SASP 2025-2027

Federal Office of Civil Aviation FOCA

Swiss Aviation Safety Plan

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Version 2.0	January 2023	Update of initial version. Change from 5- to 3- year period analogous to EPAS and GASP.
Version 3.0	January 2024	Update of previous version
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List of Abbreviations

ANS	Air Navigation Service Domain
ANSP	Air Navigation Service Provider
ATC	Air Traffic Control
ATM	Air Traffic Management
ATO	Approved Training Organisations
AVISTRAT-CH	Swiss Aviation Airspace and Infrastructure Strategy
CAT	Commercial Air Transport
CE	Critical Elements
CFIT	Controlled Flight into Terrain
EAPPRI	European Action Plan for the Prevention of Runway Incursions
EASA	European Aviation Safety Agency
EPAS	European Action Plan for Aviation Safety
ERCS	European Risk Classification Scheme
EU	Europe
FDM	Flight Data Monitoring
FOCA	Federal Office of Civil Aviation
FTL	Flight Time Limits
GA	General Aviation
GAPPRE	Global Action Plan for the Prevention of Runway Excursions
GASP	Global Aviation Safety Plan
HRCs	High Risk Categories
ICAO	International Civil Aviation Organisation
IFR	Instrument Flight Rules
IMC	Instrument Meteorological Conditions
ISMS	Information Security Management System
LFN	Low Flight Network
LOC-I	Loss of Control Inflight
MAC	Mid Air Collision
MS	Member State
MST	Member State Task
RE	Runway Excursion
RI	Runway Incursion
RMZ	Radio Mandatory Zone
RPAS	Remotely Piloted Aircraft System
SASP	Swiss Aviation Safety Plan
SMICG	Safety Management International Collaboration Group
SMS	Safety Management System
SORA	Specific Operations Risk Assessment
SPI	Safety Performance Indicator
SPT	Safety Promotion Task
SPT	Safety Performance Target
SSP	State Safety Program
UAS	Unmanned aircraft system
VFR	Visual Flight Rules

Foreword by the Director General

Switzerland is committed to further improving aviation safety and to the corresponding resourcing of activities to this end. The purpose of this national aviation safety plan is to continually reduce fatalities, and the risk thereof, by developing and adopting a national aviation safety strategy. A safe aviation system contributes to the further economic development of Switzerland and its industries. The Swiss Aviation Safety Plan (SASP) promotes the effective implementation of Switzerland's safety oversight system, a risk-based approach to managing safety and a coordinated approach to collaborations between Switzerland and other states, regions and industries. All stakeholders are urged to support and help implement the SASP as the strategy for the continuous further improvement of aviation safety.

Christian Hegner, Director General
Federal Office of Civil Aviation, 27.02.2025

1 The Swiss Aviation Safety Plan (SASP)

The Swiss Aviation Safety Plan (SASP) is the master planning document containing Switzerland's strategic direction for the management of aviation safety. It outlines the key aviation safety issues that are current in Switzerland and defines state actions to improve safety performance in connection therewith. The SASP covers a three-year period (formerly five-year period), and is updated regularly in alignment with the EASA European Plan for Aviation Safety (EPAS), the ICAO Global Aviation Safety Plan (GASP) and the European Regional Aviation Safety Plan (EUR RASP).

1.1 The SASP and the Swiss State Safety Programme (SSP)

The Swiss State Safety Programme (SSP) specifies and describes the strategy of the Swiss civil aviation safety management system. Having an effective SSP helps to identify and mitigate national operational safety risks. The SASP is a supporting document of the SSP, and outlines the implementation of the strategy proposed and how the Swiss Federal Office of Civil Aviation (FOCA) intends to meet its corresponding responsibilities.

The SSP was created on the basis of the critical elements (CEs) of the safety oversight system. ICAO Annex 19 refers to the SSP as "no longer a framework, but rather a programme to meet the State's safety management responsibilities, which includes safety oversight" [1].

The current version of the SSP (April 2023, in German, French and English) is available online on the FOCA's website [2].

On the basis of the SSP, the FOCA has issued a Safety Policy which confirms the FOCA's task of creating the framework conditions for safe and sustainable aviation in Switzerland[3].

1.2 Safety issues and goals

The SASP addresses systemic, operational and emerging safety issues. The main goal of the FOCA is to protect Swiss residents and air travellers to and from Switzerland from aviation-related incidents and accidents.

On a systemic level the SASP addresses the following topics:

- safety management system
- safety culture
- aviation cyber security.

The following operational issues are being addressed:

- airborne collision
- aircraft upset
- terrain collision
- fire, smoke and pressurisation

[1] ICAO, Safety Management Manual, Fourth Edition - 2017

[2] https://www.bazl.admin.ch/dam/bazl/en/dokumente/Fachleute/Regulationen_und_Grundlagen/state-safety-program-summary.pdf.download.pdf/Executive%20Summary%20SSP_EN_e.pdf

[3] https://www.bazl.admin.ch/dam/bazl/en/dokumente/Fachleute/Regulationen_und_Grundlagen/sicherheitspolitikdesbazl.pdf.download.pdf/sicherheitspolitikdesbazl.pdf

- security
- ground damage
- collision on runway
- runway excursion
- obstacle collision in flight
- other injuries and damages
- unmanned aircraft systems (UASs)

The emerging issues are:

- CONOPs
- Conflict zones
- Mental health
- ATM/UTM.

To address all the above issues and enhance aviation safety at the national level, the Swiss Aviation Safety Plan provides a number of safety performance indicators to monitor the safety issues, and specifies corresponding actions.

1.3 SASP and EPAS

The purpose of the EASA European Plan for Aviation Safety (EPAS) is to ensure that the principles of safety management are applied within the European aviation community to continually improve safety performance. EPAS is driven by Regulation (EU) 2018/1139, which is known as the EASA Basic Regulation, to ensure the due and full application of ICAO safety management principles that are fundamental to the continuous improvement of civil aviation safety[4].

EPAS serves as the basis for the SASP, and contains actions that have subsequently been adopted in the SASP. Switzerland fulfils its member state duties here by updating a yearly EPAS questionnaire.

1.4 Operational context

There are 13 airports[5] in Switzerland including two international, 46 airfields including one water aerodrome and 24 heliports. Swiss airspace is classified into Classes C, D, E and G. There were an average of 1,285,189 movements per year over the 2017 to 2023 period. There are currently 43 air operator certificates (AOCs) issued by the FOCA. Of these AOC holders, 21 conduct international commercial air transport operations with complex airplanes [6] and 22[7] are helicopter operators. The operational challenges in Switzerland include the complexity of Swiss airspace and the country's mountainous terrain.

[4] The difference between EPAS, SPAS and SMS | EASA (europa.eu)

[5] Eight aerodromes are ICAO-certified and five aerodromes are EASA-certified.

[6] List of AOC holders airplanes (02.06.2023)

[7] List of all helicopter operators supervised by the FOCA (15.05.2024)

1.5 Content and structure

The SASP comprises 5 chapters and 2 annexes.

Chapter 1: Overview of the SASP and its integration into the safety environment

Chapters 2-4: Safety issues (systemic, operational, emerging)

Annex A: State actions related to the objectives of each key risk area outlined in chapters 2-54

1.6 Development, implementation and monitoring

The responsibility for developing, implementing and monitoring the SASP rests with the FOCA. Implementation of actions may also lie with the industry.

