



BASIC Operations Manual:

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4 **DOCUMENT IDENTIFIER: JAR-DEL-SRM-BOM**

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Edition Number	1.0
Edition Date	18.10.2024
Status	Draft
Intended for	SRM consultation
Category	Guidelines
WG	SRM

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13 **Contents**

14 **Introduction**

15 **Scope**

16 **B OM**

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20 **Introduction**

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21 This Basic Operations Manual gives an example on how to write an Operations Manual in accordance to annex
22 A.

23 The operator has to ensure that the Operations Manual is reflecting his planned operation and fulfils all
24 requirements derived from the Risk Assessment as specified in Annex E. For any changes to this example the
25 operator has to assure that Operations Manual still aligns with the risk assessment made and meets all
26 requirements.

27 The competent authority will review the resulting Operations Manual in the process of reviewing the application
28 in accordance with the provisions arising from the risk assessment and the respective SAIL. In this process, the
29 implementation of all technical and operational requirements is checked based on the descriptions in the
30 operations manual, or other associated documents as required. The competent authority has the option to
31 request revisions of documents or to ask for additional supporting documentation.

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33 **Scope of the Basic Operations Manual**

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35 (a) Scope

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37 The Basic Operations Manual is covering a simple VLOS Operation in SAIL II with no specialties.

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39 (b) Additions

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41 Missing parts like the Flight Areas or deviations from the described Operations Manual can be derived
42 from additional modules. Please refer to the appropriate module for more information.

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Operations Manual / OM
for the operation of unmanned aircraft systems (UAS)

Rev 0 dated xx.xx.2024

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Operations Manual

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This operations manual contains all the relevant information for the UAS operation of:

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e-ID: DEUist42HSD12345

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Document Control

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

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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 template published on EASA website. 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.

88

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

90

91 The following table identifies the persons responsible for the development and release of the revision
92 of the operations manual handed in for authorisation.

	Name	Date	Signature
Developed by	Lisa Musterfrau	5.1.2022	<i>Lisa Musterfrau</i>
Approved by	Max Mustermann (CEO)	6.1.2022	<i>Max Mustermann</i>

93

94 **Other applicable documents**

95

Name	Revision Number	Description
OM D	-	Trainings manual, Part D was outsourced and is not under revision control
		<i>further documents, if referenced in the OM</i>

96

97

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List of Abbreviations

Term	Explanation
AAIB	Aircraft Accident Investigation Bureau
AC	Assurance Criterion
AGL	Altitude Above Ground Level
ALOS	Attitude Line of Sight
ARC	Air Risk Class
ASAP	as soon as possible
ATC	Air Traffic Control
ATM	Air Traffic Management
C3	Command, Control and Communication
CD	Characteristic Dimension
CRM	Crew Resource Management
CV	Contingency Volume
DLOS	Detection Line of Sight
DVR	Design Verification Report
EASA	European Aviation Safety Agency
EMS	Emergency Medical Services
ERP	Emergency Response Plan
ESC	Electronic Speed Control
FG	Flight Geography
FH	Flight Hours
FOD	Foreign Object Damage
FTS	Flight Termination System
GNSS	Global Navigation Satellite System
GRB	Ground Risk Buffer
GS	Ground Speed
GV	Ground Visibility
HMI	Human-Machine Interface
IC	Integrity Criterion
ICAO	International Civil Aviation Organization
IMU	Inertial Measuring Unit
LTE	Long Term Evolution
MCC	Multi-Crew Coordination
METAR	Meteorological Aerodrome Report
N/A	Not Applicable

NAA	National Aviation Authority
NOTAM	Notice to Airmen
OSO	Operational Safety Objective
PIS	Public Interest Site
RTK	Real-Time Kinematic
STS	Standard Scenario
T/O	Take-Off
TC	Type Certificate
TMPR	Tactical Mitigation Performance Requirement
UA	Unmanned Aircraft
UAS	Unmanned Aircraft System
VLOS	Visual Line of Sight

206

207

208 1 General Part (Part A)

209 (OSO#01)

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

211 1.1 Opening Statement

212 This operations manual has been developed in accordance with the specifications and requirements
213 of applicable regulation of the country of application. .

214 I declare that at any time the UAS operation will be conducted in accordance with the requirements
215 and limitations described in this Operations Manual.

216 Moreover, I declare that all personnel involved in the operation shall:

- 217 • Be familiar with the contents of this manual.
- 218 • Follow the instructions and procedures from this manual.
- 219 • Comply with the laws, rules and procedures of the countries in which the operation is carried
220 out.
- 221 • Always make the operation as safe as is practicably possible.
- 222 • Not take any unnecessary risks.
- 223 • Report safety risks and all incidents as per the UAS operator's occurrence reporting policy.

224 We as a UAS Operator commit ourselves:

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

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

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

241

242 Laudanum, 1.1.2024, Max Mustermann

243 Place, date, signature accountable manager

244

245 **1.2 Security and Privacy Statement**

246

247 There are security measures in place to protect the loss, misuse and alteration of the information under
248 our control. Only required employees have access to the information that is provided to us.

249 In addition, where necessary, sufficient procedures are in place to prevent the misuse or improper use
250 of our systems or parts thereof.

251

252 Personal data collected in the course of the operation described in this Operations Manual shall be
253 processed in accordance with the applicable regulation.

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

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

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

260

261

262

263 Laudanum, 1.1.2024, Max Mastermann

264 Place, date, signature accountable manager

265

266 **1.3 Environmental Statement**

267

268 We as a company are committed to sustainable and future-oriented drone operations and pursue
269 the goal of minimising the impact on the environment and wildlife.

270 To this end, our company will use all technical possibilities to increase efficiency as well as look for
271 further innovative solutions.

272 The goal is to use less and "greener" energy in the long run and to cover the reduced energy demand
273 with cleaner, more sustainable and regenerative energy.

274 The aim is to leave each flying site in a condition at least equal to that in which it was found.

275 All employees are encouraged to be aware of their surroundings at all times and to reduce any direct
276 impact on people, the environment and wildlife through noise or emissions to an absolute minimum.

277 For further information regarding our environmental policy please contact our secretariat directly.

278

279

280 Laudanum, 1.1.2024, Max Mustermann

281 Place, date, signature accountable manager

282

283 **1.4 The Operating Organization**

284 *Please describe briefly your Organisation. (Example below)*

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

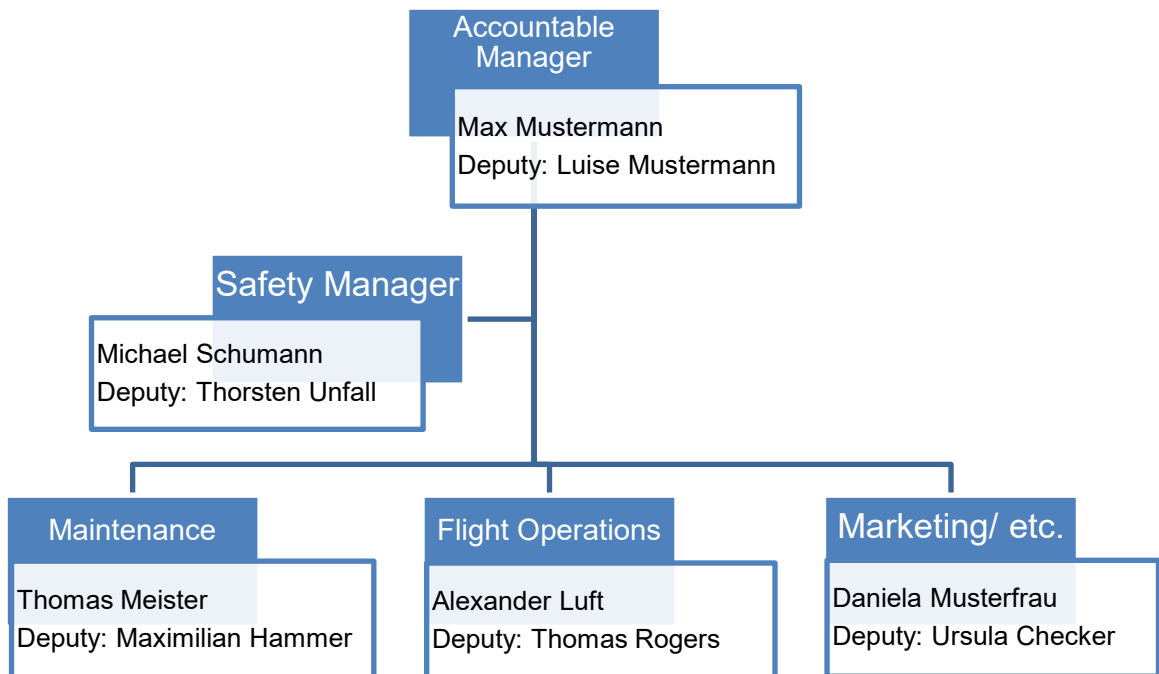
288 Our company was founded in 2018 and consists of a total of five permanent employees. All of these
289 people are responsible for an assigned area.

