope and depth of evidence of the subject areas in the document is derived from the SAIL (Specific Assurance and Integrity Levels) of the intended operation.

The OM prepared here as an example describes a theoretical UAS operation in SAIL II. The fulfilment of the robustness requirements of the OSOs (Operation Safety Objectives) are adapted to SAIL II.

The operation aimed for may have significant variations.

You can, therefore, not copy this OM and use it immediately!

Rather, the example is intended to serve as a structuring aid and to provide you with ideas and inspiration for how proofs could perhaps be implemented when describing your operation.

Notes are shown in italics or, as in the case of the references, highlighted in colour.

(OSO#23_IC1) - Means in this context that the preceding body deals with the requirements of OSO Number 23, Integrity-Criterion No.1.

Please note that the use of formulations or procedures applied here does not imply any claim for approval / recognition.

The following OM describes a theoretical UAS operation.

In doing so, it deals with a medium sized operating company, which wishes to use a 12.5 kg multi-copter with a characteristic dimension of 1.5 m for test purposes.

The flight area was chosen in such a way that the operation can be carried out without mitigations in SAIL II.

Basic SORA Data:

GRC 3,

M1-0-none,

M2-0-none,

M3-0-medium,

ARC-b,

ARC-mitigations-none

→ SAIL II

Operations Manual

This OM contains all the relevant information for the UAS operation of:

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Document Control

The contents of this document and all other applicable documents are subject to revision control and changes require the approval of the competent authority.

Revision Number	Revision Date	Name	Description of the Change
0	1.1.2022	Lisa Musterfrau	First impression of the creation of an OM. Structuring in accordance with the LBA template. Adaptation to our own operation where necessary. Insertion of the organisation chart of the operating company.
1	2.1.2022	Max Mustermann	Correction of various spelling errors. Changes to the wording in Chapters 2, 4 and 7
2	5.1.2022	Lisa Musterfrau	UAS 2 added.

All changes to the last revision will be marked with a bar on the left side.

Other applicable documents

Name	Revision Number	Description
Flight_Area_01_R1.kml	1	KML-File with all coordinates for FG, CV and GRB
Flight_Area_02_R1.kml	1	KML-File with all coordinates for FG, CV and GRB
OM D	-	Trainings manual, chapter D was outsourced and is not under revision control
		<i>further documents, if referenced in the OM</i>

List of Contents

Introduction / Foreword.....	4
Operations Manual	5
Document Control	5
List of Contents	7
List of Abbreviations	10
1 General Part (Part A).....	11
1.1 Opening Statement	11
1.2 Security and Privacy Statement.....	12
1.3 The Operating Company / Organization	13
1.3.1 Structure / Organisation Chart.....	13
1.4 Changes.....	14
1.5 Retention Periods.....	15
1.6 Document Distribution	15
1.7 Personnel Requirements and Qualifications	16
1.7.1 Pilot / Ground Station:	16
1.7.2 Maintenance Personnel.....	16
1.7.3 Ground Staff.....	16
1.7.4 Training, Examination and Supervision Personnel	16
1.8 Crew Member is “fit for the operation”	17
1.8.1 Preventive Health Care	18
1.8.2 Duty Hours and Rest Periods	19
2 Procedures (Part B).....	20
2.1 Multi-crew Coordination.....	20
2.2 Flight Planning	20
2.2.1 Use of Up-to-date Materials.....	20
2.2.2 Geographical Zones	21
2.3 External Services and Systems	21
2.3.1 Services	21
2.3.2 Systems	21
2.4 Procedures for Obtaining and Evaluating Weather Conditions	22
2.5 Procedures for Responding to Unexpected Adverse Weather Conditions	22
2.6 Procedures for TMPR (Tactical Mitigation Performance Requirement).....	22
2.7 Procedures Specifically for UAS 1.....	23
2.7.1 Pre-flight and Post-flight Inspections	24
2.7.2 Normal Procedures	24
2.7.3 Contingency Procedures	24
2.7.4 Emergency Procedures.....	26
2.8 Procedures Specifically for UAS 2.....	27
2.8.1 Pre-flight and Post-flight Inspections	27

2.8.2	Normal Procedures	27
2.8.3	Contingency Procedures	27
2.8.4	Emergency Procedures.....	27
2.9	Occurrence Reporting	23
3	Flight Areas (Part C).....	27
3.1	General Operational Limitations	27
3.1.1	Environmental Conditions	27
3.1.2	Technical Operational Limitations.....	28
3.2	Flight Area 1.....	29
3.2.1	Description	29
3.2.2	Calculation of CV / GRB.....	29
3.2.3	Specific Procedures of the Flight Zone	30
3.2.4	Emergency Response Plan (ERP) - Local Information	30
3.3	Flight Area 2.....	32
3.3.1	Description	32
3.3.2	Calculation of CV / GRB.....	32
3.3.3	Specific Procedures	32
3.3.4	Emergency Response Plan (ERP) - Local Information	32
3.4	Flight Area 3.....	32
3.4.1	Etc.....	32
4	Training (Part D).....	33
5	Emergency Response Plan (Part E).....	34
5.1	General	34
5.2	Creation of the Emergency Response Plan.....	34
5.3	ERP Template.....	34
5.4	Preparation and Briefing:.....	35
5.5	Reporting Procedures and Obligations after an Emergency	35
5.5.1	Who reports?.....	35
5.5.2	What must be reported?.....	36
5.5.3	To whom / how must reports be made?.....	36
5.5.4	What must be observed after reporting?.....	36
6	Technical Part of UAS (Part T)	37
6.1	UAS 1.....	37
6.1.1	Description	37
6.1.2	Image / Graphic.....	37
6.1.3	C3 Link.....	37
6.1.4	Parachute (M2)	38
6.1.5	TMPR.....	38
6.1.6	Containment.....	38
6.1.7	Human-Machine Interface - HMI.....	39

6.2	UAS 2.....	40
6.2.1	Description	40
6.2.2	Image / Graphic.....	40
6.2.3	C3 Link.....	40
6.2.4	TMPR.....	40
6.2.5	Containment.....	40
6.2.6	Human-Machine Interface - HMI.....	40
6.2.7	Automatic Protection of the Flight Envelope from Human Errors	40
6.2.8	Designed and Qualified for Adverse Environmental Conditions	40
7	Maintenance (Part M)	41
7.1	General	41
7.2	Software Updates.....	41
7.3	Maintenance UAS 1	41
7.4	Maintenance UAS 2	41
8	Annex.....	42
8.1	Operational Agreement with ATC	42
8.2	Evidence	42
8.2.1	Evidence of Flight Tests for Contingency and Emergency Procedures.....	42
8.3	Printed Forms.....	43
8.3.1	List for Maintenance Personnel	43
8.3.2	List for Personal for Pre-flight and Post-flight Inspections.....	45
8.3.3	List for the Documentation of Pre-flight and Post-flight Inspections	Error!
	Bookmark not defined.	
8.3.4	List for the Training / Experience Level of Personnel.....	47
8.3.5	List for Training on the Emergency Response Plan (ERP) of the Personnel....	49
8.4	Check Lists	53
8.4.1	ERP Template.....	55
8.4.2	Pre-flight Inspection - Check List.....	59
8.4.3	Post-flight Inspection - Check List	61

List of Abbreviations

Term	Explanation
PIC	Remote Pilot (Pilot in Command)
Journey-Log	Summary of the Entire Flight Documentation
OM	Operation Manual

The table should be filled in

1 General Part (Part A)

(OSO#01)

In this chapter, general aspects of the UAS operator are described.

1.1 Opening Statement

This operations manual has been prepared in accordance with the specifications and requirements of Regulation (EU) 2018/1139 and its implementing regulations. Among others, the Implementing Regulation (EU) 2019/947 and the Implementing Regulation (EU) 2019/945 were taken into account.