The FOCA's Safety and Risk Management (SRM) section coordinates with its focal points to update and finalize the SASP document. A new process was developed in 2022 and used for the first time for the SASP 2023 – 2026 version, the process was further developed starting with the SASP 2025 – 2027 version. The SRM section updates the main SASP document every three years based on occurrence reports, development of safety performance indicators and more in close collaboration with the relevant divisions. The developments of the safety performance indicators are used as basis for discussing fields of actions for the next year. The definition of new FOCA Actions is mainly done within the sections. The document including the annex are finalized by SRM by the end of the year and formally passed and released for publication by January.

The Federal Government expects to face a tight financial situation in the following years. As a result, various flexibilization measures are planned that could have an impact on the number of positions at the FOCA, though it will be ensured that positions with a direct safety impact will continue to be filled. The FOCA's new strategy will use a risk and performance-based approach to reflect the FOCA's priorities for the coming years .

To ensure it continuous monitoring, the SASP is supported by the FOCA's Annual Safety Report (ASR) amongst other data analysis documents. The ASR includes dedicated top safety issues that focus on the various operational domains in Switzerland. SRM analyses possible causal and contributing factors that lead to negative trends over a defined time period. This knowledge initiates further discussion and triggers potential actions stated in the SASP.

2 Systemic safety issues

Systemic safety issues are system-wide problems that affect aviation as a whole and play a role in accidents and incidents. As they underlie operational issues, improvements in these can have an implicit effect on operational causes[8].

This chapter covers the topics of **Safety management system** (Subchapter 2.1), **Safety culture** (Subchapter 2.2) and **Cyber security** (Subchapter 2.3).

Safety management system and **Safety culture** are mainly based on regulatory requirements such as ICAO Annex 19 (monitoring of the industry's SMSs) and Reporting Regulation EU 376/2014 (requiring the adoption of a just culture and the implementation of its reporting requirements).

The subchapters each comprise the following sections:

Applicability, which outlines who is involved or affected.

Context, which describes the international, European and national contexts of the issue.

Objectives, which specifies what we want to achieve within this key area.

Safety performance indicators, which outlines how the safety issue is being monitored.

Actions, which offers an overview of the associated actions, which are specified in Annex A.

Actions related to systemic safety issues, which are not associated with a safety issue listed can be found here: A.1.1 Miscellaneous.

2.1 Safety management system

A safety management system (SMS) is defined as a systematic approach to managing safety, including the necessary organizational structure, accountabilities, policies and procedures[9].

Applicability

- Commercial Aviation (Aeroplanes, Balloons, Helicopters)
- General Aviation (Aeroplanes, Balloons, Sailplanes, Helicopters)
- Air Navigation Services (ANS)
- Approved Training Organisations
- Aerodromes and ground handling operations
- Maintenance, Production and Design Organisations

Context

To ensure safe operations, a systematic approach to safety is essential. ICAO Annex 19 Safety Management, which has been implemented by EASA at the European level for all aviation domains, has been developed to provide guidance on managing safety at the industry as well as the state level. ICAO Annex 19 includes the safety management system (SMS) framework and mandates the implementation of an SMS for certain organisations. Over the past few years, the FOCA has compiled various documents on this topic

[8] EPAS 2016-2020, EASA

[9] Safety Management Systems (SMS) and Cabin Safety (icao.int) / ICAO Annex 19 Definitions

and distributed these industrywide. To identify blind spots or unfavourable trends FOCA started with informal technical discussions with safety managers from the industry in 2022. These technical discussions were continued in 2024.
DETEC maintains its own safety management system for internal flight operations. These activities are led by FOCA management personnel.

Objectives

The FOCA is responsible for monitoring the status of compliance with SMS requirements and the performance of the industry in SMS terms. As the entities concerned have now established safety management systems, the main focus here now lies on the effective oversight thereof.

This results in the following objectives:

- To monitor the maintenance of safety management systems by the entities required to provide these under ICAO Annex 19
- To monitor the effectiveness of the safety management systems maintained
- To ensure that the FOCA provides adequate personnel resources and training to achieve the above objectives.

Safety Performance Indicators

Measurement of SMS maturity level in accordance with R/PBO requirements and defined figures in EMPIC and internal discussions during "Ampelreporting" meetings (4 times annually).

Actions A.1.2 Safety management system

Open/in progress: FOCA.01, FOCA.02, FOCA.21.
Implemented/closed: MST.0002, MST.0026.

2.2 Safety culture

An umbrella term that encompasses just culture, reporting culture and learning culture.

Applicability

- All organisations and persons within the scope of Regulation (EU) 376/2014.

Context

To assess, maintain and further improve the safety of the aviation system, it is crucial that industry as well as individuals report safety-relevant information. The more data are available, the better weaknesses can be identified and addressed. A well-functioning safety culture consists of:

Just culture: voluntarily reporting incidents to help make the system safer, in the knowledge that such incidents will not result in punishment if the error was unintentional.

Reporting culture: maintaining a well-functioning incident reporting system within which organisations and individuals have the confidence to report safety concerns without fear of blame.

Learning culture: the entire industry can learn from reported incidents and thus achieve a better safety level.

Regulation (EU) 376/2014, which is directly applicable to Switzerland, is concerned with improving aviation safety by ensuring that relevant safety information relating to civil aviation is reported, collected, stored, protected, exchanged, disseminated and analysed.

The 'just culture' concept is currently the subject of sizeable debate in Switzerland, following multiple court rulings against air traffic controllers. Various efforts are being made to further improve the framework conditions for a just culture in Switzerland, particularly at the legislative level. The FOCA is actively working on an industry-led just culture platform, and is also striving to improve the legal basis in this regard via the Swiss Federal Department of Justice. It is foreseen that with the LFG (Luftfahrtgesetz)-Revision Just Culture should be implemented in Swiss Law and in criminal law in 2026. In summer 2024 the consultation phase has started.

Objectives

To ensure that reports from aviation professionals remain at a high level. The FOCA aims to provide an environment that supports the balance between full impunity and blame culture. Individuals should feel safe to report safety-relevant information and thereby contribute to a robust system.

To achieve these goals, the following objectives have been set:

- To ensure the effective adoption of Regulation (EU) 376/2014 in Switzerland
- To encourage the reporting of safety-relevant data
- To ensure the adoption of a just culture throughout the industry
- To measure the effectiveness of a just culture (where already implemented) in the industry
- To ensure the consistent application of just culture principles throughout the FOCA.

Safety Performance Indicators

- Number of fines issued in relation to number of incident reports
- Number of fines in which Just Culture principles were violated
- Number of ROJCA cases received by DETEC General Secretariat

Actions	A.1.3 Safety culture
Open/in progress:	FOCA.04, MST.0040, MST.0043.
Implemented/closed:	FOCA.03, MST.0025, MST.0027, MST.0042.

2.3 Aviation cyber security

Aviation cyber security may be regarded as the convergence of people, processes and technology to protect civil aviation organisations, operations, customers and passengers from information security threats.

Context

Protecting civil aviation from cyber security risks entails analysing information and communications technology (ICT) systems, information and key processes from the aviation safety and aviation security perspectives. The focus in such analyses is on the three aspects of the confidentiality, the integrity and the availability of the systems and information and on their criticality for the entire civil aviation domain.

