



FOCA GM

Guidance Material

How to apply for an operational authorisation based on a Specific Operational Risk Assessment (SORA)

Guidance to SORA V2.0 Step #2 – Mitigation 3 : **Emergency Response Plan**

Scope	Guidance for drawing up an ERP for M3 based on <ul style="list-style-type: none">JARUS SORA V2.0 and its Annex BAMC and GM to Implementing Regulation (EU) 2019/947 Art. 11 This GM extends FOCA-UAS-GM-Part1
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0 Introduction

0.1 Purpose of this GM

All Guidance Material (GM) is intended to assist an organisation/operator in the administrative matters of applying and obtaining an operational authorisation and facilitate liason with the Federal Office of Civil Aviation (FOCA). It does not represent a comprehensive and complete set of requirements and it should not be used as a substitute for the individual assessment of the applicable regulatory requirements. An understanding of the risk assessment methodology can be found in JARUS SORA (jarus-rpas.org) and EASA Easy Access Rules (easa.europa.eu) and their understanding are needed for a successful application and authorisation.

This GM provides guidelines for drawing up an Emergency Response Plan (ERP) for Mitigation M3 as explained in:

- Annex B of the Specific Operations Risk Assessment (SORA) version 2.0 and
- AMC3 UAS.SPEC.030(3)(e) Application for an operational authorisation, EASA AMC and GM to the Annex of Regulation (EU) 2019/947 [2].

It applies to operations in the specific category and addresses the medium and high robustness levels for these mitigation measures.

0.2 Scope

An effective Emergency Response Plan (ERP) should be developed in accordance with the specific operation planned. The templates/examples provided in this GM may therefore be incomplete; they simply describe a possible way of presenting the required data. An organisation must add further information or adapt the examples to their specific needs as required.

This GM extends the FOCA-UAS-GM-Part1 “Guidance to Application for an Operational Authorization Part 1” by providing further guidance to section 3. Step #3 – Final GRC determination.

0.3 Terms and Conditions

The use of the male gender should be understood to include male and female persons.

The most frequent abbreviations used by the EASA are listed here: easa.europa.eu/abbreviations.

When used in the GM, the terms ‘shall, must, will, may, should, could, etc.’ shall have the meaning as defined in the [English Style Guide](#) of the European Commission.

0.4 Legal References

- [1] (OSCA) Ordinance of the Department of the Environment, Transport, Energy and Communications (DETEC) on Special Category Aircraft (SR 748.941) [online [link](#)] Available (27.09.2022)
- [2] Commission Implementing Regulation (EU) 2019/947 of 24 May 2019 on the rules and procedures for the operation of unmanned aircraft and related Annexes, Acceptable Means of Compliance and Guidance Material [[link](#)] Available (27.09.2022)

Note: AMC to Art. 11 of (EU) 2019/947 is used as baseline to this guidance material, however its applicability is subject to the adoption of the european drone regulations in Switzerland.

0.5 Other References

1. FOCA GM/INFO, Certification Leaflet Management System, Version 1, revision 3 of the 09.11. 2017 [[link](#)] Available (01.09.2022)
2. Swiss Aerodrome Association SAA, Aerodrome Emergency Guide and Checklist, Version February 2017 [[link](#)] Available (01.09.2022)
3. Schweizerische Sicherheitsuntersuchungsstelle SUST, Bereich Aviatik, Such- und Rettungsdienst der zivilen Luftfahrt (SAR) in der Schweiz, [[link sar-booklet.ch](http://link.sar-booklet.ch)] Available (01.09.2022)

1 Emergency Response Plan (ERP)

1.1 General

- Successful response to an emergency begins with effective planning. An ERP provides the basis for a systematic approach to managing the organisation's affairs in the aftermath of a significant event – in the worst case, a major accident.
- An ERP is a description of the intended processes and actions. Most probably, much of an ERP will never be tested under actual conditions. Nevertheless, comprehensive training is required to ensure that the described processes and actions are backed by operational capabilities. Regular emergency response drills and exercises are also strongly recommended. Some elements of the ERP, such as the call-out and communication plan, can be tested once, while other aspects, such as on-site activities involving other agencies, should be rehearsed at regular intervals. This with the purpose of disclosing weaknesses in the plan, so that these can be rectified before an actual emergency.

1.2 Definitions

The terms accident, incident and mishap are defined as follows (Annex I, JARUS SORA guidelines):

- **Accident** - An unplanned event or series of events that results in death, injury, or damage to, or loss of, equipment or property.
- **Incident** - An occurrence other than an accident that affects or could affect the safety of operations.
- **Mishap** – Non safety-critical occurrence.

1.3 Operator Responsibilities

The operator shall define:

- lines of responsibility and accountability throughout the organisation;
- the overall philosophies and principles of the organisation with regard to safety, referred to as the Safety Policy;
- ground and air safety hazards entailed by the activities of the organisation, the worst case scenario for each of the safety hazards and the training to maintain personnel skilled and competent to perform their tasks according to the ERP.