Any UAS operation shall be in accordance with the requirements and limitations in this OM and shall be in accordance with the operator's rules and acceptable standards.

All personnel of the operator shall:

- Know the contents of this manual.
- Follow the instructions and procedures in this manual.
- Comply with the laws, rules and procedures of the countries in which the operation is carried out.
- Always conduct the operation as safe as is practicably possible.
- Not take any unnecessary risks.
- Report safety risks and all incidents that affect safety.

We commit ourselves:

- To promote safe operation wherever possible.
To establish an operational culture that ensures safe operation and facilitates the reporting of safety-relevant issues.
- To provide adequate financial and human resources for this purpose.
- To ensure that all information in this manual complies with the applicable statutory rules and requirements.
- To implement and maintain a "Just Culture". No employee should suffer reprisals for reporting safety deficiencies, mishaps or violations that very likely would not have been discovered without their report.
- To comply with new or amended regulations published by the EU Commission, EASA, or the National Aviation Authority (LBA), even if such new or amended regulations conflict with these procedures. Changes to the regulatory framework affecting the content of this manual will be promptly incorporated into it and submitted to the National Aviation Authority (LBA) for approval.

With the provision of this manual we pursue the following objectives:

- Safe execution of operations.
- Customer satisfaction.
- Compliance with the applicable laws.
- The harmonization of processes.
- The description of areas of responsibility and assignments.
- Standardization.

None of the foregoing shall prevent the operator's personnel from acting in good faith to the best of their knowledge and belief when this manual does not provide assistance or guidance.

We expect all staff to show initiative, decision-making ability and to have a professional work attitude.

The Management Board: Place, date, signature: Laudarum, 1.1.2022 Max Mustermann

1.2 Security and Privacy Statement

Personal data collected in the course of the operation described in this Operations Manual shall be processed in accordance with Regulation (EU) 2016/679 of the European Parliament and of the Council of the 27th of April 2016 on the protection of natural persons with regard to the processing of personal data, on the free movement of such data and repealing Directive 95/46/EC (General Data Protection Regulation).

Personal data is collected and processed only to the extent strictly necessary for the operation described herein.

For further information regarding the processing of the data (for example, to correct incorrect or incomplete data) please contact our secretariat directly.

Every affected data subject has the right to lodge a complaint regarding the processing of his or her data with the Federal Commissioner for Data Protection and Freedom of Information at any time.

The Management Board: Place, date, signature: Laudanum, 1.1.2022 Max Mustermann

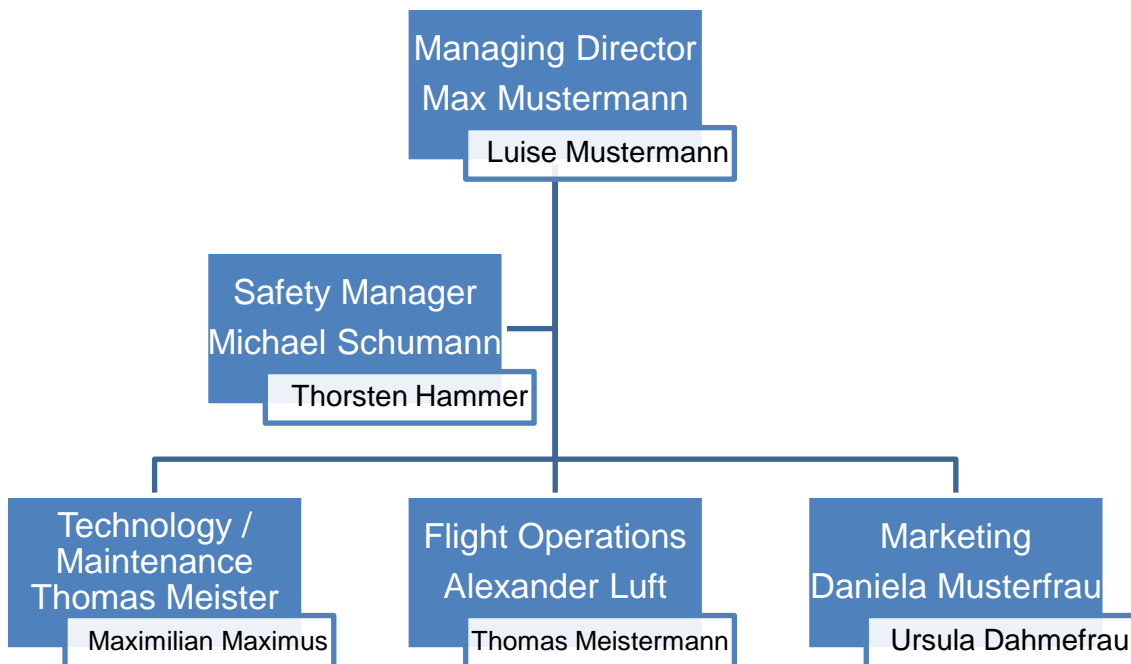
1.3 The Operating Company / Organization

Our company develops and distributes sensor products for the identification of metallic objects in the ground. These sensors are designed to be mounted on an UAS in order to be able to investigate larger ground areas. To this end, we regularly carry out test flights to improve our product.

Our company was founded in 2018 and consists of a total of five permanent employees. All of these people are responsible for an assigned area.

As shown in the organisation chart, all positions essential to our flight operations are staffed. The tasks that these people perform are the foundation of our safe flight operations.

1.3.1 Structure / Organisation Chart



The duties of the individual responsible employees are described below.

Description of duties and responsibilities:

Managing Director:

Precise description of the duties and responsibilities

Safety Manager:

Precise description of the duties and responsibilities

Technology / Maintenance:

Precise description of the duties and responsibilities

Marketing:

Precise description of the duties and responsibilities

Flight Operations:

Precise description of the duties and responsibilities

1.4 Changes

All changes to the organisational structure or processes related to the operation of the UAS must be discussed internally prior to implementation. In doing so, an assessment of the impact of these changes on the safety of the operation must be made.

If risk factors can be identified during this assessment, they must be taken into account before the change is implemented. For this purpose, a concept that reduces the critical impacts on operations must be developed.

Changes in the organisational structure must be documented in Operation Manual and are subject to approval.

1.5 Retention Periods

All important documents of the UAS operation are kept in digital or analogue form for at least three years and are protected against loss and / or alteration.

These include, but are not limited to, the following:

- All authorisations issued by the authorities, including all light authorisations to operate in geographical zones.
- Any written flight authorisation to operate into a control zone.
- Records of flights carried out.
- Maintenance records / protocols.
- Records and updates of all relevant qualifications, experience and / or training completed by maintenance personnel. (OSO#03_AC2)
- Records and updates of all relevant qualifications, experience and / or training completed by pilots.
- Minutes of all meetings with regard to safety-relevant topics (flight safety, security, occurrence reports, investigations) as well as
- All documents considered important that enable the operator's actions to be traced.

1.6 Document Distribution

Each new employee is sent an up-to-date set of valid documents by e-mail to his or her work e-mail address or is given a set as a hard copy when he or she is inducted.

Afterwards, individual documents whose revision has changed are sent to each employee by e-mail.

It is the employee's responsibility to always work with the current valid version. A list of the current revision numbers of all documents can be viewed in the company office at any time or can be sent by e-mail from the office during business hours.

In addition, documentation lists are kept and updated. The current lists are available in the company office at all times and can be viewed there or can be sent by e-mail during business hours.