The interconnectivity of the systems involved requires the adoption of a holistic viewpoint that considers the overall functions of and the information flows between their various elements. This horizontal and function-based approach provides the best possible basis for ensuring the effectiveness, the proportionality and the sustainability of the measures concerned. Wherever possible, the FOCA's solution approaches are based on existing processes, management systems, international standards and best practices from both the aviation and the information security domains.

The development and implementation of the corresponding measures are conducted in close and effective collaboration between the FOCA, the aviation industry, various bodies and stakeholders of the 'National Cyberstrategy (NCS).

The FOCA is in close dialogue with Switzerland's National Cyber Security Centre (NCSC), which possesses the requisite technical expertise in information security issues and can provide additional assistance in the event of an incident. Parallel to this, the necessary know-how and required personnel within the FOCA is being steadily acquired, where applicable and will be further expanded over the next few years, especially in light of the expected EASA regulation on information security management.

The FOCA also continues to expand and cultivate its international collaborations on aviation cyber security, both within Europe and worldwide. Efforts on this front have already resulted in the approval of an ICAO Standard and Recommendation in ICAO Annex 17 (which has been applicable in its present form since 2018), an ICAO Aviation Cybersecurity Strategy and a corresponding ICAO Action Plan. From a European safety perspective, the EASA regulations for information security management (EU)2022/1645 and (EU)2023/203 (Part-IS) have become effective. The FOCA played an active part in these rule-making activities, such as through its devising of the corresponding Acceptable Means of Compliance and Guidance Material and (AMC/GM). These EASA regulations have complemented the European aviation security framework which introduced cyber security requirements in Regulation (EU) 2019/1583.

Additional requirements have also been developed to enhance built-in cyber security from a certification viewpoint. These amendments – which were made in ED Decision 2020/006/R – reflect the state of the art in protecting products and equipment against cyber security threats. They are also intended to improve harmonization with the corresponding US Federal Aviation Administration (FAA) regulations.

The FOCA has been leading international efforts on cyber security in civil aviation since 2008. The ECAC's Study Group on Cyber Security in Civil Aviation (CYBER) was chaired by the FOCA from 2017 to 2022, and has performed valuable groundwork for ICAO, the EU and EASA in this field. The FOCA is also a founding member of the ICAO Secretariat Study Group on Cybersecurity (SSGC), which created the ICAO strategy and action plan mentioned above.

In January 2021, the FOCA joined the Network of Cyber Analysts group, which is linked to EASA's Data4Safety programme. The purpose of this network is to analyse information security incidents that may have an impact on aviation safety. The FOCA has committed to chairing the Analysis of Incidents & Threat

Intelligence sub-working group within this network.
With the aim of further improving cooperation and partnerships within the aviation community, the FOCA participates in the European Centre for Cybersecurity in Aviation (ECCSA) since 2021.

Focus

- Aligned cyber security policies and regulations that are relevant to the safety of civil aviation are in accordance with a performance- and risk-based functional approach.
- Integration of cyber security risk management into the existing risk management processes with a proactive approach to threat intelligence for the aviation sector.
- Increased awareness and expertise in appropriate and well-coordinated cyber security controls as a prerequisite for and an enabler of safety-critical systems and information.

Objectives

- Developing criteria to assist industry in defining criticality of aviation functions, systems and information from a holistic safety perspective.
- Providing information to organisations for implementing EASA Part-IS requirements.
- Establishing a coordinated, performance- and risk-based oversight regime to ensure information security risk protection for relevant organisations by recruiting appropriate personnel and by partnering with external contracters.
- Establishing cyber security training objectives for relevant FOCA personnel
- Achieve compliance to EASA Part-IS authority requirements as a minimum in order to enhance cyber security posture in regard to aviation safety, including the implementation of an Information Security Management System ISMS.
- Ensuring national and international coordination by
- Developing updated, appropriate and coordinated timelines and reporting processes for safety-relevant cyber attack scenarios in coordination with security and partners in the national cyber strategy
- Collaboration with EASA and other Competent Authorities with respect to a consistent oversight of organisations
- Continuing contribution to international networks and foster them. Active participation in relevant ICAO, ECAC, EU, EASA, Eurocontrol, and NCSC fora
- Preparing for a coordinated implementation of Part-IS with existing cyber security and safety regulations

Safety Performance Indicators

To be outlined here.

Actions A.1.4 Aviation cyber security

Open/in progress: FOCA.16, FOCA.17, FOCA.18

Implemented/closed: FOCA.19.

3 Operational safety issues

Operational safety issues are closely related to the events reported during operations. The relationship between this type of issue and the final outcomes or end-states can be supported by data [10].

This chapter outlines the operational safety issues that have been identified by the FOCA. The FOCA continuously monitors its safety risk areas, which were developed on the basis of ICAO's high-risk categories of occurrences (HRCs) and EASA's key risk areas. Safety-related projects are mentioned in the text and/or as actions. Further information on current projects can be found in the ASR.

This chapter is subdivided into the three subchapters 'Aeroplanes' (3.1), 'Helicopters' (3.2) and 'other' (3.3). The subchapter 'Others' (3.3) includes unmanned aircraft systems.

The two subchapters 'Aeroplanes' (3.1) and 'Helicopters' (3.2) are further divided into relevant safety issues.

The table below gives a list of the safety issues addressed and an overview of which operational safety issues are addressed in which sub-chapters:

	Aeroplanes: commercial aviation	Aeroplanes: general aviation	Helicopters: commercial and general aviation
Airborne collision	3.1.1		3.2.1
Aircraft upset	3.1.2.1	3.1.2.2	3.2.2
Terrain collision	3.1.3.1	3.1.3.2	3.2.3
Fire, smoke and pressurisation	3.1.4		-
Security	3.1.5		3.2.5
Ground damage	3.1.6		-
Collision on Runway	3.1.7		-
Runway excursion	-	3.1.8	-
Obstacle collision in flight	-		3.2.4
Other injuries and damages	-		3.2.6

Each sub-chapter comprises the following sections:

Applicability, which outlines who is involved or affected:

- commercial aviation (aeroplanes, balloons, helicopters)
- general aviation (aeroplanes, balloons, sailplanes, helicopters)
- air navigation services (ANS)
- approved training organisations
- aerodromes and ground handling operations
- maintenance, production and design organisations.

Context, which describes the international, European and national contexts of the issue.

Focus, which describes Switzerland's focus within this key area over the duration of this plan.

[10] EPAS 2012-2015, EASA

Contributing factors, which details factors that have a contributory impact on the issue.

Objectives, which specifies what we want to achieve within this key area (based on our context and focus).

Safety performance indicators (SPIs), which outlines how the safety issue is monitored and how improvements therein are measured.

Actions, which provides an overview of the associated actions specified in Annex A.

Actions related to operational safety issues, which are not associated with a safety issue listed can be found here: A.2.1 Miscellaneous.

3.1 Operational safety issues: aeroplanes

This includes airproxes and occurrences that can lead to an airborne collision, as well as resolution advisories from collision warning systems and airborne collisions itself. Any type of airborne conflict is considered, regardless of aircraft type and airspace (excluding RPAS, birds and wildlife).

Applicability

- Commercial Aviation (Aeroplane, Balloon)
- General Aviation (Aeroplane, Balloon, Sailplane)
- Air Navigation Services

Context

EASA analyses have identified airborne collision as a Priority 2 key risk area in operational safety in General Aviation (GA). EASA's safety data indicates that airborne collision risks affect mostly pilots of smaller aircraft regardless of experience and phase of flight. However, all of them with fatal consequences involved uncontrolled flights typically in daylight and in good meteorological conditions. A collision is more likely where traffic is congested. That occurs usually close to aerodromes or along the borders of controlled or restricted airspace structures.