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

292

293 **1.4.1 Structure / Organisation Chart**

294 *Please show how the operation is structured if multiple persons are involved. This should include at
295 least all positions that hold responsibilities for your flight ops. Example below.*



296

297

Figure 1: Organisation Chart

298

299 The duties of the individual responsible roles are described below.

300 *Precise description of the duties and responsibilities of all relevant roles mentioned above.*

Role	Duties and Responsibilities
Accountable Manager	[...]
Safety Manager	[...]
Flight Operations	[...]
[...]	[...]

301

302

303 1.5 Change Management

304 All changes to the organisational structure or processes related to the operation of the UAS must be
305 discussed internally prior to implementation. In doing so, an assessment of the impact of these changes
306 on the safety of the operation must be made. If risk factors can be identified during this assessment,
307 they must be taken into account before the change is implemented. For this purpose, a concept that
308 reduces the critical impacts on operations will be developed.

309 Changes in the organisational structure must be communicated with sufficient advance notice to all
310 persons involved in the operation and, if necessary, be updated in the Operations Manual and any
311 associated documentation.

312 All changes to the Operations Manual are subject to prior approval of the competent authority (NAA).

313

314

315 1.6 Retention Periods

316 All important documents of the UAS operation are kept in digital or analogue form for at least three
317 years, after the end of the UAS operation or for the personnel, three years after the person has ceased
318 employment with the organisation or has changed position in the organisation. The records are
319 protected against loss or alteration and are made available to authority for inspection.

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

- 321 • All authorisations issued by the authorities, including all flight authorisations for zones with
322 special requirements or in controlled airspace.
- 323 • Records of flights carried out.
- 324 • Maintenance records, (e.g. technical logbook with records).
- 325 • Records and updates of all relevant qualifications, experience and / or training completed by
326 maintenance personnel. (OSO#03_AC2), remote pilot, ground staff (if applicable) and any
327 other personnel essential for ensuring the safety of the operation.
- 328 • Minutes of all meetings with regard to safety-relevant topics (flight safety, security, occurrence
329 reports, investigations) as well as
- 330 • All documents considered important that enable the UAS operator's actions to be traced.

331

332 1.7 Document Control

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

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

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

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

341 The following documents need to be maintained and updated regularly:

342

- 343 • A list of personnel authorised to carry out maintenance work. A standard form can be found
344 in the Annex under 8.2.1. (OSO#03_AC1c)
- 345 • A list of all relevant personnel qualifications, experience and / or training. A standard form can
346 be found in the Annex under 8.2.3. (OSO#03_AC2)
- 347 This list has to be filled for each person involved in the UAS operations individually.
- 348 • A list of personnel authorised to carry out pre-flight and post-flight inspections. A standard
349 form can be found in the Annex under 8.2.2. (OSO#07_AC2)
- 350 • A list documenting the pre-flight and post-flight inspections carried out (flight logbook see
351 8.2.6). (OSO#07_AC1)
- 352 • A list of all emergency response plan (ERP) training conducted. A standard form can be found
353 in the Annex under 8.2.5 (M3_C2b)
- 354 • A list of all remote pilots who meet the requirements to fly under this operations manual. A
355 standard form can be found in the Annex under 8.2.4 (OSO#08_AC1)

356

357 1.8 Requirements and Qualifications for Personnel

358 All personnel involved within the scope of this Operations Manual must be able to read and understand
359 it independently. The minimum qualification of the personnel involved in the operations are described
360 in the following paragraphs.

361 *Include all the positions involved in the operation (Example below)*

362 1.8.1 Pilot / Ground Station:

- 363 • Remote pilot, RPIC (Remote Pilot in Command)
 - 364 ○ at least remote pilot certificate as required by local regulations
 - 365 ○ successfully completed training in accordance with the training manual (Part D)
 - 366 ○ instruction in the ERP within the last twelve months
 - 367 ○ has conducted UAS operations as a remote pilot with a UAS of the same configuration
 - 368 (for example, multi-copter/ fixed-wing aircraft) within the last ninety days
- 369 • Remote pilot, co-pilot:
 - 370 ○ at least remote pilot certificate as required by local regulations
 - 371 ○ successfully completed training in accordance with the training manual (Part D)
 - 372 ○ instruction in the ERP within the last twelve months
 - 373 ○ has conducted UAS operations as a remote pilot with a UAS of the same configuration
 - 374 (for example, multi-copter/ fixed-wing aircraft) within the last ninety days
- 375 • Remote pilot under supervision (for example, for training purposes):
 - 376 ○ at least remote pilot certificate as required by local regulations
 - 377 ○ successfully completed theoretical and practical training in accordance with the
 - 378 training manual (Part D)
 - 379 ○ Instruction in the ERP within the last twelve months

380 1.8.2 Maintenance Personnel

- 381 • Mechanic:
 - 382 ○ technical experience, including experience with UAS.
 - 383 ○ successfully completed training in accordance with the training manual (Part D).
 - 384 ○ instruction in the ERP within the last twelve months.

385 1.8.3 Ground Staff

- 386 • Assistant:
 - 387 ○ Successfully completed training in accordance with the training manual (Part D).
 - 388 ○ Instruction in the ERP within the last twelve months.

389 1.8.4 Training, Examination and Supervision Personnel

390 In case the UAS operator offers training, all training, examination and supervision personnel
391 must have the following qualifications:

- 392 • Remote pilots:
 - 393 ○ At least as under 1.8.1.
 - 394 ○ At least one year experience in the current operation.
- 395 • Maintenance Personnel:
 - 396 ○ At least as under 1.8.2.
 - 397 ○ At least one year experience in the current operation.

398

399 **1.9 Crew Member is “fit for the operation”**

400 **(OSO#17)**

401 Each crew member declares to the UAS operator prior to commencement of the operation that there
402 are no conflicts with 1.9.1 (Preventive Health Care) or 1.9.2 (Flight Duty and Rest Periods) and that he
403 / she can perform his / her duties and tasks during the UAS operation without restrictions (the crew
404 member declares himself / herself "fit to operate"!).

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

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

409

410 1.9.1 Preventive Health Care

411 (OSO#17)

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

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

- 415 • **Alcohol and other intoxicating liquids**

416 It is the company policy of the operating company to prohibit any work under the influence of
417 alcohol or other intoxicating liquids. Any consumption of alcohol within eight hours before the
418 start of operations is prohibited. The blood alcohol level must be 0.0 ‰ at the latest at the
419 time when the operation preparation is started.

- 420 • **Narcotics**

421 Psychoactive substances such as narcotics can cause mood swings or perceptual disturbances
422 in people. The same applies to sedatives and hypnotics.

423 It is not permitted to perform the tasks or activities described in this Operations Manual while
424 under the influence of narcotics.

425 Any and all violations of this prohibition shall result in immediate suspension from all duties
426 related to the operation described herein. The position or task within the company of the
427 person concerned is irrelevant.

- 428 • **Drugs**

429 Psychoactive substances such as drugs can cause mood swings or perceptual disturbances in
430 people. Examples include cannabis, cocaine, heroin, LSD, etc.

431 It is not permitted to perform the tasks or activities described in this Operations Manual while
432 under the influence of drugs.

433 Any and all violations of this prohibition shall result in immediate suspension from all duties
434 related to the operation described herein. The position or task within the company of the
435 person concerned is irrelevant

- 436 • **Sleeping tablets**

437 It is not permitted to perform the tasks or activities described in this Operations Manual while
438 under the influence of sleeping tablets.