- A list of personnel authorised to carry out maintenance work is kept and regularly updated. A standard form can be found in the Annex under 8.3.1. (OSO#03_AC1c)
- A list of all relevant personnel qualifications, experience and / or training is maintained and regularly updated. A standard form can be found in the Annex under 8.3.2. (OSO#03_AC2)
- A list of personnel authorised to carry out pre-flight and post-flight inspections is maintained and regularly updated. A standard form can be found in the Annex under 8.3.2. (OSO#07_AC2)
- A list documenting the pre-flight and post-flight inspections carried out (Tech Logbook). A standard form can be found in the Annex under 8.3.6 (OSO#07_AC1)
- A list of all emergency response plan (ERP) training conducted is maintained and updated regularly. A standard form can be found in the Annex under 8.3.4 (M3_C2b)
- A list of all pilots who meet the requirements to fly under this operations manual is maintained and regularly updated. A standard form can be found in the Annex under 8.3.4

1.7 Personnel Requirements and Qualifications

All personnel used within the scope of this Operation Manual must be able to read and understand it independently.

1.7.1 Pilot / Ground Station:

- Remote pilot, PIC (Pilot in Command):
 - At least remote pilot certificate A2 or STS (Standard Scenario) licence.
 - Successfully completed training in accordance with the training manual (Part D).
 - Instruction in the ERP not older than twelve months.
 - Active flight as a remote pilot with a UAS of the same configuration (for example, multi-copter/ fixed-wing aircraft) within the last ninety days.
- Remote pilot, co-pilot:
 - At least remote pilot certificate A2 or STS licence.
 - Successfully completed training in accordance with the training manual (Part D).
 - Instruction in the ERP not older than twelve months.
 - Active flight as a remote pilot with a UAS of the same configuration (for example, multi-copter/ fixed-wing aircraft) within the last ninety days.
- Remote pilot under supervision (for example, for training purposes):
 - At least remote pilot certificate A2 or STS licence.
 - Successfully completed training in accordance with the training manual (Part D).
 - Instruction in the ERP not older than twelve months.
- Ground station operator:
 - At least remote pilot certificate A2.
 - Successfully completed training in accordance with the training manual (Part D).
 - At least three flights experience with the ground station gained under supervision.
 - Instruction in the ERP not older than twelve months.

1.7.2 Maintenance Personnel

- Mechanic:
 - Several years' technical experience, including at least one year of experience with UAS.
 - Successfully completed training in accordance with the training manual (Part D).
 - Instruction in the ERP not older than twelve months.

1.7.3 Ground Staff

- Assistant:
 - Successfully completed training in accordance with the training manual (Part D).
 - Instruction in the ERP not older than twelve months.

1.7.4 Training, Examination and Supervision Personnel

- Remote pilots:
 - At least as under 1.7.1.
 - At least one year experience in the current operation.
- Maintenance Personnel:
 - At least as under 8.3.3.
 - At least one year experience in the current operation.

1.8 Crew Member is “fit for the operation”

(OSO#17)

Each crew member declares to the operator prior to commencement of the operation that there are no conflicts with 1.8.1 (Preventive Health Care) or 1.8.2 (Flight Duty and Rest Periods) and that he / she can perform his / her duties and tasks during the UAS operation without restrictions (the crew member declares himself / herself "fit for duty"!).

If a conflict exists regarding either of the two points, the crew member should report "unfit for duty" to the Head of Flight Operations. This may be done in writing or by telephone.

The performance of his or her duties, including the limited or only partial assumption of further duties in the company, is no longer permitted thereafter.

1.8.1 Preventive Health Care

(OSO#17)

The points listed in this chapter are based on the requirements of Regulation (EU) 965/2012.

Preventive health care is an important part of ensuring safe operations.

Everyone should try to keep as healthy and fit as possible. This applies in particular, but not exclusively, to the following:

- **Alcohol and other intoxicating liquids**
It is the company policy of the operating company to prohibit any work under the influence of alcohol or other intoxicating liquids. Any consumption of alcohol eight hours before the start of operations is prohibited. The blood alcohol level must be 0.0 ‰ at the latest at the time when the operation preparation is started.
- **Narcotics**
Psychoactive substances such as narcotics can cause mood swings or perceptual disturbances in people. The same applies to sedatives and hypnotics.
Any and all violations of this prohibition shall result in immediate suspension from all duties related to the operation described herein. The position or task within the company of the person concerned is irrelevant.
- **Drugs**
Psychoactive substances such as drugs can cause mood swings or perceptual disturbances in people. Examples include cannabis, cocaine, heroin, LSD, etc.
Any and all violations of this prohibition shall result in immediate suspension from all duties related to the operation described herein. The position or task within the company of the person concerned is irrelevant
- **Sleeping tablets**
It is not permitted to perform the tasks or activities described in this OM while under the influence of sleeping tablets.
- **Antidepressants**
It is not permitted to perform the tasks or activities described in this OM while under the influence of antidepressants.
- **Medical treatments**
Whenever a crew member is receiving medical treatment from a doctor, he / she should inform the doctor that he / she is carrying out safety-related activities in connection with the operation described here to ensure that he / she is not subject to any restrictions in this regard. Whenever there is any doubt about unrestricted fitness, the crew member should report "unfit for duty" to his / her employer.
- **Immunization**
Each crew member is responsible for ensuring that they have the required vaccinations.
Vaccinations should take place at least 24 hours before the time when operational preparations begin. Consumption of food or drinks containing alcohol should be avoided during this period. In the event of a severe reaction to the vaccine, it is imperative that a doctor is consulted.
- **Deep sea diving**
Due to the expected effects on the human body, deep sea diving is prohibited for all crew members for a period of 24 hours prior to the start of operational preparations. Shallow depth dives without the use of compressed air remain permitted.
- **Blood and bone marrow donations**
Blood or bone marrow donations must have been made at least 72 hours before the start of operational preparations.
- **Precautions regarding meals before and during operation**
No special precautions need to be taken. However, each crew member is encouraged to let us know in good time if they feel unwell after eating a meal.
- **Sleep and rest**

Individual rest periods, holidays or days off (for example, weekends) should be used for relaxation. Activities that conflict with this should be avoided.

- **Surgical operations**

After surgery, it is the responsibility of the crew member to check with his / her doctor whether he / she is fit enough to discharge his / her responsibilities. Whenever there is any doubt about full fitness, the crew member should report "unfit for duty" to his / her employer.

- **Smoking**

Smoking is forbidden during flight operations.

- **Vision aids**

Whenever a crew member is required to wear vision aids, he / she shall, if possible, carry a spare pair of spectacles / contact lenses with him / her during flight operations.

1.8.2 Duty Hours and Rest Periods

(OSO#17)

The flight duty hours and rest periods listed in this section are maximum values. These apply to all crew members involved in the operation of a UAS within the scope of this operating concept. They may be further limited, but not extended, by company agreements or collective agreements.

1.8.2.1 Definition of Terms

- **Flight area**

In terms of flight duty hours and rest periods, each flight area is considered to be another flight area if the UAS cannot be moved without assistance. The same applies to the ground station, should its relocation involve great effort.

- **Duty time**

A period of time that begins when a crew member reports for duty or begins duty and ends when the crew member is free from all duty obligations, including post-flight activities.

- **Flight time (block time)**

The period of time between the moment the UAS is able to move under its own propulsion until the moment the UAS is deprived of the ability to move by itself.

- **Rest time**

A continuous, uninterrupted and fixed period of time following or preceding duty during which the crew member is free from duty and standby duty.

1.8.2.2 Flight Duty Times

- The **maximum duty time** / day for all crew members is: thirteen hours

The maximum duty time / day is reduced by one hour with each new flight zone.

Example for three different flight zones:

The maximum duty time / day = 13h - 3x1h = 10h

- The **maximum flight time (block time)** / day for all remote pilots is: Four hours

1.8.2.3 Rest Times

The minimum rest period between two duty periods is always as long as the duty period before it, but not less than eight hours.

In addition, each crew member shall have at least one full day off from duty or standby duty at least every seven days.