Airborne collision is thus considered to pose a higher risk than Runway excursions (KRA Priority 3) but a lower risk than Aircraft upset (KRA Priority 1)[11] in General Aviation.

EASA is further committed to ensuring the interoperability of different iConspicuity[12] devices, to improve the visibility of non-certified traffic warning systems.

Focus

- Focus 1: Ineffective deconfliction of flights adhering to instrument flight rules (IFR) and visual flight rules (VFR) where VFR flights are not subject to ATC clearance and no IFR-VFR separation is provided by ATC, such situations may result in airborne conflicts and collisions.
- Focus 2: improving airspace knowledge and situational awareness in Class D, E, and G airspace for all parties involved.

[11] EASA ASR 2024

[12] *i*Conspicuity* (or inflight electronic conspicuity plus) is the inflight capability to transmit the position of an aircraft and/or to receive, process and display the positions of other aircraft in real time with the objective of enhancing pilots' situational awareness about surrounding traffic. It is an umbrella term for a range of technologies and solutions, airborne and on the ground, that can help airspace users and other stakeholders to be more aware of other aircraft in their vicinity or in a given airspace.

Contributing Factors

- Factor 1: inadequate flight planning and preparation by flight crew
- Factor 2: airspace infringements.

Objectives

- Objective 1: As it is not possible to fully resolve the issue of mixed IFR/VFR traffic within FIR Switzerland, 'hotspots' which hold particular potential for airborne collisions owing to mixed IFR/VFR traffic should be constantly monitored and the risk assessments regularly reviewed. On the basis of this risk assessment and a subsequent risk mitigation assessment, possible mitigating actions should be implemented to reduce the numbers of situations that could develop into an airborne collision.
- Objective 2: Improve flight crew discipline in the VFR field. Airspace infringements are not a 'minor offence'.

Safety Performance Indicators

- Number of airborne conflicts and collisions (without RPAS)
- Number of triggered resolution advisory warnings
- Number of Separation Minima Infringements
- Airborne conflicts with military aircraft involved
- Airborne conflicts between IFR and VFR traffic
- Inadequate flight planning and preparation by the flight crew.

Actions A.2.2 Airborne collision

Open/in progress: FOCA.07, FOCA.08, FOCA.22, FOCA.23, MST.0024.
Implemented/closed: FOCA.06, FOCA.20, MST.0030, MST.0038.

An aircraft upset is an undesired aircraft state which is characterized by unintentional divergences from parameters normally experienced during operations and which might ultimately lead to an uncontrolled impact with terrain[13].

This chapter is subdivided into Commercial aviation (3.1.2.1) and General aviation (3.1.2.2).

3.1.1 Aircraft upset: commercial aviation

Applicability

- Commercial aviation (aeroplanes)
- Air navigation services
- Aerodromes and ground handling operations
- Maintenance, production and design organisations.

Context

LOC-I has been identified by ICAO as a top risk in the 2020-2022 edition of its Global Aviation Safety Plan. These accidents often have catastrophic results with very few (if any) survivors. Many of their contributing factors can be categorized as aeroplane systems-induced, environmentally induced, pilot/human-induced

[13] EPAS 2021-2025, EASA

or any combination thereof. Of the three, pilot-induced factors are the most frequently identified cause of LOC-I accidents.

EASA identifies aircraft upset or loss of control as a key risk area ranking third-highest in terms of its cumulative risk score (see ASR 2021) with regard to fatal accidents in CAT operations with aeroplanes. This includes all occurrences involving an actual or potential loss of control inflight, which includes situations where unintended deviations from the flight path have occurred. It covers only occurrences during the airborne phase of flight, which may also occur as a result of a deliberate manoeuvre. It further includes occurrences involving configuring the aircraft (e.g., flaps, slats, on-board systems etc.), the handling of technical failures, fatigue of the flight crew and inflight icing.

For Switzerland, the commercial air transport aeroplane accidents of Halifax (1998) and Nassenwil (2000) and the recent Ju-Air accident in 2018 are examples from this category.

The majority of such incidents and accidents have one of the following main contributing factors: deviations from inflight parameters such as airspeed or horizontal and/or vertical flight path, or incorrect power or weight & balance calculations. Degraded or loss of aircraft power is a technical contributing factor.

Focus

LOC-I owing to failure or degraded monitoring of inflight parameters and performance:

- Deviation from vital inflight parameters
- Wrong aircraft configurations.

Aerodrome ground handling operations:

- Aircraft outside the operational mass and balance envelope
- Incorrect loading, fuelling, servicing or de-icing of aircraft

Contributing factors

- Handling of technical failures
- Aircraft configurations
- Crew resource management
- Flight crew fatigue
- Monitoring of flight parameters and automation modes
- Approach path management
- Entry of aircraft performance data
- Flight planning and preparation
- Aircraft loading and load documentation
- Aircraft servicing, fuelling and de-icing
- Fire and smoke effects
- Adverse convective weather (turbulence, hail, lightning, ice)
- Aircraft maintenance.

Objectives

- To reduce the number of exceedances of inflight parameters
- To reduce the number of degraded performance incidents.
- To reduce the number of loading-related events with the potential to negatively impact aircraft flight characteristics.

Safety performance indicators

- Flight parameter exceedances (deviations from intended airspeed, pitch, bank, roll)
- Dutytime exceedances, fatigue reports
- Stall warnings / stick shaker events.
- Fire/explosions (Technical)
- Pressurisation, conditioning and contamination
- Aircraft Maintenance, Production, Design
- Number of aircraft significantly outside the operational mass and balance envelope owing to ground loading events (Wrong baggage/cargo loading and documentation)

Actions A.2.3 Aircraft upset

Implemented/closed: MST.0003.

3.1.2 Aircraft upset: general aviation

Applicability

- General aviation (aeroplanes, sailplanes)
- Approved training organisations
- Aerodromes and ground handling operations
- Maintenance, production and design organisations.

Context

EASA analyses of general aviation sailplane operations have identified that the "attributed risk of occurrences involving a stall or a spin and resulting in a fatality or serious injury is quite high". In general aviation aeroplane operations, aircraft upset (particularly owing to a safety issue stall/spin) is a Priority 1 key risk area[14].

Strong contributing factors here are: flight planning and preparation including mass and balance calculations and weather/route planning, inflight icing, flying in mountainous areas, inadvertent flight into IMC, the experience, training and competence of individuals, inflight decision-making and planning, inappropriate control input, turbulence etc.

Within Switzerland, accidents in the general aviation sector owing to LOC-I occur predominantly in mountainous areas. The precursors to such LOC-I accidents are mainly deviations from flight parameters owing to either human performance or the loss or reduction of engine power or the contributing factors mentioned above.

[14] EASA Annual Safety Report 2021

Focus

For LOC-I owing to exceedance or degraded monitoring of inflight parameters:

- Deviation from vital inflight parameters.

For LOC-I owing to failure of or degraded performance:

- Aircraft experiencing technical failures leading to degraded power or loss of control.

Contributing factors

- Inadvertent flight into IMC
- Experience, training and competence of individuals
- Pre-flight planning and preparation
- Inflight decision-making and planning
- Handling of technical failures
- Engine system reliability (propulsion and/or fuel system malfunction).