- 439 • **Antidepressants**

440 It is not permitted to perform the tasks or activities described in this Operations Manual while
441 under the influence of antidepressants.

- 442 • **Medical treatments**

443 Whenever a crew member is receiving medical treatment from a doctor, he / she should
444 inform the doctor that he / she is carrying out safety-related activities in connection with the
445 operation described here to ensure that he / she is not subject to any restrictions in this regard.
446 Whenever there is any doubt about unrestricted fitness, the crew member should report "unfit
447 to operate" to his / her employer.

- 448 • **Immunization**

449 Each crew member is responsible for ensuring that they have the required vaccinations. In
450 case of suffering side effects after vaccination, the crew member should report 'unfit to
451 operate' to his / her employer.

452 In the event of a severe reaction to the vaccine, it is imperative that a doctor is consulted.

- 453 • **Deep sea diving**

454 Due to the expected effects on the human body, deep sea diving is prohibited for all crew
455 members for a period of 24 hours prior to the start of operational preparations. Shallow depth
456 dives without the use of compressed air remain permitted.

- 457 • **Blood and bone marrow donations**

458 Blood or bone marrow donations must have been made at least 72 hours before the start of
459 operational preparations.

- 460
- 461 • **Precautions regarding meals before and during operation**
462 No special precautions need to be taken. However, each crew member is encouraged to let us
463 know in good time if they feel unwell after eating a meal.
 - 464 • **Sleep and rest**
465 Individual rest periods, holidays or days off (for example, weekends) should be used for
466 relaxation. Activities that conflict with this should be avoided.
 - 467 • **Surgical operations**
468 After surgery, it is the responsibility of the crew member to check with his / her doctor whether
469 he / she is fit enough to discharge his / her responsibilities. Whenever there is any doubt about
470 full fitness, the crew member should report "unfit to operate" to his / her employer.
 - 471 • **Smoking**
472 Smoking is forbidden during flight operations.
 - 473 • **Vision aids**
474 Whenever a crew member is required to wear vision aids, he / she shall, if possible, carry a
475 spare pair of spectacles / contact lenses with him / her during flight operations.
- 476

477 1.9.2 Duty Hours and Rest Periods

478 (OSO#17)

479 The flight duty hours are maximum values, the rest periods listed in this section are minimum values.
480 These applies to all crew members involved in the operation of a UAS within the scope of this
481 operations manual. They may be further limited, but not extended, by company agreements or
482 collective agreements.

483 1.9.2.1 Definition of Terms

- 484 • **Flight area**
485 In terms of flight duty hours and rest periods, each flight area is considered to be another flight
486 area if the UAS cannot be moved without additional resources. The same applies to the ground
487 station, should its relocation involve great effort.
- 488 • **Duty time**
489 A period of time that begins when a crew member reports for duty or commences duty and
490 ends when the crew member is free from all duty obligations, including post-flight activities.
- 491 • **Flight time (block time)**
492 The period of time between the moment the UAS is able to move under its own propulsion
493 until the moment the UAS is deprived of the ability to move by itself.
- 494 • **Rest time**
495 A continuous, uninterrupted and fixed period of time following or preceding duty during which
496 the crew member is free from duty and standby duty.

497 1.9.2.2 Flight and Duty Times

- 498 • The **maximum duty time** / day for all crew members is: thirteen hours
499 The maximum duty time / day is reduced by one hour with each new flight area.
500 Example for three additional flight areas:
501 The maximum duty time / day = 13h - 3x1h = 10h
- 502 • The **maximum flight time (block time)** / day for all remote pilots is: Four hours

503 1.9.2.3 Rest Times

504 The minimum rest period between two duty periods is at least the same duration of the last duty
505 period, but not less than eight hours.

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

508 2 Procedures (Part B)

509 (OSO#01, OSO#08)

510 All procedures and checklists described in this chapter have been designed to the best of our
511 knowledge and belief, taking into account all practical experience gained and the expected workloads
512 for the crew and the RPIC. (OSO#08, OSO#16_AC1, OSO#23_AC2)

513 This was done with the aim of making them clear, understandable and applicable, while minimising
514 the impact of human error. (OSO#08)

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

- 516 • the safety of persons is threatened or
- 517 • property on the ground is threatened or
- 518 • other airspace users are put at risk or
- 519 • there is a violation of this authorisation or that the operation cannot comply with this OM or
- 520 any applicable regulation.

521 The RPIC ensures that he:

- 522 • can keep the UA in VLOS and maintain a thorough visual overview of the surrounding airspace
523 in order to avoid any risk of collision with manned or unmanned aircraft,
- 524 • can take manual control of the UAS at any time, even if it normally operates automatically,
525 (OSO#08)
- 526 • only operates one UA at a time,
- 527 • does not operate from a moving vehicle and
- 528 • does not handover the control of the UA to another command unit while operating.
- 529

530 The suitability of the contingency and emergency procedures described in these chapters has been
531 tested under safe conditions during test flights in the open category. All procedures have been found
532 to be effective and suitable. (OSO#08, OSO#16_AC1b)

533 2.1 Multi-crew Coordination

534 (OSO#16)

535 When the RPIC cooperates with other personnel or involved persons are present in the operational
536 volume, the RPIC shall conduct a safety briefing before each flight operation. During the briefing, care
537 shall be taken to ensure that:

- 538 • The roles are clearly assigned.
- 539 • Everyone has understood their role (RPIC, assistant, etc. according to 1.7) and the associated
540 tasks.
541 (OSO#16_IC1a)
- 542 • The communication channels to be used (oral, radio, etc.) have been clearly identified, and
543 • clear and effective communication is ensured (no language barrier, use of the same terms and
544 call outs, etc.);
545 (OSO#16_IC1b)

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

547

548 2.2 Flight Planning

549 (OSO#08)

550 2.2.1 Use of Up-to-date Materials

551 For flight planning, it is ensured that the most current maps, charts and any other data available is
552 used. For all data that is only updated at long intervals, such as ICAO charts or satellite images, updates
553 (for example NOTAM (Notice to Airmen)) or on-site inspections are also taken into account.

554 For the weather in particular, the meteorological data, used as the basis for planning, is documented
555 as described in section 2.4 and the planning is updated in the event of changes that need to be taken
556 into account.

557 If a geocaging system or geofencing-system is available, the limits of the flight area as described in
558 section 3 will be identified and uploaded to the UAS.

559 The remote pilot verifies that the conditions on site have not changed in regard to the assumed risk of
560 operation (e.g. the area is really controlled ground and no uninvolved people are present).

561 2.2.2 Geographical Zones

562 Zones where special requirements apply as published by the state where the flight takes place are
563 taken into account in the planning. Before conducting a flight operation, compliance with the
564 requirements has to be ensured.

565 2.2.3 Controlled Airspace

566 Within controlled airspace, operations are only allowed if a clearance by current air traffic control is
567 available unless otherwise provided by the Competent Authority

568 This must be carried by the RPIC and later archived. It must be possible to present it during on-site
569 inspections or subsequent audits.

570 2.2.4 Airport and Heliport Environment

571 In Flight areas that are within x.y km of an airfield operations may only be conducted if a written
572 agreement has been made in accordance with the Appendix (see 8.1.2.1). *(Please refer to the local*
573 *conditions and regulations for airport and heliport environment.)*

574 This agreement must be carried by the RPIC and later archived. It must be possible to present it during
575 on-site inspections or subsequent audits.

576 2.2.5 Automatic flight

577 In case all or a part of the flight is conducted automatically, the RPIC will plan the flight making sure
578 the UA never exceeds the limits of the flight geography (both horizontal and vertical).

579 In case the UAS is equipped with a 'return to home' function, the RPIC will set the parameters of the
580 function and the 'home' point such that the probability to endanger any person in the air or on the
581 ground, during the automatic flight to the home point, is minimised.

582 The RPIC will then upload the data related to the flight to the UA.

583

584 2.3 External Services and Systems

585 2.3.1 Services

586 (OSO#13)

587 *List of the external services used for the UAS operations (for example RTK, LTE, etc.).*

588 It is ensured that the level of performance for all external services is adequate for the planned
589 operation and its safe execution. Should an external service require communication between the UAS
590 operator and service provider, effective communication is ensured to support the provision of the
591 service. The roles and responsibilities of both parties are clearly defined.