2 Procedures (Part B)

(OSO#01, OSO#08, #11, #14, #21)

All procedures and check lists described in this chapter have been designed to the best of our knowledge and belief, taking into account all practical experience gained and the expected workloads for the crew and the PIC. (OSO#08, #11, #14, #21_ACa, OSO16_AC1)

With the aim of making them clear, understandable and applicable, while minimising the impact of human error. (OSO#08, #11, #14, #21_IC3)

The PIC has the authority to cancel or delay any or all flight operations, if he has to assume that:

- the safety of persons is threatened or
- property on the ground is threatened or
- other airspace users are in jeopardy or
- there is a violation of this authorisation.

The PIC ensures that he:

- can take manual control of the UAS at any time, even if it normally operates automatically, (OSO#08, #11, #14, #21_IC2)
- only operates one UA at a time,
- does not operate from a moving vehicle and
- does not handover the control of the UA to another command unit while operating.

Applicable to the Contingency and Emergency Procedures is:

The suitability of the procedures described in these chapters has been tested under safe conditions during test flights in the open category. All procedures have been found to be effective and suitable. (OSO#08, #11, #14, #21_ACb)

2.1 Multi-crew Coordination

(OSO#16)

When the PIC cooperates with other UAS personnel, care shall be taken to ensure that:

- The roles are clearly assigned in a "briefing".
- Everyone has understood their role (PIC, ground control station operator, etc.) and the associated tasks. (OSO#16_IC1a)
- The communication channels to be used (oral, radio, etc.) have been clearly identified, and
- that nothing stands in the way of clear and effective communication (no language barrier, use of the same terms and call outs, etc.). (OSO#16_IC1b)

The terms and call-outs are, where necessary, explicitly specified in the procedures.

2.2 Flight Planning

(OSO#08, #11, #14, #21_IC1a)

2.2.1 Use of Up-to-date Materials

For flight planning, it is ensured that the most current data available is always used. For all data that is only updated at long intervals, such as ICAO charts or satellite images, updates (for example NOTAMs (Notice to Air Missions)) or on-site inspections are also taken into account.

For the weather in particular, the meteorological data, used as the basis for planning, is documented and the planning is updated in the event of changes to the planning basis that need to be taken into account.

2.2.2 Geographical Zones

Geographical zones are taken into account in the planning and operation for all subsequent flight zones. In order to operate in a geographical zone, the requirements of §21h LuftVO (Air Traffic Regulations) must be fulfilled in Germany.

In other countries, the applicable national regulations must be taken into account.

2.3 External Services and Systems

2.3.1 Services

(OSO#13)

List of the services used (for example GNSS, LTE, etc.).

It is ensured that the level of performance for all external services is adequate for the planned operation and its safe execution. Should an external service require communication between the UAS operator and service provider, effective communication is ensured to support the delivery of the service. The roles and responsibilities of both parties are clearly defined. **(For example, an App for TMPR).**

2.3.2 Systems

(OSO#08, #11, #14, #21_IC1b)

GNSS

To verify that the GNSS is not disturbed by foreseeable phenomena, a check is made before each flight operation to see whether disturbances are to be expected. The forecast must not be older than eight hours at the start of the operation and should be noted in the journey log.

An operation in the event of predicted restrictions or disruptions is not permitted.

Forecasts are available, for example, on the site of the "Space Weather Prediction Center".

<https://www.swpc.noaa.gov/communities/global-positioning-system-gps-community-dashboard>

2.4 Procedures for Obtaining and Evaluating Weather Conditions

(OSO#08, #11, #14, #21_IC1a, OSO#23_IC2)

The checking of the weather condition takes place immediately before the start of the flight operation.

Primarily, the "DWD FlugWetter" app of the German Weather Service is used for data collection. In the process, the nearest aerodrome with a published METAR (METeorological Aerodrome Report) is used for the evaluation. The data is archived by means of screenshots. These are sent by e-mail to the company office for archiving after the end of the flight operation.

In the event that no current data are available or the nearest station with published METAR data is disproportionately far away, the data are determined by hand. These data are logged in the Technical Logbook.

The e-mail address of the company office is: GZ@konischeKegel.de

Format / layout of the e-mail:

- Subject line: MET, Flight date,
- In the e-mail: Operating location and name of the PIC
- Annex: Data (*.jpg, *.txt, ...)

2.5 Procedures for Responding to Unexpected Adverse Weather Conditions

(OSO#08, #11, #14, #21_IC1a)

If, despite conscientious flight preparation, a situation arises in which UAS operations are disrupted by unexpected weather conditions, the first priority is to ensure the safety of all persons involved.

In this context, it is incumbent on the PIC not to even start an operation that has not yet been started.

If the UAS operation is already in progress, the PIC shall terminate the operation in the manner that appears to him at that moment to be the safest with the least risk to all concerned.

2.6 Procedures for TMPR (Tactical Mitigation Performance Requirement)

(TMPR without technology - VLOS (Visual Line of Sight))

The operation is exclusively within visual range according to VLOS conditions. Therefore the general principle of "See / Detect and Avoid" applies in order to reduce the risk of a collision in the airspace.

For early detection of collision hazards, the PIC shall monitor the surrounding airspace at all times. Any crew member may point out to the PIC another aircraft in the airspace if the PIC has not yet detected it.

It is the responsibility of the PIC to assess whether the detected aircraft (UAS or manned) already poses a hazard or may become a hazard if there is an indication that it may enter the operating area. It is his responsibility to decide this in good time and, if necessary, to refer to the appropriate procedures.

See the Contingency Procedures:

2.8.3.4 Appearance of an Uninvolved UAS or

2.8.3.5 Appearance of a Manned Aircraft

2.7 Occurrence Reporting

(OSO#08, #11, #14, #21_IC1a)

See 5.5 Reporting Procedures and Obligations after an Emergency.

2.8 Procedures Specifically for UAS 1

2.8.1 Pre-flight and Post-flight Inspections

(OSO#07)

Pre-flight and post-flight inspections of the UAS are only carried out by competent persons trained for the specific work. A list of currently qualified persons can be found in the company office for everyone to see.

The remote crew ensures that the UAS is in a safe condition and ready for safe operation in accordance with this OM. (OSO#07_IC)

This condition is recorded in the Technical Logbook and confirmed by the signature of the responsible and authorised person. (OSO#07_AC1)

2.8.1.1 Description of the Pre-flight Inspection

Please describe

Check list (see Annex 8.4.2)

2.8.1.2 Description of the Post-flight Inspection

Please describe

Check list (see Annex 8.4.3)

2.8.2 Normal Procedures

(OSO#08, #11, #14, #21_IC1a)

2.8.2.1 General

A minimum flight altitude of eight metres, which minimises the risk to people, animals and means of transport, will be respected.

The minimum flight altitude is not maintained only for take-off, landing or within the framework of contingency / emergency procedures if this is deemed to be necessary.

2.8.2.2 Start

Describe the procedure

– *Possibly reference to a checklist...*

2.8.2.3 Flight / Cruising Flight

Describe the procedure

– *Possibly reference to a checklist...*

2.8.2.4 Takeover of Manual Control

Describe the procedure

– *Possibly reference to a checklist...*

2.8.2.5 Landing

Describe the procedure

– *Possibly reference to a checklist...*

2.8.3 Contingency Procedures

(OSO#08, #11, #14, #21_IC1a)

2.8.3.1 Unexpected Behaviour of the UAS within the Flight Geography

As soon as it is detected that the UAS is behaving differently than expected, for example, deviation from the pre-programmed flight path in automatic mode:

Action:

- **Call Out: Warning! Warning! Warning!**
- Attempt manual control (see 2.7.2.4) or
- Landing, see 2.8.2.5

Should expectable behaviour not be able to be restored

→ Termination (see 0)

Note: Flight operations can only be resumed once the cause of the fault has been rectified and it has been ensured that it cannot occur again.

2.8.3.2 Contingency Manoeuvre Lateral (or name of the contingency manoeuvre, for example: Stop multi-rotor)

Should the UAS leave the flight geography laterally.

(Description of the method used to calculate the contingency manoeuvre. Description of the procedure of the contingency manoeuvre. - Not the calculation!)