Objectives

- To reduce the number of degraded-performance incidents
- To reduce the number of loss-of-power incidents.

Safety performance indicators

- Incorrect aircraft performance data
- Flight parameter exceedances
- Propulsion and Fuel System Malfunction

Actions **A.2.3 Aircraft upset**

Implemented/closed: FOCA.09, FOCA.10.

3.1.3 Terrain collision

A terrain collision is an occurrence in which an airborne aircraft collides with terrain without any indication that the flight crew were unable to control the aircraft prior to impact. This includes instances in which the flight crew are affected by visual illusions or a degraded visual environment[15].

This chapter is subdivided into Commercial aviation (3.1.3.1) and General aviation (3.1.3.2).

3.1.3.1 Terrain collision: commercial aviation

Applicability

- Commercial aviation (aeroplanes)
- Air navigation services.

[15] EPAS 2021 - 2025, EASA

Context

CFIT is an inflight collision with elevated or level terrain, water or an obstacle without indication of loss of control, and has been identified by ICAO as a top risk in aviation. Accidents categorized as CFIT are events in which an aircraft is flown into terrain in a controlled manner, regardless of the crew's situational awareness. CFIT accidents often have catastrophic results when they occur, with very few (if any) survivors. The requirement for aircraft to be equipped with (enhanced) ground proximity warning systems has significantly reduced the numbers of CFIT accidents.

The accidents in Weiach (1990) and Bassersdorf (2001) were the latest accidents in this category in Switzerland. The on-board installation of (enhanced) ground proximity warning systems has had a positive impact, and has reduced the numbers of such CFIT accidents to a very low level. But the issue is still monitored continuously via the safety performance indicators below.

Focus

- Arrival or departure:
  - Terrain separation deteriorating below normal requirements
- Non-precision approach (especially in instrument meteorological conditions [IMC] or at night):
  - Terrain separation deteriorating below normal requirements
- Precision approach in IMC or at night:
  - Terrain separation deteriorating below normal requirements
- IGPWS/TAWS events.

Contributing factors

- Approach path management
- Flight planning and preparation
- Experience, training and competence of flight crew
- Handling of technical failures.

Objectives

- To reduce the number of IGPWS/TAWS events
- To reduce aircraft operations below minimum vectoring altitude (MVA).

Safety performance indicators

- GPWS/TAWS events (soft and hard warnings)
- Flight crew minimum vectoring altitude (MVA) deviations
- MSAW events in combination with approaches and departures.

Actions A.2.4 Terrain collision

NIL.

3.1.4 Fire, smoke and pressurisation

A fire, smoke and pressurisation occurrence involves cases of fire, smoke, fumes or pressurisation situations that may become incompatible with human life. This includes occurrences involving fire, smoke or fumes affecting any part of an aircraft, in flight or on the ground, which is not the result of impact or malicious acts.

Applicability

- Commercial aviation (aeroplanes, balloons, helicopters)
- General aviation (aeroplanes, balloons, sailplanes, helicopters)
- Aerodromes and ground handling operations
- Maintenance, production and design organisations.

Context

Confirmed Fire on board an aircraft, especially when it is in flight, represents one of the most feared hazards in aviation. Fire in the air can ultimately lead to loss of control, either as a result of structural or control system failure, or again as a result of crew incapacitation; Fire on the ground can take hold rapidly and lead to significant casualties if evacuation and emergency response is not swift enough.

Smoke or Fumes, whether they are associated with Fire or not, can lead to passenger and crew incapacitation. Fire Smoke and Fumes | SKYbrary Aviation Safety

Fire, Smoke and Pressurisation events have been identified by EASA as one of the top ten key risk areas:

Top 10 Key Risk Areas | EASA Community (europa.eu)

EASA and other authorities conducted several studies about different aspects of this key risk area and it is included in the EPAS:

EPAS Volume III

Several EASA Studies (FACTS – Toxicity of contaminated aircraft cabin air, AVOIL and others)

EASA Annual Safety Review 2023

Focus

- Wrong loading/unloading and documentation of dangerous goods in an aircraft
- Undeclared dangerous goods in aircraft
- Incidents due to smoke, odours, vapours, fire

Contributing factors

- Electrical/Avionics system defect
- Engine & APU oil system
- Hydraulic system
- Fuel system
- Cabin/Galley equipment
- Inadequate handling and packaging of dangerous goods (DG)
- Incorrect aircraft De-/ Anti-Icing operation
- Wrong fuelling operations
- Wrong baggage/cargo loading and documentation

Objectives

- Reduce number of undeclared dangerous goods

Safety performance indicators (SPIs)

- Fire/explosions (Technical)
- Pressurisation, conditioning and contamination
- Wrong baggage/cargo loading and documentation

Actions A.2.5 Fire, smoke and pressurisation

Open/in progress: FOCA.12

3.1.5 Security

Security covers the topic of laser blinding of aircraft and their crews, e. g. by means of commercially available laser pointers, such as those used for presentations.

Applicability

- Commercial aviation (aeroplanes)
- General aviation (aeroplanes, balloons)
- Air navigation services (ANS)
- approved training organisations

Context

The dazzling of flight crews using commercially available laser pointers poses a potentially high risk to the health of pilots and other persons on board an aircraft. *"Even though it is illegal to shine a laser device at an aircraft in most countries, such errant behaviour still occurs and puts flight crews at risk of temporary or permanent blindness. It may result in pilot distraction, temporary vision impairments and, in serious cases, ocular injury. These effects may pose significant flight safety hazards in critical phases of flight during approach and landing near airports."* (Source: EPAS 2024 Edition, Vol. III, Laser illumination (SI-0046)). Apart from eye injuries, the risk of Loss of Control Inflight (LOC-I) is increased, especially in single pilot operation.

Focus

- Interference by Lasers/Beamer
- ATM Interference by Laser/Beamer

Contributing factors

- NIL

Objectives

- None at present. No direct measures possible on the part of the CAA. The use and possession of laser pointers is regulated in the Ordinance on Protection from Non-Ionizing Radiation (NISV).

Safety performance indicators (SPIs)

- Laser attack, SPI-2-LASER

Actions A.2.6 Security

NIL.

3.1.6 Ground damage

Ground damage covers damage to an aircraft induced by ground handling operations or its operation on ground on any other ground area than a runway or predesignated landing area. It includes apron management issues like (near-)collisions of aircraft with other aircraft, obstacles or vehicles while the aircraft is moving on the ground, either towed or under its own power. It does not include collisions on the runway[16].

Applicability

- Commercial aviation (aeroplanes, balloons, helicopters)
- General aviation (aeroplanes, balloons, sailplanes, helicopters)
- Aerodromes and ground handling operations.

Context

Ground damage is a global concern during operation on aerodromes. ICAO as well as EASA support efforts in this domain in order to reduce the number of events regarding this risk area. The focus is on reducing the number of damages caused to the aircraft during servicing and on the ground operation of the aircraft or vehicles in order to avoid a possible collision. For this reason, several international working groups are currently working on different regulations, whether it be for the design of aerodromes or heliports or for ground handling. Also Ground Damage, is identified as one of the 10 key risk areas in Europe since several years now[17,18].