592 2.3.2 Systems

593 (OSO#08)

594 GNSS

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

598 A flight in the event of predicted restrictions or disruptions is not permitted.

599 Forecasts are available on the websites of Eurocontrol or the "Space Weather Prediction Center".

600 • <https://augur.eurocontrol.int/tool/>

601
602 • [https://www.swpc.noaa.gov/communities/global-positioning-system-gps-community-](https://www.swpc.noaa.gov/communities/global-positioning-system-gps-community-dashboard)
603 [dashboard](https://www.swpc.noaa.gov/communities/global-positioning-system-gps-community-dashboard)

604

605 2.4 Procedures for Obtaining and Evaluating Weather Conditions

606 (OSO#08, OSO#23_IC2)

607 The checking of the weather condition (temperature, wind, visibility, precipitation, etc.) takes place
608 immediately before the start of the flight operation.

609 If available, the national drone weather provided by the state is used for data collection.

610 See website:

611 (e.g. for Germany) www.dipul.de

612 Alternatively, the nearest airfield with published METAR can be used for evaluation. In case the nearest
613 station with published METAR data is disproportionately far away, the RPIC will assess the
614 meteorological conditions using other reliable sources, if available, or weather measuring equipment.

615 The determined weather data is entered into the Flight Logbook or digitally archived by mail.

616 e-mail address: GZ@konischeKegel.de

617 Format / layout of the e-mail:

- 618 • Subject line: MET, Flight date,
- 619 • In the e-mail: Location of operations and name of the RPIC
- 620 • Annex: Data (*.jpg, *.txt, ...)

621

622 Before take-off:

- 623 • Check the visibility and cloud cover to ensure the minimum requirement is fulfilled
- 624 • A close attention is paid to wind speed and direction to ensure that the data fall within the
- 625 safe operating limits of the UA used.
- 626 • Observation of the local conditions such as wind, cloud cover, and any sudden weather
- 627 changes that may not be reflected in the forecast.
- 628 • Based on the weather information and the on-site check, the RPIC makes the decision on
- 629 whether it's safe to proceed with the UAS operation.
- 630 • If conditions are not favourable, the RPIC will delay or reschedule the flight.
- 631 • The weather conditions are documented in the Flight Logbook.

632 During the flight operation:

- 633 • The RPIC stays vigilant about adverse weather conditions that could pose safety risks (see
- 634 procedure 2.7.2.1);
- 635 • The RPIC continuously monitor weather updates, as conditions may change rapidly.

636 **2.5 Procedures for TMPR (Tactical Mitigation Performance Requirement)**

637 **TMPR without technology or VLOS-Deconfliction scheme**

638 The operation is conducted exclusively within visual range according to VLOS conditions. Therefore
639 RPIC must apply the general principle of "See / Detect and Avoid" in order to reduce the risk of a
640 collision in the airspace.

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

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

648 As a reminder, priority shall always be given to manned aviation.

649 See the Contingency Procedures:

650 2.7.2.5 Appearance of an Uninvolved UAS or

651 2.7.2.7 Appearance of a Manned Aircraft

652

653 2.6 Occurrence Reporting

654 (OSO#08)

655 2.6.1 What must be reported?

656 All

- 657 • occurrences which endanger or which, if not corrected or addressed, would endanger an
- 658 aircraft, its occupants, any other person, equipment or installation affecting aircraft operations
- 659 • other relevant safety-related information in that context

660 shall be reported according to Regulation (EU) 376/2014 within 72 hours of becoming aware of the
661 occurrence, unless exceptional circumstances prevent this using the following website:

662 <https://aviationreporting.eu/>

663 In addition:

- 664 • Accidents or serious incidents.
- 665 • Damage to property.
- 666 • A serious or fatal injury.

667 have to be immediately reported according to Regulation (EU) 996/2010 to the **AAIB (Aircraft Accident**
668 **Investigation Bureau)**.

669 This can be done

- 670 • by telephone: +xxxxxxxxxxxx
- 671 • by FAX: +xxxxxxxxxxxx or
- 672 • via mail: xxxxxxxx@mail.com

673 2.6.2 Who reports?

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

676

677 2.6.3 What must be observed after reporting?

678 All occurrence reports should be stored and retained, as the significance of such reports may only
679 become apparent at a later date.

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

684

685 2.7 Procedures Specifically for UAS 1

686 2.7.1 Normal Procedures

687 (OSO#08)

688

689 2.7.1.1 General

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

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

694

695 *Adapting the following procedures, consider manufacturer specific instructions/checklists.*

696

697 2.7.1.2 Pre-flight and Post-flight Inspection

698 (OSO#07)

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

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

704 This condition is recorded in the flight logbook and confirmed by the signature of the responsible and
705 authorised person. (OSO#07_AC1)

706

707 2.7.1.2.1 Description of the Pre-flight Inspection

708 The Pre-flight inspection will always be carried out in a read and do style using a checklist.

709 The Person performing the check will therefore read each item from the checklist and then perform
710 the check. This procedure can also be performed with two persons. One will therefore read the
711 checklist and the other will perform the checks communicating the observation clearly (e.g. with the
712 call out: "checked").

713 Completion of the checklist with no open items is documented in the flight logbook with signature.

- 714 • Check list (see Annex 8.3.2)

715

716 2.7.1.2.2 Description of the Post-flight Inspection

717 The Post-flight inspection will always be carried out in a read and do style using a checklist.

718 The Person performing the check will therefore read each item from the checklist and then perform
719 the check. This procedure can also be performed with two persons. One will therefore read the
720 checklist and the other will perform the checks communicating the observation clearly (e.g. with the
721 call out: "checked").

722 Completion of the checklist with no open items is documented in the flight logbook with signature.

- 723 • Check list (see Annex 8.3.3)

724

725 2.7.1.3 **Before Take-off**

726 Action:

727 RPIC:

- 728 • Pre-flight inspection completed
- 729 • Check Ground area
- 730 • Check Airspace
- 731 • Check GNSS available (if necessary)
- 732 • Check T/O area clear (e.g. people, FOD or any obstacle)
- 733 • **Call Out: CLEAR PROP!**
- 734 • Arm motors (*please describe how*)
- 735 • Check for initialising
- 736 • Check for error-messages or any un-normal behaviour / sound
- 737 If so - disarm motors (*please describe how*) and abort procedure.

738 2.7.1.4 **Take-off**

739 Action:

740 RPIC:

- 741 • Check initial flight direction clear
- 742 • Check Airspace
- 743 • **Call Out: ATTENTION: START!**
- 744 • Commence take-off
- 745 • at safe altitude check if UAS response is normal (as expected),
- 746 If not → land (see 2.7.1.7) ASAP

747 2.7.1.5 **Flight**

748 Manual flying or automatic flight

749 Action:

750 RPIC:

- 751 • operate UAS
 - 752 ○ manual control or automatic flight
- 753 • monitor:
 - 754 ○ Flight parameters of the UAS (e.g. altitude, speed, battery, C2/3-link,...)
 - 755 ○ Correct automatic flight plan execution (if automatic flight is active)
 - 756 In case of deviations → takeover manual control, see 2.7.1.6
- 757 • observe:
 - 758 ○ Weather changes
 - 759 ○ Ground area for presence of uninvolved persons and obstacles
 - 760 ○ Airspace
 - 761 In case of conflict:
 - 762 → Appearance of an uninvolved UAS, see 2.7.2.5
 - 763 → Appearance of a manned aircraft, see 2.7.2.7

764

765 Ground staff (if present):

- 766 • observe:
 - 767 ○ Weather changes
 - 768 ○ Ground area for presence of uninvolved persons and obstacles
 - 769 ○ Airspace
 - 770 ○ Inform RPIC about changes if necessary

771 2.7.1.6 **Takeover Manual Control**

772 Whenever safe flight under automatic control is in doubt or if deemed necessary by the RPIC he shall
773 take over manual control.