If the UAS cannot be returned to the flight geography or if it is foreseeable that it will leave the contingency volume

→ Termination (see 0)

2.8.3.3 Contingency Manoeuvre Vertical (or name of the contingency manoeuvre, for example: Descend multi-rotor)

Should the UAS leave the flight geography vertically.

(Description of the method used to calculate the contingency manoeuvre. Description of the procedure of the contingency manoeuvre. - Not the calculation!)

If the UAS cannot be returned to the flight geography or if it is foreseeable that it will leave the contingency volume

→ Termination (see 0)

2.8.3.4 Appearance of an Uninvolved UAS

An uninvolved UAS is detected that is threatening to fly into the operational volume or has already flown into it.

Action:

PIC:

- **Call Out: Unknown UAS!**
- Initiate the landing of the UAS while ensuring sufficient distance to persons.
- Landing in accordance with 2.8.2.5

Note: The operation can only be resumed when it has been ensured by agreement that the simultaneous operation of several UAS does not occur again.

2.8.3.5 Appearance of a Manned Aircraft

A supposedly manned aircraft is observed that is threatening to fly into the operational volume or has already flown into it.

Action:

PIC:

- **Call Out: Unknown aircraft!**

- Initiate the landing of the UAS while ensuring sufficient distance to persons.
- Landing in accordance with 2.8.2.5 (Landing)

Report in accordance with the information sheet in the ERP template.

Note: The operation can only be resumed after it has been ensured that the conflict will not occur again.

2.8.4 Emergency Procedures

(OSO#08, #11, #14, #21_IC1a)

2.8.4.1 Termination of the Flight

At the latest when leaving the contingency volume, or whenever deemed necessary by the PIC, to minimise an identified risk to persons.

Action:

For the remote pilots

- Press the "Kill Switch" button
Call Out: **Crash! Crash! Crash!**
- Instruction to the ground station: "Disarm" motors!

For the ground station

- "Disarm" motors
- Note the last position and direction

For the observer (if present)

- Take cover
- If necessary, loudly warn other people
Call Out: **"Look out, take cover! - Look out, take cover!"**

Termination procedure successful

→ Continue with the Crash procedure, see 2.8.4.3

In the event that the termination procedure does not take effect and the UAS continues to fly

→ Continue with the "Fly Away" procedure, see 2.8.4.2.

2.8.4.2 Fly Away

Action:

- **Call Out: Fly Away! Fly Away! Fly Away!**

Immediately report to ATC (Air Traffic Control) or ATM (Air Traffic Management) in accordance with the ERP if it cannot be ruled out that the UAS is still flying.

Attempt to re-execute the "Termination of the Flight" procedure. By agreement, this can be done permanently in parallel with the message, as long as the message is not slowed down or delayed as a result.

2.8.4.3 Crash

After impact

Action:

- **Call Out: Crash! Crash! Crash!**
- Initiation of the ERP

2.9 Procedures Specifically for UAS 2

Only as needed if two different UAS are used.

- 2.9.1 Pre-flight and Post-flight Inspections
- 2.9.2 Normal Procedures
- 2.9.3 Contingency Procedures
- 2.9.4 Emergency Procedures

3 Flight Areas (Part C)

For the creation of rule-compliant flight zones and their description, the data from Chapter 3.1 General Operational Limits are used.

3.1 General Operational Limitations

The operational limits listed here are fixed limits and must not be exceeded under any circumstances. The listed limits are derived from the environmental conditions and technical limits.

Safe operation can be guaranteed at all times by adhering to the specified operational limits. (OSO#23_IC1)

3.1.1 Environmental Conditions

(OSO#23_IC1)

3.1.1.1 Light Conditions

The operation only takes place during the day with suitable light conditions in the time between:

30 minutes after sunrise until

30 minutes before sunset.

3.1.1.2 Wind

Maximum wind speed ≤ 5 m/s

3.1.1.3 Visibility

All flights take place under Visual Line of Site conditions (VLOS).

The maximum possible VLOS distance between the remote pilot and the UAS results from the smaller value of ALOS and DLOS and is determined before the flight.

Flights beyond the VLOS distance may not be operated.

Attitude Line Of Sight

$$\text{ALOS} = 327 * \text{CD} + 20$$

Detection Line Of Sight

$$\text{DLOS} = 0.3 * \text{GV}$$

The maximum ground visibility (GV) to be applied is 5km.

3.1.1.4 Temperature

The ambient temperature at ground level is between -10°C and $+40^{\circ}\text{C}$.

3.1.1.5 Adverse Weather Conditions

Flights in hail, ice, and precipitation as well as all weather conditions that are contrary to safe operation are prohibited.

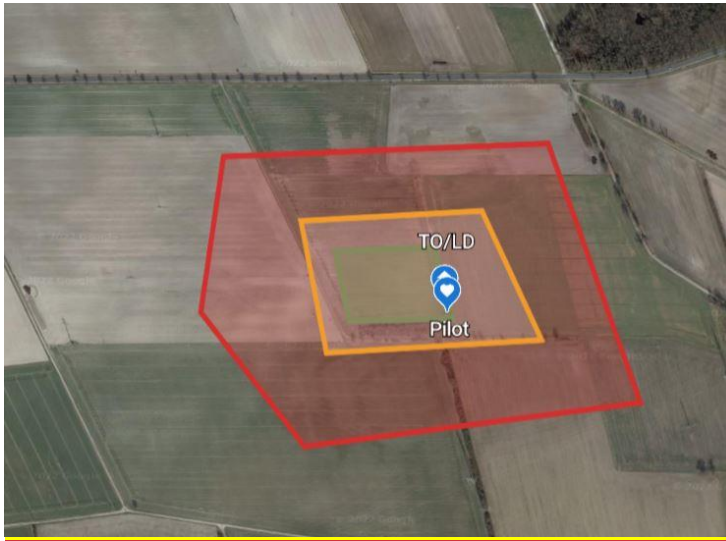
3.1.2 Technical Operational Limitations

- Maximum characteristic dimension: 1.5 m
- Maximum take-off weight: 12.5 kg
- Maximum permissible speed during operation: 14 m/s (GS - Groundspeed)
- Maximum permissible speed during operation: 19 m/s (TAS - True Airspeed)
- Maximum pitch angle: 45 degrees
- Maximum roll angle: 45 degrees

3.2 Flight Area 1

3.2.1 Description

Where is the flight zone located, geographical features and an image (for example, a screenshot of satellite images or a screenshot of the file *.kml)?



The flight zone with its exact coordinates is clearly defined within the associated file "Flight_Area_01_R1.kml".

3.2.2 Calculation of CV / GRB

Detailed calculation and justification of the values for contingency volumes and ground risk buffer

(For example, in accordance with the guideline) otherwise with reasoning and evidence for the chosen values

Calculation Contingency Volume:

Lateral:

$$S_{GPS} = ?$$

$$S_{Pos} = ?$$

$$S_K = ?$$

$$S_{RZ} = ?$$

$$S_{CM} = ? \text{ (Which manoeuvre will be used? Reference to procedure!)}$$

$$S_{CV} = S_{GPS} + S_{Pos} + S_K + S_{RZ} + S_{CM}$$

$$S_{CV} = ?$$

Vertical:

$$H_{FG} = ?$$

$$H_{baro} = ?$$

$$H_{RZ} = ?$$

$$H_{CM} = ?$$

$$H_{CV} = H_{FG} + H_{baro} + H_{RZ} + H_{CM}$$

$$H_{CV} = ?$$

Calculation Ground Risk Buffer:

(E.g. with the ballistic approach for multicopter...)

$$S_{GRB} = V_0 \sqrt{\frac{2H_{CV}}{g}} + \frac{1}{2}CD$$

$$S_{GRB} = ?$$

3.2.3 Specific Procedures of the Flight Zone

(Only when necessary!)