Ground damage related events involves Swiss registered aircraft but also foreign registered aircraft on Swiss aerodromes. Predominately ground damage incidents occur within the domain of commercial avia-

[16] EASA EPAS 2018 – 2022, Regulation (EU) 2020/2034 (modified to include near-collisions)

[17] EASA EPAS 2021-2025

[18] EASA Annual Safety Report 2020 (published in 2020)

tion. In the last five years, there were no fatalities caused by a ground damage related event in Switzerland. None of the less, ground near collision events are also monitored in order to prevent possible ground collision.

Focus

- Aircraft ground operations:
  - Incorrect presence of aircraft on the aerodrome surface other than the runway in use for landing or take off
- Aerodrome ground operations:
  - Incorrect presence of person, vehicle or equipment on the aerodrome surface other than the runway in use for landing or take off
- Ground handling operations:
  - Incorrect ground handling procedure or operation leading to damage during servicing

Contributing Factors

- Apron/Taxiway incursions
- Obstacle clearance

Objectives

- To reduce the number of (near-)ground collisions between an aircraft and other aircraft, obstacles or vehicles while the aircraft is moving on the ground, either towed or under its own power.
- To reduce the number of cases of ground aircraft damage during servicing-related events.

Safety performance indicators

- Number of cases of aircraft damage caused or induced during ground handling operations (A/C damage during ground handling operations)
- Number of near-collisions and collisions on the ground (A/C movement error on the apron/ramp/taxiway [own-powered])
- Number of collisions or near-collisions of ground vehicles with aircraft (Wrong vehicle/equipment operation on the apron/ramp/taxiway)
- Number of wrong aircraft towing/pushback or marshalling operation

Actions A.2.8 Ground damage

Open/In progress: FOCA.24.

Implemented/Closed: MST.0029.

3.1.7 Collision on runway

A *collision on runway* is defined as *a collision between an aircraft and another object (other aircraft, vehicles, etc.) or person that occurs on a runway of an aerodrome or other predesignated landing area. This does not include collisions with birds or wildlife*[19].

Such accidents are very rare and ***runway incursions***, as immediate precursor, are therefore used to monitor the risk related to runway collisions. *A runway incursion is any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft*[20].

Applicability

- Commercial aviation (aeroplanes, helicopters)
- General aviation (aeroplanes, helicopters)
- Air navigation services
- Approved training organisations
- Aerodromes.

Context

ICAO has identified runway incursions as one of its high-risk categories of occurrences (HRCs). Runway incursions *produce an increased risk of collision for any aircraft occupying the runway* and *although statistically very few runway incursions result in collisions, there is a high fatality risk associated with these events*[20]. Collision on the runway is one of the ten key risk areas identified in the EPAS.

Eurocontrol has issued its European Action Plan for the Prevention of Runway Incursions (EAPPRI) in a continuing effort to combat the problem (European Action Plan for the Prevention of Runway Incursions (EAPPRI) | EUROCONTROL).

Switzerland's air navigation service provider (ANSP) and the country's national and regional airports all report events involving violations of the protected runway safety area. The majority of these events are considered to be of low severity as they involve only the persons or vehicles entering the protected areas around a runway or the runway itself. In exceptional cases, such events involve (fixed-wing CAT or NCO) aircraft entering the protected area without approval while another one is on final approach or about to land. Such exceptional cases are considered to be of high severity.

The training, experience and competence of individuals (airport staff, passengers, pilots and visitors) are a crucial factor here. Airport installations (mainly at regional airports and at former military airfields now used for civil air traffic) should be improved wherever possible (fences, signs, markings, barriers, cameras, sensors, loudspeakers, etc.). Great care must be taken at all times in communication to avoid misunderstandings - and to correct them if necessary.

[19] European Plan for Aviation Safety (EPAS) | Volume III – 2024 edition

[20] GASP 2023 - 2025, ICAO

Focus

- Runway incursions in Switzerland
- Runway incursions in Geneva
- Runway incursions in Zürich

Contributing factors

- Communication issues between ATM and crew
- Aerodrome design and layout
- Suboptimal visual check by ATC or crew (Monitoring of Environment)
- Stop bar crossing deviations

Objectives

- To reduce undetected occupied runways
- To reduce high-energy runway conflicts
- To reduce landings, take-offs or runway crossings without clearance.

Safety performance indicators

- Runway incursions

Actions A.2.9 Collision on runway

Open/In progress: FOCA.25, FOCA.26, FOCA.27.

Implemented/closed: MST.0029.

3.1.8 Runway excursion

A runway excursion is a veering or an overrun off the runway surface[21].

Applicability

- General aviation (aeroplanes, sailplanes)
- Air navigation services
- Approved training organisations
- Aerodromes and ground handling operations.

Context

GASP 2020-2022 identified runway excursion as one of its high-risk categories of occurrences. The term 'runway excursion' is a categorization of an accident or incident which occurs during either the takeoff or the landing phase. Contributing factors include unstabilized approaches, long landings, lateral control on the ground, runway condition and the influence of weather conditions. EASA analyses have concluded that runway excursions in general aviation aeroplane and sailplane operations lead to a high number of

[21] ICAO ADREP taxonomy

accidents, but still pose a lower risk than, for example, LOC-I s (which cause a lower number of accidents but pose a higher risk)[22].

To address the issue of runway excursions, Eurocontrol has launched a dedicated Global Action Plan for the Prevention of Runway Excursions (GAPPRE).

Most runway excursion accidents and incidents in Switzerland occur either at regional aerodromes or at airfields with general aviation aircraft. Compared to other accident categories, the number of runway excursions is small. But most runway excursions are categorized as accidents rather than incidents. In statistical terms, the majority of runway excursions are survivable. But the fatality risk still remains significant. The outcome of a runway excursion (e.g. whether it is survivable) depends on several factors, including the speed at which an aircraft touches down or departs from the runway end during the excursion (high-energy excursions), runway contamination and the characteristics of the aerodrome's runway-end safety area.

Focus

- Runway-end excursions (overruns)
- Runway-side excursions
- Landings beside the runway.

Contributing factors

- The experience, training and competence of individuals
- Pre-flight planning and preparation
- Inflight decision-making and planning
- Handling of technical failures
- Engine (on takeoff), brake system reliability
- Hard landings
- Deep landings
- Cross wind.

Objectives

- To reduce the number of runway overruns
- To reduce the number of runway-side excursions.

Safety performance indicators

- Abnormal runway contact.

Actions A.2.10 Runway excursion

NIL (runway safety teams).

[22] EASA Annual Safety Report 2021

3.2 Operational safety issues: helicopters

3.2.1 Airborne collision

This includes airproxes and occurrences that can lead to an airborne collision, as well as resolution advisories from collision warning systems and airborne collisions itself. Any type of airborne conflict is considered, regardless of aircraft type and airspace (excluding RPAS, birds and wildlife).

Applicability

- Commercial aviation (helicopters)
- General aviation (helicopters)
- Air navigation services.

Context

EASA analyses have identified airborne collision as a Priority 2 key risk area in operational safety in General Aviation (GA). EASA's safety data indicates that airborne collision risks affect mostly pilots of smaller aircraft regardless of experience and phase of flight. However, all of them with fatal consequences involved uncontrolled flights typically in daylight and in good meteorological conditions. A collision is more likely where traffic is congested. That occurs usually close to aerodromes or along the borders of controlled or restricted airspace structures.

Airborne collision is thus considered a lower risk than Aircraft upset (KRA Priority 1)[23] in General Aviation.