774 Action:

775 RPIC:

- 776 • Switch flight mode to manual control *(please describe how)*
- 777 • Check if manual control is established
- 778 • **Call Out: I HAVE CONTROL!**
- 779 • Return to safe altitude and distance

780

781 2.7.1.7 **Land**

782 Action:

783 RPIC:

- 784 • Check Final Approach path clear
- 785 • Check landing area clear
- 786 • **Call Out: ATTENTION: LANDING!**
- 787 • Commence landing
- 788 • As soon as the UAS is safe on ground disarm motors *(please describe how)*

789 → Perform post-flight checklist (see 8.3.3)

790

791 **2.7.2 Contingency Procedures**

792 (OSO#08)

793 **2.7.2.1 Procedure for Responding to Unexpected Adverse Weather Conditions**

794 (OSO#08)

795 If, despite conscientious flight preparation, an unexpected weather conditions occurs, the first priority
796 is to ensure the safety of all persons involved.

797 It is the RPIC's responsibility not to start a flight operation / flight that is not yet in progress.

798 If a flight is already in progress, the RPIC shall abort the operation in the manner that appears to him
799 at that moment to be the safest with the least risk to all persons concerned.

800 Action:

801 RPIC:

- 802 • **Call Out: Adverse Weather!**
- 803 • In automatic flight
- 804 → Takeover manual control (see 2.7.1.6)
- 805 • → Land (see 2.7.1.7)

806

807 If weather conditions are so adverse that controlled flight is no longer possible.

808 → Termination (see 2.7.3.1)

809 **2.7.2.2 Unexpected Behaviour of the UAS within the Flight Geography**

810 As soon as it is detected that the UAS is not behaving as expected, (e.g. deviation from the pre-
811 programmed flight path in automatic mode)

812 Action:

813 RPIC:

- 814 • **Call Out: Warning! Warning! Warning!**
- 815 • In automatic flight
- 816 → Takeover manual control (see 2.7.1.6)
- 817 • → Land (see 2.7.1.7)

818

819 If expectable behaviour during manual control cannot be restored

820 → Termination (see 2.7.3.1)

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

823

824 2.7.2.3 **Contingency Manoeuvre Lateral**

825 Should the UAS leave the flight geography laterally.

826 Action:

827 RPIC:

- 828 • in case of automatic flight
- 829 → Takeover manual control (see 2.7.1.6)
- 830 • Stop the lateral movement of the UA
- 831 • Return UA into the flight geography
- 832

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

835 → Termination (see 2.7.3.1)

836

837 2.7.2.4 **Contingency Manoeuvre Vertical**

838 Should the UAS leave the flight geography vertically.

839 Action:

840 RPIC:

- 841 • In case of automatic flight
- 842 → Takeover manual control (see 2.7.1.6)
- 843 • Stop the vertical movement of the UA
- 844 • Return UA into the flight geography

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

847 → Termination (see 2.7.3.1)

848

849 2.7.2.5 **Loss of Link**

850 If C2 Link is lost.

851 Action:

852 RPIC

- 853 • **Call Out: Link Loss!**
- 854 • Check the signal and try to reconnect

855 If it is foreseeable that the UA will leave the contingency volume

856 → Termination (see 2.7.3.1)

857

858 2.7.2.6 **Appearance of an Uninvolved UAS**

859 When an UAS uninvolved in the operation is detected that is threatening to fly into the operational
860 volume or has already entered.

861 Action:

862 RPIC or Ground staff:

- 863 • **Call Out: unknown UAS!**

864

865 RPIC:

- 866 • Initiate the landing of the UA
867 → Land (see 2.7.1.7)

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

870

871 2.7.2.7 **Appearance of a Manned Aircraft**

872 A manned aircraft is observed that is threatening to fly into the operational volume or has already
873 entered.

874 Action:

875 RPIC or Ground staff:

- 876 • **Call Out: unknown aircraft!**

877

878 RPIC:

- 879 • Initiate the landing of the UA
880 → Land (see 2.7.1.7)
- 881 • Report in accordance to ERP template (see 8.3.1)

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

884

885 **2.7.3 Emergency Procedures**886 **(OSO#08)**887 **2.7.3.1 Termination of the Flight**

888 When the UA is about to leave the contingency volume or whenever deemed necessary by the RPIC:

889

890 Action:

891 RPIC:

- 892 • Press "Kill Switch"
- 893 • **Call Out: Crash! Crash! Crash!**
- 894 • Note the last position and direction of the UA

895

896 Ground staff (if present):

- 897 • Take cover
- 898 • If necessary, loudly warn other people
- 899 **Call Out: Duck and cover!**
- 900 • Note the last position and direction of the UA

901

902 Termination procedure successful?

903 Yes:

904 → Crash (see 2.7.3.3)

905 NO:

906 → Fly Away (see 2.7.3.2)

907

908 **2.7.3.2 Fly Away**

909 Action:

910 RPIC:

- 911 • **Call Out: Fly Away! Fly Away! Fly Away!**
- 912 • Initiation of ERP (see 8.3.1)
- 913 (Immediately report to ATC or ATM)
- 914 • Re-attempt → Termination (see 2.7.3.1)
- 915 (This can be done permanently in parallel with the ERP, as long as the execution
- 916 of the ERP is not slowed down or delayed.)

917

918

919 **2.7.3.3 Crash**

920 After impact:

921 Action:

922 RPIC:

- 923 • **Call Out: Crash! Crash! Crash!**
- 924 • Initiation of ERP (see 8.3.1)

925 3 Flight Areas (Part C)

926 In this chapter operational limitations as well as all volumes and areas needed for the safe operation
927 of the UAS are defined.

928 3.1 General Operational Limitations

929 The operational limits listed here are fixed limits and must not be exceeded under any circumstances.
930 The listed limits are derived from the environmental conditions and technical limits (Part T).

931 Safe operation can be guaranteed at all times by adhering to the specified operational limits.

932 This is ensured by the operating limits defined in this OM not exceeding or contradicting those defined
933 by the UAS manufacturer (see 6).

934 3.1.1 Environmental Conditions

935 (OSO#23_IC1)

936 3.1.1.1 Light Conditions

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

- 938 • 30 minutes before sunrise until
- 939 • 30 minutes after sunset.

940 3.1.1.2 Wind

941 Maximum wind speed ≤ 5 m/s

942 *(please adjust as needed, this value shall not exceed the maximum wind speed defined in the UAS*
943 *manufacturers instructions).*

944

945 3.1.1.3 Visibility

946 All flights take place under conditions that allow safe Visual Line of Sight (VLOS) operations. It is the
947 responsibility of the RPIC to keep the UA in VLOS at all times.

948 The maximum possible VLOS distance between the remote pilot and the UAS results from the smaller
949 value of Attitude Line Of Sight (ALOS) and Detection Line Of Sight (DLOS) and is determined before the
950 flight.

951 Attitude Line Of Sight:

952 $ALOS = 327 * CD [m] + 20 \text{ m}$

953 Detection Line Of Sight:

954 $DLOS = 0.3 * GV [m]$

955 (The maximum ground visibility (GV_{max}) to be applied is 5000 m.)

956 Flights beyond the VLOS distance may not be operated.

957

958 3.1.1.4 Temperature

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

960 *(please adjust as needed, these values shall not exceed the min/max temperature defined in the UAS*
961 *manufacturers instructions).*

962

963 3.1.1.5 **Adverse Weather Conditions**

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

966 **3.1.2 Technical Operational Limitations**

- 967 • Maximum take-off mass during operation: 25 kg
- 968 • Maximum speed during operation: 5 m/s (GS - Groundspeed)
- 969 • Maximum pitch angle: 30 degrees
- 970 • Maximum roll angle: 30 degrees

971 *(please adjust as needed, these values shall not exceed the maximum values defined in the UAS*
972 *manufacturers instructions).*

973

974 **3.2 Flight Area 1**975 *(Please refer to the appropriate module to include one or multiple flight areas)*976 **4 Training (Part D)**977 *(OSO#01, OSO#08, OSO#09, OSO#16)*

978 Training of all personnel takes place in accordance with our training manual (OM(D)). The training
979 manual complies with all the requirements of applicable regulation and is regularly updated. It
980 includes, but is not limited to, the following topics:

- 981 • Applicable laws and regulations for UAS operation in applicable in the state of operation
982 *(e.g. Implementing Regulation (EU) 2019/947, etc.)*
- 983 • Airspace structures
- 984 • Airmanship and aviation safety
- 985 • Human performance capacity
- 986 • Weather
- 987 • Navigation and maps
- 988 • UAS used
- 989 • Procedures and
- 990 • ERP *(M3)*
- 991 • Product inspection *(OSO#07)*
- 992 • Weather measurement *(OSO#23_IC3)*
- 993 • MCC (Multi-crew Cooperation) *(OSO#16)*
- 994 • CRM (Crew Resource Management) training *(OSO#16)*

995
996 Name of the training manual: *OM_D_rev01.pdf*

997 The training manual can be found in the company office for everyone to see.

998

999 5 Emergency Response Plan (Part E)

1000 (M3 – Medium)

1001 Emergency Response Plan (ERP)

1002 5.1 General

1003 Even though our primary goal is safe UAS operation, accidents and incidents may still occur. It does
1004 not matter who is responsible. The first priority is to minimise the effects. In particular, if people have
1005 been harmed or could be harmed by the consequences of an emergency, the following applies:

1006 **People First, Then Property!**

1007 In addition, the general principles shall apply to all persons involved in the operation:

- 1008 • stay calm and get an overview
- 1009 • ensure your own protection
- 1010 • secure the accident site
- 1011 • remove people from the danger zone
- 1012 • report emergency
- 1013 • give first aid if necessary

1014 Each person does what he or she can without putting himself or herself in danger.

1015 5.2 Creation of the Emergency Response Plan

1016 All procedures and check lists described in this chapter have been designed to the best of our
1017 knowledge and belief, taking into account all practical experience gained. (OSO#07)

1018 The objective is to make these procedures clear, understandable and applicable, and at the same time
1019 minimise the impact of human error.

1020 The ERP was tested for its suitability with the participation of all office holders, as described in the
1021 training manual, by means of a detailed "table-top exercise" and considered to be good.
1022 (OSO#8_AC1,/2/3)acceptable.

1023 In the process, the ERP was checked to ensure that it (OSO#8_AC1,/2/3)

- 1024 a. is appropriate for the situation
- 1025 b. limits the consequential effects
- 1026 c. contains definitions that allow the identification of emergencies
- 1027 d. is practically feasible and
- 1028 e. clearly identifies the responsibilities of all parties involved.

1029

1030 5.3 ERP template

1031 The ERP template is generally used for ease of use and to facilitate action by the people involved on
1032 site in case of an emergency.

1033 Three pages for printing can be found in the Annex (see 8.3.1)

1034 This document is to be completed and signed by the Emergency Response Manager (RPIC) before the
1035 operation. For documentation purposes, the ERP template is photographed before the start of
1036 operation and sent to the company office by e-mail.

1037 The e-mail address of the company office is: GZ@konischeKegel.de

1038 Format / layout of the e-mail:

- 1039 • Subject line: ERP, flight date,
- 1040 • In the e-mail: Location of operations and name of the RPIC
- 1041 • Annex: Data (*.jpg)

1042

1043 5.4 Preparation and briefing:

1044 Before the flight operations, the ERP template is shown to all involved persons and, in the event of
1045 questions, the individual topics are dealt with. Only when all questions about the ERP have been
1046 clarified, the operation can be started.

1047 The ERP distinguishes between two types of emergencies.

1048 1. Emergencies where the effects on the ground after a crash must be limited.

1049 In order to be able to react appropriately and promptly to these emergencies, the following is
1050 recorded in the ERP template prior to the start of the operation:

- 1051 a. The nearest location of first aid materials ("first aid kit", etc.).
- 1052 b. The nearest location of fire extinguishing equipment (fire extinguishers, etc.).
- 1053 c. The telephone numbers for further emergency services, in case the emergency cannot
1054 be brought under control using own resources.

1055

1056 2. Emergencies requiring notification to an ATM provider or airfield / airport.

1057 In order to be able to react appropriately and promptly to these emergencies, the following is
1058 recorded in the ERP template prior to the operation:

- 1059 a. The telephone numbers of any airfields / airports affected. For airfields / airports with
1060 control zones, the direct extension number of the tower controllers.
- 1061 b. The telephone number of the nearest ATM provider.

1062 Location-specific information or telephone numbers can be taken from 3.x.5 onwards in Part C of the
1063 Annex.

1064

1065 5.5 Reporting procedures and obligations after an emergency**1066 (OSO#08)**

1067 Any triggering of the ERP should be processed in the best possible way to improve the safety of the
1068 UAS operation.

1069 All persons involved in an emergency should write down their recollections of the incident as soon as
1070 possible and provide them to the responsible person for occurrence reporting. The sooner this is done,
1071 the better / more accurate the recollections will be. This should be done independently to get as many
1072 uninfluenced perspectives and perceptions as possible. The data collected in this way should be
1073 supplemented with the journey log, the meteorological data at the time of the incident and any other
1074 data that might help to classify the incident.

1075

1076 See also 2.6 Occurrence Reporting.

1077

1078 **6 Technical part of UAS (Part T)**

1079 In this section, all necessary details of the UAS used are described in detail. Alternatively, a reference
1080 to the respective manufacturer's instructions is given.

1081 **6.1 UAS 1 [Model/Type]**1082 **6.1.1 Description**

1083 The UAS 1 is a class C5 unmanned aircraft system.

1084 Technical details are provided in the manufacturer's instructions (see Annex 8.4).

1085 **6.2 UAS 2 [Model/Type]**1086 **6.2.1 Description**

1087 The UAS is a multi-rotor manufactured by **Manufacturer.**

1088 It is designed as a fully symmetrical cross with 4 rotors. The characteristic dimension of the UAS is less
1089 than 3 m, measured from rotor tip to rotor tip and has a maximum take off mass of less than 25 kg.

1090

Nominal voltage of the accumulator	22.2 V
Capacity of the accumulator	5000 mAh
Maximum take-off mass	12.5 kg
Empty mass	9 kg
Characteristic Dimension (CD)	1,5 m
Other	

1091

1092 **6.2.2 Image / Graphic**

1093

1094

1095

1096

1097

1098

1099

1100

1101 Figure 4 shows **UAS 1 in the configuration xy standing on the ground ready for operation.**

1102

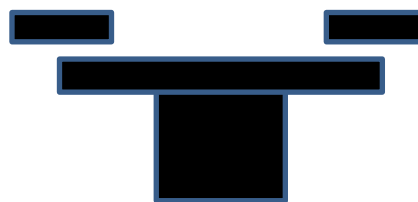


Figure 2: UAS 1 in Configuration XY

1103 **6.2.3 C3 Link**1104 **(OSO#06)**

1105 The direct C2 link used consists of a ground antenna using the XXX MHz-band and an airborne receiver
1106 as described in Part T.

1107 All the C3 links used meet the requirements in terms of performance, quality, RF spectrum and
1108 environmental conditions in order to safely perform the planned operation at all times. (OSO#06_ICa)

1109 All C3 links used provide sufficient information for the pilot to monitor at all times whether operational
1110 requirements are being met. (OSO#06_ICb)

1111

1112 **6.2.4 Parachute (M2)**1113 ***If installed:***

- 1114 • Detailed description of the system
- 1115 • Evidence for adequate functionality

1116

1117 **6.2.5 TMPR**

- 1118 • No technical solution for TMPR is used. VLOS operation only.

1119

1120

1121 **6.2.6 Containment**

1122 **(SORA Step 9 (low))**

1123 Leaving the operating volume can be prevented at any time by transmitting the command to terminate
 1124 the flight via the regular C3 Link. This can be done, by applying the procedure "Termination of the
 1125 Flight" (see 2.7.3.1).