3.2.3.1 Controlled Ground

How exactly is "controlled ground" created?

For example, by means of:

- Signs, (where are they located?)
- Barriers, (what do they look like?)
- Personnel, (who stands where and does what?)
- (Not necessary in this example, as another GRC is used)

3.2.3.2 M1 Mitigation

How will M1 be implemented?

Detailed justification!

- (Not necessary in this example, as unused)

3.2.3.3 ARC-Mitigation

How exactly is the reduction of the air risk implemented?

Detailed justification!

- (Not necessary in this example, as unused)

3.2.3.3.2.3.4 Information to Third Parties

- Police,
- Property Owners,
- With what advance notice and how is information provided?
- (Not necessary in this example, as unused)

3.2.4 Emergency Response Plan (ERP) - Local Information

Instructions and completion aids for the ERP template

Telephone number of the nearest airfield:

- Airfield: "Quadratic Field" +49(0)1234 1234567
- Airfield: "Oval Field" Tower controller +49(0)1234 1234576

Air traffic controllers possibly affected (ATM)

- Bremen +49(0)1234 xxxxxxxx
- Langen +49(0)1234 xxxxxxxx
- Munich +49(0)1234 xxxxxxxx

Nearest fire service:

- Professional fire service 112
- Alternative +49(0)1234 xxxxxxxx

Nearest police station

- Police
- Alternative

110

+49(0)1234 xxxxxxxx

3.3 Flight Area 2

Only when necessary

3.3.1 Description

3.3.2 Calculation of CV / GRB

3.3.3 Specific Procedures

3.3.4 Emergency Response Plan (ERP) - Local Information

3.4 Flight Area 3

Only when necessary

3.4.1 Etc.

4 Training (Part D)

(OSO#01, OSO#08, #11, #14, #21, OSO#09, #15, #22, OSO#16)

All personnel training takes place in accordance with our training manual (OM(D)). The training manual complies with all the requirements of Implementing Regulation (EU) 2019/947 and is regularly updated. It includes, but is not limited to, the following topics:

- Applicable laws and regulations for UAS operation in the EU and national special requirements (Implementing Regulation (EU) 2019/947, LuftVO, LuftVG (Air Traffic Act), etc.).
- Airspace structures.
- Airmanship and aviation safety.
- Human performance capacity.
- Weather;
- Navigation and maps.
- UAS used.
- Procedures and

(If necessary, further topics by means of OSOs)

- ERP. (M3)
- Product inspection (OSO#07)
- MCC (Multi-crew Cooperation) (OSO#16)
- CRM (Crew Resource Management) Training (OSO#16)
- Weather measurement (OSO#23_IC3)

Name of the training manual: OM D

The training manual is updated regularly and can be found for everyone to see in the company office.

5 Emergency Response Plan (Part E)

(M3 – Medium)

Emergency Response Plan (ERP)

5.1 General

Even though our primary goal is safe UAS operation, accidents and incidents may still occur. It does not matter who is responsible. The first priority is to minimise the effects. In particular, if people have been harmed or could be harmed by the consequences of an emergency, the following applies:

First People, Then Property!

In addition, the general principles shall apply to all persons involved in the operation:

- **Stay calm and get an overview**
- **Ensure your own protection**
- **Secure the accident site**
- **Remove people from the danger zone**
- **Report an emergency**
- **Give first aid**

Each person does what he or she can without putting him or herself in danger.

5.2 Creation of the Emergency Response Plan

All procedures and check lists described in this chapter have been designed to the best of our knowledge and belief, taking into account all practical experience gained. (M3Crit1aAs)

The objective is to make these procedures clear, understandable and applicable, and at the same time minimise the impact of human error.

The ERP was tested for its suitability with the participation of all office holders, as described in the training manual, by means of a detailed "table-top exercise" and found to be good. (M3Crit1bAs)

In the process, the ERP was checked to ensure that it (M3Int)

- a. is appropriate for the situation
- b. limits the consequential effects
- c. contains definitions that allow the identification of emergencies
- d. is practically feasible and
- e. clearly identifies the responsibilities of all parties involved.

5.3 ERP Template

The ERP template is generally used for ease of use and to facilitate action by the people involved on site under the influence of an emergency.

Three pages for printing out can be found in the Annex under: 8.4.1

This document is to be completed and signed by the Emergency Response Manager (PIC) before operations begin. For documentation purposes, the ERP template is photographed before the start of operation and sent to the company office by e-mail.

The e-mail address of the company office is: GZ@konischeKegel.de

Format / layout of the e-mail:

- Subject line: ERP, flight date,
- In the e-mail: Operating location and name of the PIC
- Annex: Data (*.jpg)

5.4 Preparation and Briefing:

Before the operation, the ERP template is shown to all participants and, in the event of questions, the individual points are dealt with. Only when all questions about the ERP have been clarified can the operation be started.

The ERP distinguishes between two types of emergencies.

1. Emergencies where the effects on the ground after a crash must be limited.

In order to be able to react appropriately and promptly to these emergencies, the following is recorded in the ERP template prior to the operation:

- a. The nearest location of first aid materials ("first aid kit", etc.).
- b. The nearest location of fire extinguishing equipment (fire extinguishers, etc.).
- c. The telephone numbers for further emergency services, in case the emergency cannot be brought under control using own resources.

2. Emergencies requiring notification to an ATM operating company or airfield / airport.

In order to be able to react appropriately and promptly to these emergencies, the following is recorded in the ERP template prior to the operation:

- a. The telephone numbers of any airfields / airports affected. For airfields / airports with control zones, the direct extension number of the tower controllers.
- b. The telephone number of the nearest ATM operating company.

Location-specific information or telephone numbers can be taken from 3.3.3 onwards in Part C of the Annex. Further known reporting channels and contact details are provided there as an aid.

5.5 Reporting Procedures and Obligations after an Emergency

(OSO#08, #11, #14, #21_IC1a8)

In the sense of the Opening Statement from 1.1, every ERP triggering should be processed in the best possible way to improve the safety of the UAS operation.

All persons involved in an emergency should write down their recollections of the incident as soon as possible. The sooner this is done, the better / more accurate the recollections will be. This should be done independently to get as many uninfluenced perspectives and perceptions as possible. The data collected in this way should be supplemented with the journey log, the meteorological data at the time of the incident and any other data that might help to classify the incident.

5.5.1 Who reports?

The PIC is responsible for reporting and ensuring correct reporting. If the PIC is unable to report the incident, another person immediately following in rank and involved in the operation must take over.

The report must be made immediately after becoming aware of the incident unless exceptional circumstances prevent this.

5.5.2 What must be reported?

Every

- Safety-related occurrence that endangers or, in the absence of countermeasures and / or in the event of non-compliance, would endanger an aircraft, its occupants, other persons, equipment or installations associated with the operation of aircraft.
- Other relevant safety-related incidents

Must be reported.

These include among other things:

- Accidents or serious incidents.
- Damage to property.
- A serious or fatal injury.

5.5.3 To whom / how must reports be made?

Reports are made in accordance with Regulation (EU) 376/2014.

In this context also to the:

Bundesstelle für Flugunfalluntersuchung (Federal Bureau for Aircraft Accident Investigation)

Hermann-Blenk-Straße 16

38108 Braunschweig Germany

E-mail: box@bfu-web.de

<https://www.bfu-web.de>

The immediate reporting of an accident or serious incident in accordance with § 7 LuftVO and in accordance with Regulation (EU) 996/2010 to the AAIB (Aircraft Accident Investigation Bureau) can be done

by telephone,

by FAX using a blank form in the PDF download or

via online message.

The online form can be used to report accidents and incidents to the AAIB. It is possible to add files as attachments to the form

BFU (AAIB) Tel: +49 (0)531 35 48 - 0

BFU (AAIB) Fax: +49 (0)531 35 48 - 246

5.5.4 What must be observed after reporting?

All occurrence reports that are considered notifiable by the person filing the report should be stored and retained, as the significance of such reports may only become apparent at a later date.