EASA is further committed to ensuring the interoperability of different iConspicuity[24] devices, to improve the visibility of non-certified traffic warning systems.

Focus

- Focus 1: Ineffective deconfliction of flights adhering to instrument flight rules (IFR) and visual flight rules (VFR) where VFR flights are not subject to ATC clearance and no IFR-VFR separation is provided by ATC, such situations may result in airborne conflicts and collisions.
- Focus 2: improving airspace knowledge and situational awareness in Class D, E, and G airspace for all parties involved.

Contributing factors

- Factor 1: inadequate flight planning and preparation by flight crew
- Factor 2: airspace infringements.

[23] EASA ASR 2024

[24] *i*Conspicuity* (or inflight electronic conspicuity plus) is the inflight capability to transmit the position of an aircraft and/or to receive, process and display the positions of other aircraft in real time with the objective of enhancing pilots' situational awareness about surrounding traffic. It is an umbrella term for a range of technologies and solutions, airborne and on the ground, that can help airspace users and other stakeholders to be more aware of other aircraft in their vicinity or in a given airspace.

Objectives

- Objective 1: As it is not possible to fully resolve the issue of mixed IFR/VFR traffic within FIR Switzerland, 'hotspots' which hold particular potential for airborne collisions owing to mixed IFR/VFR traffic should be constantly monitored and the risk assessments regularly reviewed. On the basis of this risk assessment and a subsequent risk mitigation assessment, possible mitigating actions should be implemented to reduce the numbers of situations that could develop into an airborne collision.
- Objective 2: Improve flight crew discipline in the VFR field. Airspace infringements are not a 'minor' offence.

Safety performance indicators

- Number of airborne conflicts and collisions (without RPAS)
- Number of triggered resolution advisory warnings
- Number of Separation Minima Infringements
- Airborne conflicts with military aircraft involved
- Airborne conflicts between IFR and VFR traffic
- Inadequate flight planning and preparation by the flight crew.

Actions A.2.2 Airborne collision

Open/in progress: FOCA.07, FOCA.08, MST.0024.
Implemented/closed: FOCA.06, MST.0030, MST.0038.

3.2.2 Aircraft upset

An aircraft upset is an undesired aircraft state which is characterized by unintentional divergences from parameters normally experienced during operations and which might ultimately lead to an uncontrolled impact with terrain[25].

Applicability

- Commercial aviation (helicopters)
- General aviation (helicopters)
- Air navigation services
- Approved training organisations
- Maintenance, production and design organisations.

Context

LOC-I has been identified by EASA as a Priority 1 key risk area, with safety issues such as flight path management, systems reliability, perception and situational awareness, the experience, training and competence of individuals and obstacle see and avoid. ICAO also classifies LOC-I as a high-risk category of occurrence (HRC) in its Global Aviation Safety Plan (GASP; ICAO Doc 10004).

At the Swiss national level, precursors to LOC-I accidents predominantly occur in helicopter CAT (HEMS) operations and during flight instruction. When a general aviation helicopter is involved in a precursor to an LOC-I, this usually involves a deviation from flight parameters such as too-high or too-low engine and rotor

[25] EPAS 2021-2025, EASA

speed. It should be noted, however, that the data set for helicopter operations in general (regardless of operation type) is very small.

Focus

- Helicopter torque exceedance
- Helicopter RPM exceedance.

In view of the very small data set available, it is difficult to select a specific focus. But both the safety issues listed above regularly appear.

Contributing factors

- Perception and situational awareness
- Decision-making and planning
- Flight path management
- Experience, training and competence of individuals.

Objectives

- To increase safety by continuously monitoring trends and by assessing and improving risk controls for the above-mentioned safety areas.

Safety performance indicators

- Helicopter torque exceedance
- Helicopter RPM exceedance.
-

Actions A.2.3 Aircraft upset

Implemented/closed: MST.0015.

3.2.3 Terrain collision

A terrain collision is an occurrence in which an airborne aircraft collides with terrain without any indication that the flight crew were unable to control the aircraft prior to impact. This includes instances in which the flight crew are affected by visual illusions or a degraded visual environment[26].

Applicability

- Commercial aviation (helicopters)
- General aviation (helicopters)
- Air navigation services.

[26] EPAS 2021 - 2025, EASA

Context

CFIT has been identified by EASA as a Priority 3 key risk area, with safety issues such as helicopter obstacle see and avoid and perception and situational awareness. ICAO also classifies the CFIT category as a high-risk category of occurrence (HRC) in its Global Aviation Safety Plan (GASP; ICAO Doc 10004).

Terrain collision incidents predominantly occur in commercial helicopter operations (HEMS and SPO). When a helicopter is involved in a terrain collision, this is usually a matter of aircraft handling, personnel decision-making, personnel attention and vigilance and/or misjudgement. It should be noted, however, that the data set for helicopter operations in general (regardless of operation type) is very small.

Focus

- Collision with cable or wire
- Rotor strike.

In view of the potentially serious consequences of terrain collision incidents, and based on the small data set available, the FOCA will put its focus in the next five years on collisions with cables or wires and on rotor strikes.

Contributing factors

- Perception and situational awareness
- Decision-making and planning
- Helicopter obstacle see and avoid
- Flight path management.

Objectives

- To increase safety by continuously monitoring trends and by assessing and improving risk controls for the above-mentioned safety areas.

Safety performance indicators

- Collisions with cables or wires
- Rotor strikes.

Actions A.2.4 Terrain collision

Open/in progress: FOCA.13

Implemented/closed: MST.0031.

3.2.4 Obstacle collision in flight

Collision between an airborne aircraft and obstacles raising from the surface of the earth. Obstacles include such things as tall buildings, trees, power cables, telegraph wires and antennae as well as tethered objects. (Source: EPAS Edition 2024, Vol. III)

Applicability

- Commercial aviation, incl. SPO (helicopters)
- General aviation (helicopters)
- Approved training organisations

Context

One of the greatest risks for helicopter flying is posed by cables and wires, as helicopters often operate close to the ground due to the tasks they perform (e. g. aerial work – SPO, landings away from airfields during training and rescue missions). Due to the risk potential and a number of accidents, the FOCA carried out a detailed risk assessment in 2022. The risk assessment showed that the risk is at an acceptable level. Nevertheless, this issue remains under close observation.

Focus

- Collision with Cable/Wire

Contributing factors

- Up-to-dateness of the obstacle database and the associated tools (charts, FLARM etc.)
- Accuracy of the obstacle database
- Light conditions
- Marking of the cables
- Choice of landing sites

Objectives

- Reduce the number of collisions with cables and wires.

Safety performance indicators (SPIs)

- Collision with cable or wire, SPI-2-CABLEWIRECOLL

Actions A.2.7 Obstacle collision in flight

NIL.

3.2.5 Security

Security covers the topic of laser blinding of helicopters and their crews, e. g. by means of commercially available laser pointers, such as those used for presentations.

Applicability

- Commercial aviation (helicopters)
- General aviation (helicopters)
- Approved training organisations

Context

The dazzling of flight crews using commercially available laser pointers poses a potentially high risk to the health of pilots and other persons on board an aircraft. *"Even though it is illegal to shine a laser device at an aircraft in most countries, such errant behaviour still occurs and puts flight crews at risk of temporary or permanent blindness. It may result in pilot distraction, temporary vision impairments and, in serious cases, ocular injury. These effects may pose significant flight safety hazards in critical phases of flight during approach and landing near airports."* (Source: EPAS 2024 Edition, Vol. III, Laser illumination (SI-0046)). Apart from eye injuries, the risk of Loss of Control Inflight (LOC-I) is increased, especially in single pilot operation.