1.4 Purpose and Effectiveness of an Emergency Response Plan

The purpose of an ERP is:

- to proactively identify all possible emergency events or scenarios and their corresponding mitigation actions;
- to avoid as much as possible the escalating effect;
- to keep control of the situation even in a high level of stress;
- to inform as fast as possible the relevant external parties (Rega, police, ANSPs, etc.);
- to limit injuries and loss of materials following the occurrence;
- to document emergency checklists, procedures and processes;
- to coordinate the emergency response efforts internally and with external involved parties;
- to limit the risk to people.

An effective ERP should:

- identify the emergency and assign a level of emergency (the gravity of the event);
- be suitable for the situation (respond to the effective level of emergency);
- define the conditions to alert external parties (Rega, police, FOCA, ANSPs, etc.);

- be practical to use, even with low concentration levels (stress);
- assign clear roles and responsibilities of every crew member;
- list the emergency numbers required;
- set a communication protocol.

1.5 Emergency Response Plan Format

An ERP would normally take the form of a manual but the exact format may depend on the operation. Checklists or processes simplify the tasks of each member during the emergency situation.

1.5.1 Language

The organisation shall ensure that all personnel are able to understand the language in which those parts of the organisation's documentation which pertain to their duties and responsibilities are written. The content of the documentation shall be presented in a form that can be used with a direct and straightforward access to critical information and instructions. It must take into account human factor principles.

The organisation shall thus establish the documentation in a common language, but also consider the (future) collaboration with other persons and organisations (e.g. contractors). This can lead to the use of different languages in different parts of the organisation's documentation (Management System). When multiple languages are used, the master version of the document needs to be clear (valid version). Updates should be reflected in every version of the document.

1.6 Emergency Response Plan Structure

The ERP includes the following:

- a table of content;
- a record of revision;
- the content as described in the chapter 1.7 of this document;
- approval and signature by the accountable manager or the safety officer.

1.6.1 Example of Record of Revisions

Record of Revisions:

<i>Edition No</i>	<i>Revision No</i>	<i>Effective as of</i>	<i>Entered by</i>	<i>Date</i>
1	0	dd.mm.yy	abc	dd.mm.yy
1	1	dd.mm.yy	abc	dd.mm.yy
1	2	dd.mm.yy	abc	dd.mm.yy
2	0	dd.mm.yy	abc	dd.mm.yy
...				

1.6.2 Example of declaration and signature

The undersigned declares, that

- Example 1: All personnel concerned understand the content and meaning of the ERP and will perform all duties in full accordance with it.
- Example 2: All personnel concerned understand in full the content relevant to them and we undertake to ensure that personnel comply with the instructions given in the ERP.

Accountable Manager:

Name: _____ Signature: _____

1.7 Emergency Response Plan Content

To be complete and meaningful, the processes and procedures defined in the ERP must provide information that answers the following questions as a minimum:

- What is the situation?
- What must be done?
- Who does it?
- How, when and where must it be done? / Which tools / forms have to be used?
- In which order?

1.7.1 Emergency Situations

At minimum, the ERP must address the following situations:

- Fly-away cases (refer to 1.7.3 for additional information);
- Complete loss of the UAV;
- Mid-air collision with another airspace user;
- Fire or explosion of a battery leading to injured people/fatalities;
- Injured people;
- Fatalities.

1.7.2 Additional note on the “fly-away” situation

Please note the following about ERP procedures in the event of a loss of containment (‘Fly-Away’)

- AMC1 to Art. 11 of regulation (EU) 2019/947 / JARUS SORA V2.0 §1.4.1 Fig.2 (‘Emergency declared to ATM’) and Annex B, section 4 (“the conditions to alert ATM”) should not be understood as formal operational requirements to define an alerting process with ATM in case of fly-away in all cases and situations.
- ERP should always be proportional to the operation’s potential secondary effects. It is expected that this covers the conditions if, when and how to alert ANSP (e.g. after exiting the operational volume and the optional air risk buffer). It is therefore the operator’s decision to establish a coordination process with ATS/ATM based on his ConOps (e.g. operations in controlled airspace, operational exposure in the vicinity of an airport environment).
- When a ConOps (incl. UAS design) complies with the requirements of enhanced containment (SORA Step#9 (c)), failure conditions leading to a loss of containment are considered remote (or less than remote), i.e. qualitatively so unlikely that it is not anticipated to occur during the entire system/operational life of the UA.
- An ERP must in any case focus on limiting the escalating effect of loss of control/crash, i.e. address the (remote to extremely remote) events of mid-air-collision and ground collision as a result of a fly-away.