The operator should analyse those events that could have an impact on flight safety in order to identify safety hazards and, if necessary, take appropriate corrective or preventive action. It should forward the preliminary results of its analysis to the competent authority and, in the event that it identifies an actual or potential risk to aviation safety, also the final results of the analysis.

6 Technical Part of UAS (Part T)

In this section, all necessary details of the UAS used are described in detail. The UASs described below are developed and manufactured by the operating company itself.

No UASs are described that contradict or conflict with the limits described in the Technical Operational Limitations Chapter (3.1.2).

6.1 UAS 1

6.1.1 Description

The UAS 1 is a multi-rotor.

It is designed as a fully symmetrical cross with 4 rotors. The characteristic dimension of the UAS is 1.5 m, measured from rotor tip to rotor tip.

The drive is electric with a nominal voltage of 22.2 V.

The power supply is provided by the use of a lithium-polymer accumulator (6S1P) with a capacity of 5000 mAh.

Nominal voltage of the accumulator	22.2 V
Capacity of the accumulator	5000 mAh
Maximum take-off weight	12.5 kg
Empty weight	9 kg
Other	

6.1.2 Image / Graphic



Illustration 1: UAS 1 in Configuration xy

The picture (Ill. 1) shows the UAS 1 with the configuration xy standing on the ground ready for operation.

6.1.3 C3 Link

(OSO#06)

(Please describe the used C3-Link.)

All the C3 links used meet the requirements in terms of performance, quality, RF spectrum and environmental conditions in order to safely perform the planned operation at all times.

(OSO#06_ICa)

All C3 links used provide sufficient information for the pilot to monitor at all times whether operational requirements are being met. **(OSO#06_ICb)**

6.1.4 Parachute (M2)

A parachute is not installed.

6.1.5 TMPR

(Technical part for TMPR - for example, for BVLOS (Beyond Visual Line of Sight))

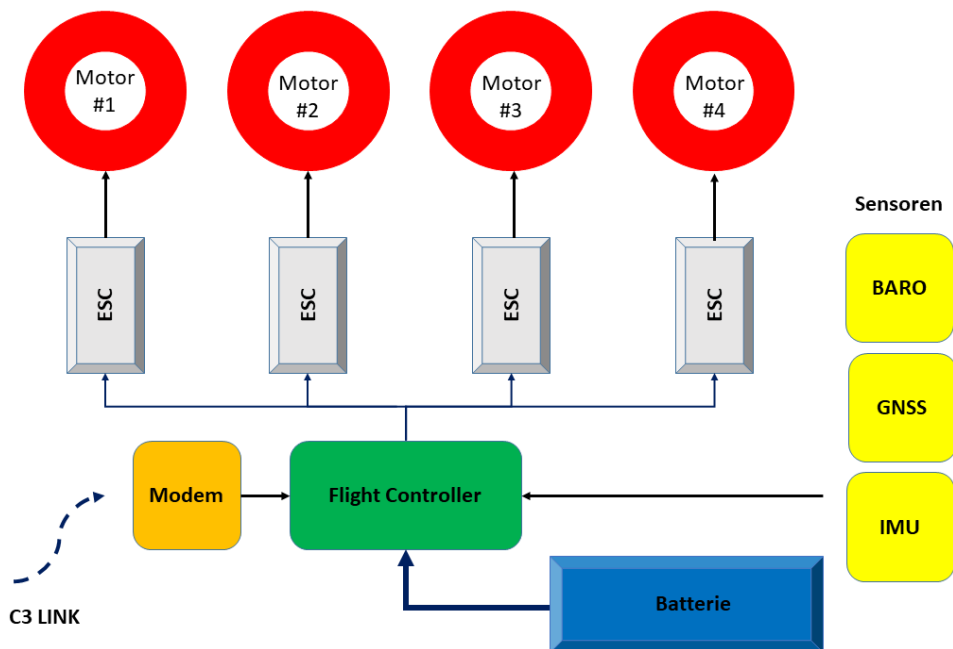
- *(Not necessary in this example, as unused)* -

6.1.6 Containment

(SORA Step 9)

6.1.6.1 System

Schematic representation of the system:



Above: Battery, Sensors, Barometer, GNSS, Inertial Measurement Unit

Leaving the operating volume can be prevented at any time by transmitting the command to switch off all four motors to the flight controller via the C3 Link. This can be done, for example, within the framework of the procedure "Termination of the Flight" (see 2.7.4.1).

No probable failure of the UAS or any external system can cause the UAS to leave the operating volume.

6.1.6.2 Enhanced Containment

(SORA Step 9 Enhanced Containment)

- Not necessary in this example, as unused -

If necessary:

As shown graphically in the overview in 6.1.6.1, two completely independent systems can be used for flight termination to prevent the leaving of the operating volume. (Attention: Currently, only containment is shown in 6.1.6.1!)

- 1. The main system used for routine control of the UAS and*
- 2. The flight termination system with a separate C2 link with the sole task of standing in the event of the failure of the main system.*

Both systems can be activated independently of each other by the remote pilot.

By using commercially available system solutions, a failure probability of the individual systems of 1×10^{-2} /flight hour is assumed.

-Reference to the systems-

Since two independent systems are used here, the total probability of failure is calculated as follows:

$$1 \times 10^{-2} * 1 \times 10^{-2} = 1 \times 10^{-4}$$

Since leaving the operating volume is only possible through the simultaneous failure / breakdown of both systems, the requirement is fulfilled.

If the UAS is in danger of leaving the operating volume, the PIC initiates the flight termination in accordance with Chapter xxx.

We thus assure that all the requirements for "enhanced containment" are fully met at all times.

6.1.7 Human-Machine Interface - HMI

(OSO#20)

Human Machine Interface (HMI)

The objectives of the UAS human-machine interfaces are to:

- Present data and information clearly and concisely.
- Avoid confusion.
- Prevent disproportionate fatigue.
- Minimise errors by the crew.

All human-machine interfaces have been tested during flights under safe conditions in the open category. Analysis of the test flights, taking into account human factors, has shown that all human-machine interfaces are adequate and suitable for the planned operation.

6.1.8 Payload

- Not necessary in this example, as unused -

6.2 UAS 2

Only if required

6.2.1 Description

6.2.2 Image / Graphic

6.2.3 C3 Link

6.2.4 Parachute (M2)

6.2.5 TMRP

6.2.6 Containment

6.2.7 Human-Machine Interface – HMI

6.2.8 Payload

6.2.9 Automatic Protection of the Flight Envelope from Human Errors

6.2.10 Designed and Qualified for Adverse Environmental Conditions

7 Maintenance (Part M)

(OSO#01)

7.1 General

Maintenance work ensures that the UASs are in a safe operating condition at all times and that a hazard due to wear and tear, signs of use or ageing of the technology can be excluded.

All maintenance work is carried out only by competent persons trained for the specific work. A list of currently qualified and authorised persons for everyone to see can be found in the company office. (OSO#03_ICb)

All maintenance work may only be carried out in accordance with the maintenance instructions described herein. (OSO#03_ICc)

7.2 Software Updates

After each software update of the UAS, test flights must first be carried out in the open operating category and all important functions must be checked.

The flights and the functionality of all results are documented.

7.3 Maintenance UAS 1

The UAS is regularly maintained according to the manufacturer instructions 8.5.1. The maintenance intervals laid out by the manufacturer are to be considered as a maximum. All maintenance will therefore be scheduled in advance in a way that a positive time margin remains to these maximum values.