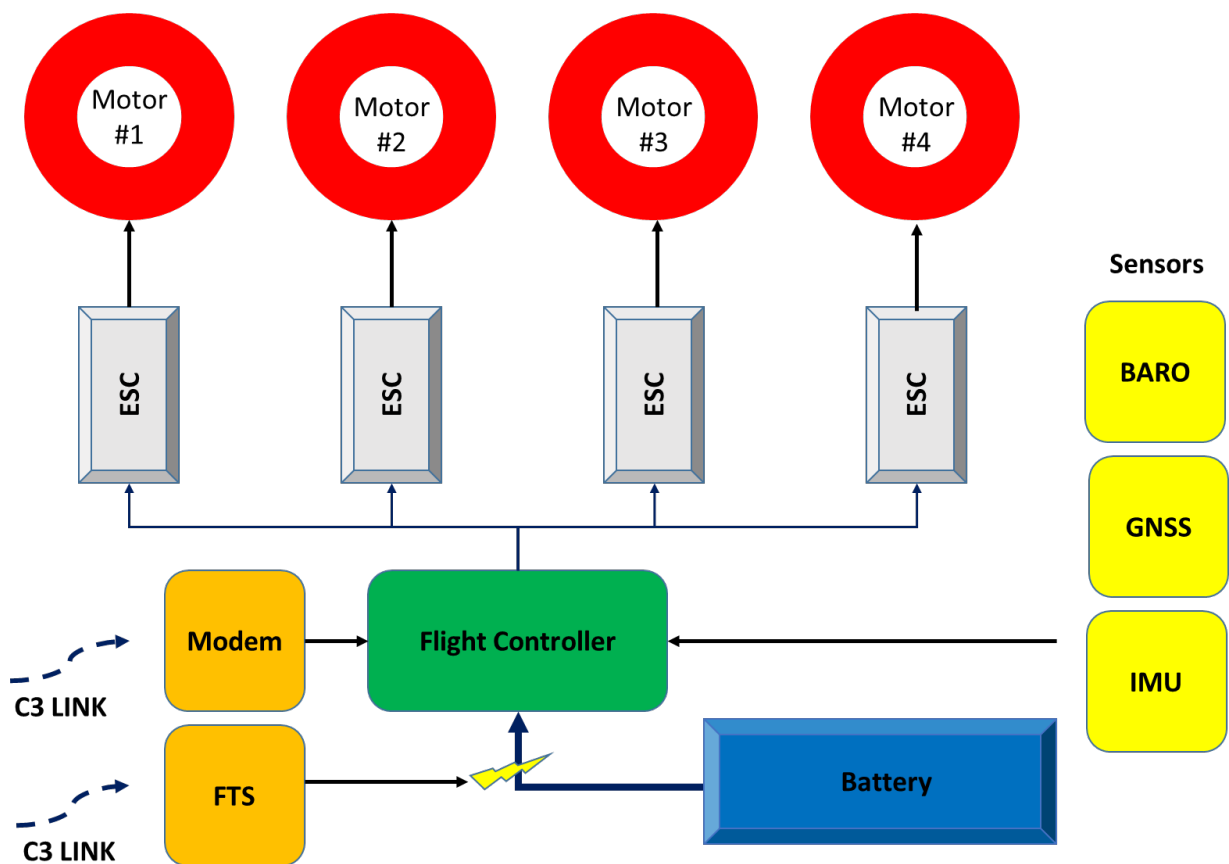
1126 No probable single failure of the UAS or any external system can cause the UAS to leave the operating
 1127 volume.

1128

1129 System:

1130 A representation of the technical system architecture showing the high level schematics of the UAS is
 1131 provided in Figure 5: Schematic representation of the airborne system.

1132



1133

1134

Figure 3: Schematic representation of the airborne system

1135

1136

1137 **6.2.7 Human-Machine Interface - HMI**

1138 (OSO#20)

1139 *Please describe the HMI used.*

1140 The objectives of the UAS human-machine interfaces are to:

- 1141 • Present data and information clearly and concisely.
- 1142 • Avoid confusion.
- 1143 • Prevent disproportionate fatigue.
- 1144 • Minimise errors by the crew.

1145 All human-machine interfaces have been tested during flights under safe conditions in the open
1146 category. Analysis of the test flights, taking into account human factors, has shown that all human-
1147 machine interfaces are adequate and suitable for the planned operation.

1148

1149 **6.2.8 Payload**

1150 *Please describe the payload used and how to operate it. If training to operate the payload is required,*
1151 *please provide information in Part D.*

1152

1153 7 Maintenance (Part M)

1154 (OSO#01, OSO#03)

1155 7.1 General

1156 Maintenance ensures that the UAS is in a safe operating condition at all times and that a hazard due
1157 to wear and tear, signs of use or ageing of the technology can be excluded.

1158 The UAS is regularly maintained according to the maintenance instructions (see 8.4) (OSO#03_ICa,
1159 OSO#03_AC1a). The maintenance intervals laid out by the manufacturer are to be considered as a
1160 maximum. All maintenance will therefore be scheduled in advance in a way that a positive time margin
1161 remains to these maximum values. All maintenance is carried out only by competent persons trained
1162 for the specific work. A list of currently qualified and authorised persons can be found in the company
1163 office. (OSO#03_ICb)

1164 All maintenance may only be carried out in accordance with the maintenance instructions described
1165 herein. (OSO#03_ICc)

1166 All maintenance carried out on the UAS is recorded in the technical logbook (see 8.2.6), together with
1167 the name of the person carrying out the maintenance. (OSO#03_AC1b)

1168 7.2 Software Updates

1169 After each software update, test flights must first be carried out in an area comparable with the
1170 subcategory A3 of the open category. All important functions and capabilities must be checked.

1171 These flights with the results are documented in the technical logbook.

1172 7.3 Maintenance UAS 1 [Model/Type]

1173 Please describe the maintenance instructions or refer to the chapter of the C5-UAS manufacturer
1174 manual where they are listed.

1175 Please state how often or when certain maintenance task are scheduled.

1176 7.4 Maintenance UAS 2 [Model/Type]

1177 Please describe the maintenance instructions or refer to the chapter of the UAS manufacturer manual
1178 where they are listed.

1179 Please state how often or when certain maintenance task are scheduled.

1180

1181

1182 **8 Annex**

1183 **8.1 Evidence**

1184 **8.1.1 Organisational**

1185 8.1.1.1 **Organisational Operating Certificate**

- 1186 • Not applicable

1187 8.1.1.2 **Maintenance Program / Organisation Certificate**

- 1188 • Not applicable

1189 **8.1.2 Operational**

1190 8.1.2.1 **Operational Agreements**

1191 8.1.2.1.1 Generic template for an operating agreement with an airport or heliport.

1192 The template to be printed out is on the next page. (Note:

1193

1194 **Arrangement for Temporary Operation of Unmanned Aircraft Systems (UAS)**

1195

1196 Between airfield and UAS operator (as follows):

1197

1198

1199

1200 Airport:

1201

1202 Airport name/ICAO code: _____

1203 Name of flight ops controller: _____

1204 Phone number of flight ops control: _____

1205

1206

1207 UAS operator

1208

1209 Name of UAS operator: _____

1210 Address of UAS operator: _____

1211 Name of authorized representative: _____

1212 Phone number for communication with the remote pilot: _____

1213

1214

1215 Period of planned flight operations:

1216

1217 from: _____ (date, time)

1218 until: _____ (date, time)

1219

1220

1221

- 1222 1. Fifteen minutes before the start of the flight operations, flight ops control must be
1223 contacted by telephone to coordinate the time of take-off.
1224 Flight ops control may postpone the scheduled time of take-off (in particular for traffic
1225 reasons) and, if necessary, change or revoke authorisations already issued in writing in
1226 advance.
- 1227 2. Immediately before the start of the flight, flight ops control must be contacted to
1228 coordinate the exact time of take-off.
1229 Flight ops control may postpone the planned time of take-off (in particular for traffic
1230 reasons) and, if necessary, change or revoke authorisations that have already been
1231 issued in advance.
- 1232 3. The permanent telephone availability of the remote pilot must be ensured. This can also
1233 be assured indirectly by a second person answering the call if this person is in direct
1234 contact with the remote pilot.
- 1235 4. The end of flight operation is to be reported immediately to flight ops control.
- 1236 5. At the request of flight ops control, e.g. due to a manned aircraft ready for take-off or
1237 approaching, flight operations must be suspended.
1238 The resumption of flight operations requires the express consent of flight ops control.
- 1239 6. The remote pilot shall permanently observe the airspace. Flight operations will be
1240 suspended immediately when a manned aircraft threatens to enter the UAS operating
1241 volume.
1242 Resumption of flight operations requires explicit approval by flight ops control.
- 1243 7. Emergency notification chain: In the event of an emergency (triggering of the ERP, e.g.,
1244 due to fly-away or crash of the UAS), it is the responsibility of the remote pilot or a
1245 second person who is in direct contact with the remote pilot to declare the emergency
1246 condition and immediately inform flight ops control by telephone. At a minimum, the
1247 following information shall be provided::
1248
- 1249 (a) Who is reporting
 - 1250 (b) Where did the emergency occur?
 - 1251 (c) What happened: nature of the emergency
 - 1252 (d) Is the UAS still in the air? (e.g., fly-away).
 - 1253 (e) What is the maximum risk area?
 - 1254 (f) Is personal injury suspected?
 - 1255