1.7.3 Example for Initial Emergency Response Guidelines and Procedures

Step	Task	Responsibility	Verify/Check	Tool / Source
#	Identify the level of emergency and gravity	ERP Manager	UAS/Crew Location. Get additional first-hand information	Communication Means
#
...

1.7.4 Example for an Initial Notification of an Emergency

Step	Who / Responsibility	Means Of Notification / Forms	Notification to / Address	Time Limit
1	ERP Manager	Phone	Rega; -Phone (within CH): 1414 -Phone (abroad.): +41 333 333 333	ASAP
#
#

1.7.5 Example for Composition, Role and Contact Details of the Emergency Response Team

Order	Role	First Name / Family name	Phone No 1	Phone No 2
1	ERP Manager	Muster Emery
2	Resp. Flight Operations	Muster Opery
#

1.7.6 Occurrence Reporting for UAS in Switzerland

For unmanned aircraft, there are two different procedures in the reporting system (please adhere to those in order to avoid duplication and redundant reporting):

- Firstly, all drone operators/remote pilots are **obliged to report accidents and serious incidents immediately** to the Aviation Division of the Swiss Transportation Safety Investigation Board (STSB) **via the REGA alarm center** (tel. 1414; from abroad +41 333 333 333).
- Secondly, all drone operators/remote pilots **must report all incidents related to safety** (such as incidents in connection with failure or malfunction of the emergency systems, navigation systems or propulsion systems without damage) **to the Federal Office of Civil Aviation (FOCA)** or the reporting system of the organisation concerned **within 72 hours** (www.aviationreporting.eu).

Incidents, serious incidents and accidents involving unmanned aircraft are **exempted** from this obligation to report, **provided that no serious or fatal injury to persons is recorded and no manned aircraft are involved**.

In other words, UAS operators/pilots must report accidents and serious incidents via the REGA alarm centre (Tel. 1414 from outside Switzerland +41 333 333 333) immediately to the aviation department of the Swiss Transportation Safety Board (STSB) **and** report all safety-related incidents with serious or fatal injuries to persons or involving manned aircrafts within 72 hours to the FOCA through www.aviationreporting.eu.

In addition, **voluntary reports are possible and encouraged**, which are not covered by the mandatory reporting obligation.

Further information on what is considered an accident, serious incident or an incident can be found on the [SRM section](#) of the FOCA website. Figure 1 illustrates in a visual and simple manner the occurrence reporting requirements.