Maintenance and checks will always be performed by qualified personal in accordance to the best of our knowledge and belief, taking into account all manufacturer instructions 8.5.1. (OSO#03_ICa, OSO#3_AC1a)

All maintenance work carried out on the UAS is recorded in the Technical Logbook 8.3.6. It is recorded who carried out the maintenance and what work was done. Each entry is released by an authorised person with date and signature. (OSO#03_AC1b)

7.4 Maintenance UAS 2

See above, as required

8 Annex

8.1 Operational Agreement with ATC

(Only if required!)

The operating agreement with the airfield "Quadratic Field" follows on the next page.

-DOCUMENT- (Separate operating agreement, signed by the responsible parties)

8.2 Evidence

8.2.1 Evidence of Flight Tests for Contingency and Emergency Procedures

(OSO#08, #11, #14, #21)

Documentation of the flight tests carried out in the open category.

Date	Flight Tests	Type	Number	Result
01.04.2022	0	Simulated	3	3/3 successful
01.04.2022	2.8.3.3	Real	5	5/5 successful
<i>to be completed</i>				

8.3 Printed Forms

8.3.1 List for Maintenance Personnel

(OSO#03_AC1c)

The template to be printed out is on the next page.

8.3.2 List for Personal for Pre-flight and Post-flight Inspections (OSO#07_AC2)

The template to be printed out is on the next page.

8.3.3 List for the Training / Experience Level of Personnel (OSO#03_AC2)

The template to be printed out is on the next page.

8.3.4 List for authorised Pilots

The template to be printed out is on the next page.

8.3.5 List for Training on the Emergency Response Plan (ERP) of the Personnel (M3 Crit2 b)

The template to be printed out is on the next page.

8.3.6 Technical Logbook

(OSO#03_AC1b, OSO#07_AC1)

The template to be printed out is on the next page.

Technical Logbook

UAS No.: _____

Page: _____

Date: _____ (tt.mm.jj)	Pre-flight checklist completed by: _____ Post-flight checklist completed by: _____	Flight cycles: _____	Start: _____ End: _____	Total BH: _____ (hh:mm)
Location		Weather		
Defect / occurrence Description	PIC: Name / Signature _____	Action taken (maintenance)	Released by: Name / Signature _____	

8.4 Check Lists

8.4.1 ERP Template

The ERP template can be found on the next three pages.

Emergency Response Plan

For every operation, high-visibility jackets for all persons involved, a first-aid kit in accordance with DIN 13157 and a fire extinguisher in accordance with DIN EN 3 must always be carried along.

- Location of the high-visibility jackets: _____
- Location of the first aid kit: _____
- Location of the fire extinguisher: _____

Emergency Plan in the Event of a UAS Crash

RULES

- **Keep calm**
- **Rescue of people before rescue of objects**



1. GET AN OVERVIEW

- Put on high visibility jackets
- Get to the scene of the accident as quickly as possible
- Secure the scene of the accident
- Ensure own protection



2. If people are affected: RESCUE them

- Rescue people from the danger zone
- Keep a safe distance from the scene of the accident
- Ensure own protection



3. If necessary: MAKE AN EMERGENCY CALL Tel.: 110 or 112

- Who is reporting?
- Where did it happen?
- What has happened?
- How many people are injured?
- Wait for any questions!



4. If necessary: EXTINGUISH FIRE

- Do not put yourself in danger
- Fight fire (fire extinguisher or fire blanket)
- Take special care with rechargeable batteries! Explosion hazard!
- Brief the arriving fire service



5. If necessary: PROVIDE FIRST AID

- Check injured people for signs of life
- Resuscitate in the event of circulatory arrest
- Staunch any bleeding
- Place injured people in the recovery position
- Brief the rescue service



6. REPORT AN ACCIDENT

7. Immediately report the accident to the BFU (Federal Bureau of Aircraft Accident Investigation), among others, in the event of:
 - Accidents or serious incidents
 - Damage to property
 - A severe or fatal injury

Emergency Plan in the Event of the "Fly Away" of the UAS

The UAS continues to fly despite termination having been initiated

- Name and telephone number of the nearest ATM operating company:

For operation near an airfield / airport:

- Name and telephone number of the airfield / airport (Tower): _____

RULES

- **Keep calm**
- **Rescue of people before rescue of objects**



1. WITH C2 LINK PROBLEM

- Repeat the connection attempt several times
- Change the position of the remote control or antenna on the ground (if possible)



2. REPORT to the airport / airfield in the vicinity

- Telephone report of the fly-away to the above-named tower
 - Who is reporting?
 - Where did it happen?
 - What has happened?
 - Size and configuration of the UAS
 - Last known direction of flight
 - Estimated maximum possible flight time
 - Estimated maximum achievable flight altitude
 - Wait for any questions!



3. REPORT TO AN ATM OPERATING COMPANY

- Telephone report of the fly-away to the above-named ATM operating company
 - Who is reporting?
 - Where did it happen?
 - What has happened?
 - Size and configuration of the UAS
 - Last known direction of flight
 - Estimated maximum possible flight time
 - Estimated maximum achievable flight altitude
 - Wait for any questions!



• **INFORM THE POLICE Tel.: 110**

- Telephone report of the fly-away and warning about a possible crash
 - Who is reporting?
 - Where did it happen?
 - What has happened?
 - Wait for any questions!

Place, Date, Signature (PIC): _____

Instruction Sheet for Reporting Accidents

Who reports?

The PIC is responsible for reporting and ensuring correct reporting. If the PIC is unable to report the incident, another person immediately lower in rank and involved in the operation must make the report.

The notification must be made within 72 hours of becoming aware of the incident unless exceptional circumstances prevent this.

What must be reported?

Every

- safety-related occurrence that endangers or, in the absence of countermeasures and / or in the event of non-compliance, would endanger an aircraft, its occupants, other persons, equipment or installations associated with the operation of aircraft
- other relevant safety-related information

must be reported.

These include among other things:

- Accidents or serious incidents.
- Damage to property.
- A serious or fatal injury.

To whom / how must reports be made?

Bundesstelle für Flugunfalluntersuchung (Federal Bureau for Aircraft Accident Investigation)

Hermann-Blenk-Straße 16

38108 Braunschweig Germany

The reporting can be done by

- telephone: +49 (0)531 35 48 – 0
- fax: +49 (0)531 35 48 – 246 using a blank form (PDF download <https://www.bfu-web.de>)
- Online reporting <https://www.bfu-web.de>

All persons involved in an emergency should write down their recollections of the incident as soon as possible. The sooner this is done, the better / more accurate the recollections will be. This should be done independently to get as many uninfluenced perspectives and perceptions as possible. The data collected in this way should be supplemented with the journey log, the meteorological data at the time of the incident and any other data that might help to classify the incident.

8.4.2 Pre-flight Inspection - Check List

The template to be printed out is on the next page.

Pre-flight checklist:

Note:

- All items have to be checked before any flight operation
- Completion of this list has to be signed in the Tech Logbook

Equipment / crew

	everyone fit for operation / fit to fly
	equipment complete
	documents available (e.g. Operational Authorisation, ensurance, pilot certificate etc.)
	ERP-template available

Flight planning

	Geographical Zones
	weather / Kp-Index
	mission planning completed (e.g. Home point set)
	briefing of all involved persons completed

UAS

	No open defects in Tech Log.
	fully assembled
	general impression (e.g. no visible damage)
	all motors turn easily and freely
	batteries charged
	correct flight plan loaded (if applicable)

T/O Area

	flat area
	wind direction
	no obstacles in departure or arrival area

8.4.3 Post-flight Inspection - Check List

The template to be printed out is on the next page.

Post-flight checklist:

Note:

- All items have to be checked after any flight operation
- Completion of this list has to be signed in the Tech Logbook

UAS

	UAS secured
	batteries disconnected
	general impression (e.g. no visible damage)

Documentation

	Flight times logged in Tech.-Log.
	Defects or occurrences (e.g. hard landing) entry in Tech.-Log.

8.5 Manuals

8.5.1 Maintenance manual

Include maintenance manual of the manufacturer if applicable and referenced