1256 Airfield:

1257

1258

1259 _____
Place, date, signature of authorized representative

1260

1261

1262 UAS Operator:

1263

1264

1265 _____
Place, date, signature of authorized representative

1266

- 1267 8.1.2.2 **M1**
1268 • Not applicable (operation over controlled ground)

1269

1270 8.1.2.3 **Flight Tests**

1271 Evidence of flight tests for contingency and emergency procedures

1272 **(OSO#08)**

1273 Documentation of the flight tests carried out in an area comparable with the subcategory A3 of the
1274 open category.

Date	Flight Tests	Type	Number	Result
01.04.2022	2.7.3	Simulated	3	3/3 successful
01.04.2022	2.7.2	Real	5	5/5 successful
<i>to be completed</i>				

1275

1276 8.1.2.4 **Performance of External Services and Systems**

- 1277 • Not applicable (no external services or systems are required)

1278

- 1279 **8.1.3 Technical**
- 1280 8.1.3.1 **Design (TC)**
- 1281 • Not applicable
- 1282 8.1.3.2 **M2**
- 1283 • N/A
- 1284
- 1285 8.1.3.3 **Manufacturer Competence**
- 1286 • Not applicable
- 1287
- 1288

1289 **8.2 Printed Forms**

1290 **8.2.1 List of Maintenance Personnel**

1291 (OSO#03_AC1c)

1292 The template to be printed out can be found on the next page.

1293

1297

1298 **8.2.2 List of Personal authorised to conduct Pre-flight and Post-flight Inspections**

1299 (OSO#07_AC2)

1300 The template to be printed out can be found on the next page.

1301

1305 **8.2.3 List of the Training / Experience Level of Personnel**

1306 (OSO#03_AC2)

1307 The template to be printed out can be found on the next page.

1308

1316 **8.2.4 List of authorised remote pilots**

1317

1318 The template to be printed out can be found on the next page.

1319

1323 **8.2.5 List of Training on the Emergency Response Plan (ERP)**

1324 (M3_C2b)

1325 The template to be printed out can be found on the next page.

1326

1330 **8.2.6 UAS Operator Flight Logbook**

1331 The template to be printed out can be found on the next two pages.

1332

1334

1335 **8.2.7 Technical Logbook**

1336 (OSO#03_AC1b, OSO#07_AC1)

1337 The template to be printed out can be found on the next page.

1338

Technical Logbook

UAS name: _____ serial no.: _____

Page: _____

<p>Date: _____ (dd.mm.yyyy)</p>	<p>Regular maintenance? yes <input type="checkbox"/> no <input type="checkbox"/></p>	<p>Flight cycles: _____</p>	<p>Total FH: _____ (hh:mm)</p>
<p>Defect / occurrence (description)</p>		<p>Maintenance action taken (description)</p>	
<p>Observed</p>	<p>Name / Signature _____</p>	<p>Released by:</p>	<p>Name / Signature _____</p>
		<p>Maintained by</p>	<p>Name / Signature _____</p>

1340

1341 **8.3 Check Lists**

1342 **8.3.1 ERP Template**

1343 The template to be printed out can be found on the next three pages.

1344

1345
1346
1347
1348
1349
1350

Emergency Response Plan

For every flight 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 shall always be available.

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

Emergency Response Plan in the Event of a UAS Crash

ALWAYS

- stay calm
- rescue people before objects



1. GET AN OVERVIEW

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



2. Protect people:

- 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.: 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

Immediately report the accident to the 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 Response Plan in the Event of a UAS "Fly Away" The UAS continues to fly despite termination having been initiated

- Name and telephone number of the nearest ATM provider:

For operation near an airfield / airport:

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

ALWAYS

- stay calm
- Rescue people before objects



1. IN CASE OF C2 LINK LOSS

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



2. INFORM airports / airfields in the vicinity

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



3. INFORM THE ATM PROVIDER

- Telephone report of the fly-away to the above-named ATM provider
 - 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 and distance
 - Estimated maximum achievable flight altitude
 - Wait for any questions!



- INFORM THE POLICE Tel.: 112**
- 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!

1351

1352

1353

Place, Date, Signature (RPIC): _____

Instruction Sheet for Occurrence Reporting

1354

1355 What must be reported?

1356 All

- 1357 • occurrences which endanger or which, if not corrected or addressed, would endanger an
- 1358 aircraft, its occupants, any other person, equipment or installation affecting aircraft operations
- 1359 • other relevant safety-related information in that context

1360 shall be reported according to applicable regulation within 72 hours of becoming aware of the

1361 occurrence, unless exceptional circumstances prevent this using the following website:

1362 <https://aviationreporting.eu/>

1363 In addition:

- 1364 • Accidents or serious incidents.
- 1365 • Damage to property.
- 1366 • A serious or fatal injury.

1367 have to be immediately reported according to Regulation (EU) 996/2010 to the AAIB (Aircraft Accident

1368 Investigation Bureau).

1369 This can be done

- 1370 • by telephone: +xxxxxxxxxxxxx
- 1371 • by FAX: +xxxxxxxxxxxxx or
- 1372 • via mail: xxxxxxxx@mail.com

1373 Who reports?

1374 The RPIC is responsible for reporting and ensuring correct reporting. If the RPIC is unable to report the

1375 incident, another person immediately following in rank and involved in the operation must take over.

1376

1377 What must be observed after reporting?

1378 All occurrence reports should be stored and retained, as the significance of such reports may only

1379 become apparent at a later date.

1380 The UAS operator should analyse those events that could have an impact on flight safety in order to

1381 identify safety hazards and, if necessary, take appropriate corrective or preventive action. It should

1382 forward the preliminary results of its analysis to the competent authority and, in the event that it

1383 identifies an actual or potential risk to aviation safety, also the final results of the analysis.

1384

1385 **8.3.2 Pre-flight Inspection - Check List**

1386 The template to be printed out can be found on the next page.

1387

Pre-flight checklist:

Note:

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

Equipment / crew

- | | |
|--|--|
| | personnel fit to operate / fit to fly |
| | equipment complete |
| | documents available (e.g. Operational Authorisation, insurance, pilot certificate, etc.) |
| | |

Flight planning

- | | |
|--|--|
| | Geographical Zones (e.g. current status, flight authorisation available, etc.) |
| | weather / Kp-Index |
| | mission planning completed (e.g. Home point set) |
| | briefing of all involved persons completed |
| | |

UAS

- | | |
|--|---|
| | No open defects in technical logbook. |
| | fully assembled |
| | correct configuration |
| | general impression (e.g. no visible damage) |
| | all motors turn easily and freely |
| | batteries charged |
| | correct flight plan loaded (if applicable) |
| | Radio Communication (if applicable) |
| | |

T/O Area

- | | |
|--|---|
| | flat area |
| | wind direction |
| | no obstacles in departure or arrival area |
| | |

1388

1389

1390 **8.3.3 Post-flight Inspection - Check List**

1391 The template to be printed out can be found on the next page.

1392

Post-flight checklist:

Note:

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

UAS

	UAS secured
	batteries disconnected
	general impression (e.g. no visible damage)
Documentation	
	flight times logged in the flight logbook
	defects or occurrences (e.g. hard landing, damage) entry in the technical logbook

1393

1394

1395 **8.4 Manuals**

1396 **8.4.1 Manufacturer's Instructions for UAS 1**

1397 *Include manual of UAS 1*

1398 **8.4.2 Maintenance manual for UAS 1**

1399 *Include maintenance manual of the manufacturer if applicable and referenced*