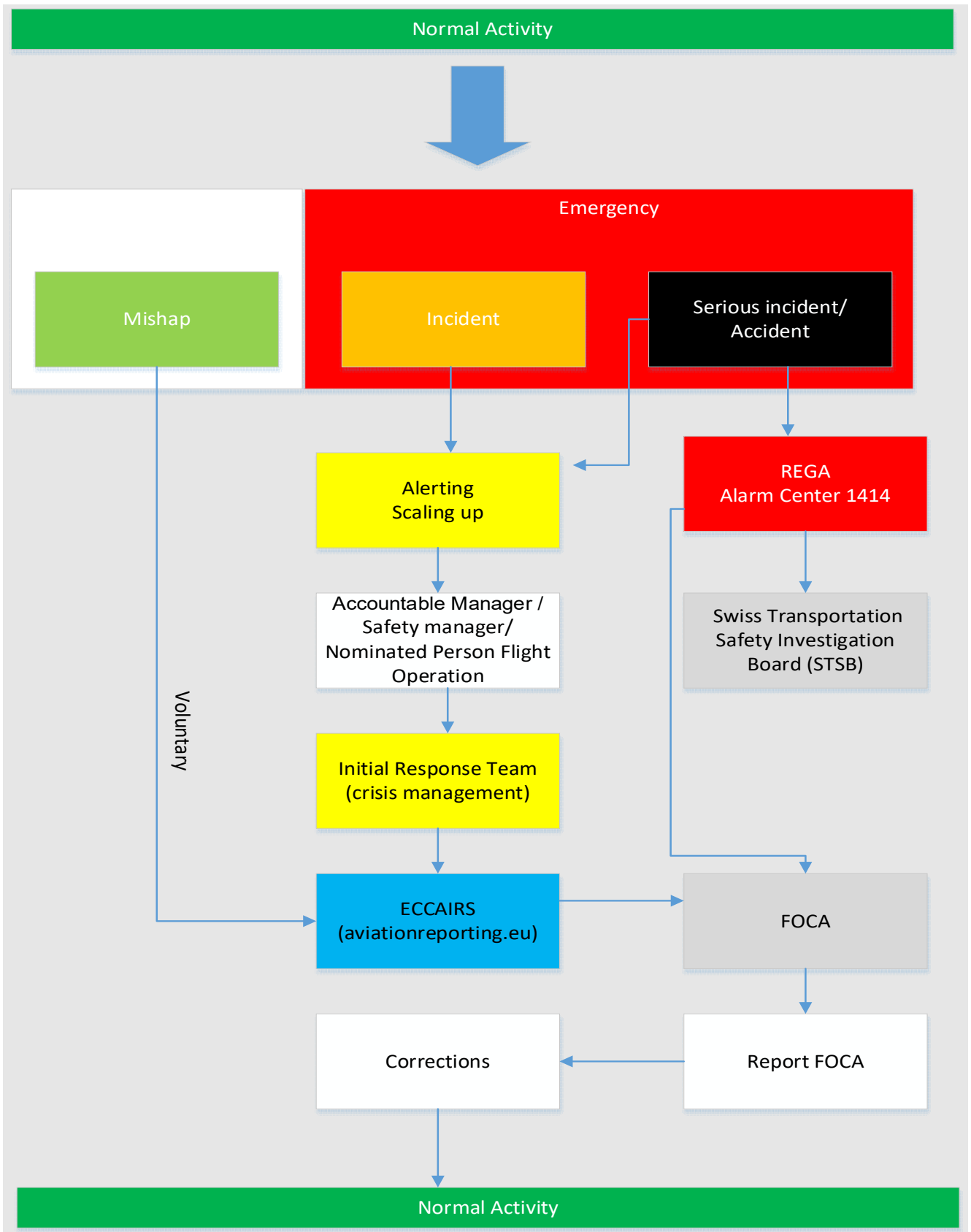


Figure 1: Announcement Process

1.8 Checklist for compliance verification and self assessment (non-exhaustive):

The following check-list items should allow you – as applicant – to define whether the drawn ERP fulfills the specifications of this Guidance Material:

- Is there a statement regarding the scope and objectives of the ERP concept?
- Is an alarm system in place to trigger the ERP?
- Does the ERP concept outline a communication and notification plan, including communication and notification to the authorities and the emergency response team?
- Are the composition, role and contact details of the emergency response team defined?
- Are the actions to be taken in an emergency by the organisation or specified individuals defined?
- Is there a documented process on how to notify the REGA Operations Centre, including phone numbers and contact details?
- Does the ERP describe a level of emergency relating to the severity of the situation?
- Does the ERP cover all possible scenarios as well as the appropriate risk mitigating measures?
- Does the use of checklists as well as the development of procedures and processes lead to a better understanding of the ERP and simplify its deployment?
- In the event of an emergency, do the team members have all the necessary resources in order to implement the ERP correctly (e.g.: crisis room, checklists, procedures, phones, phone numbers, etc.)?
- Has the ERP been validated in a representative tabletop exercise¹ consistent with the ERP training syllabus?

1.9 Additional requirements for a High Robustness Level

- The ERP and the effectiveness of the plan in limiting the number of people at risk (a reduction of 90% is expected) are validated by a competent third party.
- The applicant has coordinated and agreed the ERP with all third parties identified in the plan.
- The tabletop exercise has been validated as effective by a competent third party.

Important Note:

For the reasons mentioned in the items of §1.9 above, an ERP at high level of robustness can only be justified under extra-ordinary conditions.

A valid example of an ERP at High Robustness Level is the establishment of an order of engagement and a deployment scheme for the emergency services during an airshow.

¹**Tabletop exercises** are discussion-based sessions where team members meet in an informal, classroom setting to discuss their roles during an emergency and their responses to a particular emergency situation. A facilitator guides participants through a discussion of one or more scenarios.

2 Training of ERP

An ERP training syllabus is mandatory and must be available. The checklist / tabletop exercise must be used by the members during the training.

A record of the ERP training completed by the relevant staff is to be established and kept up to date. A refresher should take place within a timeframe defined by the organisation/operator with a maximum cycle of two years.

2.1.1 Question for compliance verification and self assessment:

- Does the ERP include a training syllabus with a tabletop exercise used by the members during the training?
- Has a record of ERP training been drawn up and kept up to date by the relevant staff?

2.1.2 Additional requirements for a High Robustness Level

- The competencies of the relevant staff are verified by a competent third party.²

3 Emergency Response Planning Service Provider

There are third-party Emergency Response Service Providers which tailor their services to an organisation's required standards and specifications. Such services may include a crisis management centre, crisis communication, media call centre, family assistance, disaster recovery services, etc.

Depending on the scope and size of the organisation, it may be advisable to outsource certain complex, time-consuming and expensive elements of emergency response (e.g. training) to a third-party service provider in order to minimise set-up, training and running costs. This recommendation is especially worth considering for small and low cycle operators. Other operators may choose to implement a fully fledged ERP. There should be a record stipulating which emergency response element is contracted to a specific service provider and under which circumstances and criteria those services are activated. The contract with the service provider shall comply with #OSO13 on external service provision.

²Entities specialised in ERP may be recognised in this context (e.g. IATA, FOCP).