Focus

- Interference by Lasers/Beamer

Contributing factors

- NIL

Objectives

- None at present. No direct measures possible on the part of the CAA. The use and possession of laser pointers is regulated in the Ordinance on Protection from Non-Ionizing Radiation (NISV).

Safety performance indicators (SPIs)

- Laser attack, SPI-2-LASER

Actions A.2.6 Security

NIL.

3.2.6 Other injuries and damages

Incidents where fatal or non-fatal injuries have been inflicted or damages occurred. Used in the context of sling load operation and hoist missions in the helicopter domain.

Applicability

- Specialized operations (SPO) (helicopters)

Context

Helicopter flying with external sling loads require special precautions to be taken if both the helicopter crew and third parties are to be protected from undue risk. Despite all precautionary measures, it is still possible for crew members on ground to be injured during sling load or during hoist missions.
The EPAS Version 2024, Vol. III contains two safety issues on the subject of sling load and hoist operations, which are of a general nature (External-sling-load-operations-related issues (SI-8038) and Hoist-operations-*related issues (SI-8037)*). Nevertheless, they include the topic dealt with here in the broadest sense.

Focus

- Loss of load
- Cargo hook opening, strop disruption
- Load release
- Injuries due to Hoist/Sling Operations

Contributing factors

- Load preparation
- Condition/design of cargo hook and cargo sling
- Weather conditions

Objectives

- Reduce the number of injuries and damages during sling load operation
- Reduce the number of injuries during hoist missions

Safety performance indicators (SPIs)

- Loss of sling load, SPI-2-SLINGLOADLOSS
- Spontaneous cargo hook opening, strop disruption, SPI-2-CARGOHOOK
- Injuries due to sling load operations, SPI-2-SLINGLOADINJ

Actions	A.2.11 Other injuries and damages
Open/in progress:	FOCA.28

3.3 Operational safety issues: other

3.3.1 Unmanned aircraft systems (UASs)

An unmanned aircraft system (UAS) is defined as an unmanned aircraft and the equipment to control it remotely[27].

[27] Regulation (EU) 2018/1139

Context

The operation of UASs generates an increased safety risk in Swiss airspace. EASA stated in its 2023 Annual Safety Review that close encounters or collisions in lower airspace involving drones are increasingly coming into focus, especially as UASs become more widely available to the general public[28]. Since June 2022, over 80,000 Swiss drone pilots have registered. There is particularly heavy drone traffic in the airspace area of Zurich, Geneva, Lausanne, and Berne[29]. The FOCA is implementing various measures to mitigate the risk of collisions between UASs and other airspace users in lower airspace, and to ensure a high level of safety in Swiss airspace, particularly in areas with increased UASs traffic. These measures include:

- Mandatory registration for all UAS pilots in Switzerland through the official registration portal.
- Mandatory online training and examination for most of the pilots.
- Remote identification of certain UASs and complex UAS operations.
- Introduction and publication of UAS geographical zones (restricted flight areas) where UAS operations are either limited or prohibited.
- Introduction of class markings for UASs. Manufacturers are required to classify new UASs brought on the market. This classification, along with the CE-marking, confirms that the UAS meets the applicable minimum product safety standards.

These measures are outlined in the EU drone regulation, which consists of Delegated Act (EU) 2019/945 and Implementing Act (EU) 2019/947, and came into effect in Switzerland as of 1st January 2023

The FOCA is influential in the further development of the SORA (Specific Operations Risk Assessment) methodology which has been adopted by the EU to analyse, evaluate and approve complex drone operations such as heavy drone operations for the transport of goods or flights beyond visual line of sight (BVLOS).

Furthermore, the FOCA is creating the framework conditions for the introduction of the digital U-space infrastructure in highly frequented airspace areas in Switzerland (AVISTRAT-CH, UI-14 "Designing the Infrastructure for Unmanned Aviation"). The term "U-space" refers to a digital, decentralized, and automated infrastructure that facilitates the exchange of information and data between airspace users in designated airspace areas in Switzerland. The U-space infrastructure simplifies coordination and provides UAS operators with a good overview of the airspace by allowing safety-related information to be received and exchanged. This information exchange is based on international compatible, open-source standards to ensure the interoperability of all users of the infrastructure. The FOCA is actively involved in these standardization processes. It has also become a member of the Linux Foundation, which supports the development of standards-compliant, open-source implementations that facilitate the communication in the U-Space environment.

The U-space regulatory package consists of the three Implementing Regulations (EU) 2021/664, (EU) 2021/665, and (EU) 2021/666. It is applicable in Switzerland and in the EU since 26th January 2023. The FOCA, in collaboration with cantonal authorities and relevant stakeholders, is coordinating the introduction of the U-Space infrastructure in the Zurich airspace. In parallel, the FOCA is preparing the necessary work for the introduction of the digital U-Space infrastructure in other heavily frequented airspace areas (controlled and uncontrolled airspace) in Switzerland and allow for preparations to be made for the large-scale iConspicuity of all airspace users by the use of international compatible, standardised, and affordable systems (AVISTRAT-CH, SI-2-4 "Designing the Infrastructure for Unmanned Aviation")

[28] *EASA Annual Safety Review 2023, p. 122.*

[29] Swiss Drone Industry Report 2024, p. 11.

Focus

- Further development of the SORA methodology in multilateral bodies
- Further development of international compatible and open standards
- Implementation of U-space infrastructure in airspace areas with high amount of air traffic in controlled (i.e. Zurich) and uncontrolled airspace
- Support the utilization, interoperability compatibility of digital data in aviation by creating the necessary competences and harmonized interfaces

Objectives

To adopt and maintain a risk-based approach to the regulation of UASs (including the authorization of complex UAS operations) and ensure the integration of UASs into the existing airspace system while maintaining the high level of safety in Swiss airspace.

Safety Performance Indicators

To be outlined here.

Actions A.2.12 Unmanned aircraft systems

Open/in progress: FOCA.15.
Implemented/closed: FOCA.14.

4 Emerging safety issues

Emerging safety issues include concepts for operations, technologies, public policies, business models or ideas that might impact safety in the future, but for which insufficient data currently exist to complete typical data-driven analyses [30].

The following emerging topics are being closely monitored by FOCA:

CONOPs: Due to the ongoing developments in technology, automation and autonomous unmanned aircraft, there is an interest and desire to explore whether it is feasible to operate commercial air transport (CAT) with reduced flight crews in large aeroplanes. This feasibility is considered from both the safety as well as efficiency perspectives. EASA was approached by aircraft manufacturers regarding the regulatory and safety aspects of such new concept of operations (CONOPs). Two specific CONOPs were identified:

- Extended Minimum-Crew Operations (eMCOs) are defined as operations where the flight time is extended by means of rest in flight with the minimum flight crew. It is achieved by allowing operations with one pilot at the controls, during the cruise flight phase; however, offering an equivalent overall level of safety through compensation means (e.g. ground assistance, advanced cockpit design with workload alleviation means, pilot incapacitation detection, etc.). It is, in particular, relevant to large aeroplanes operated in CAT operations, for which no fewer than two flight crew members are currently required as per the Air Operations Regulation.
- Single-Pilot Operations (SiPOs) are defined as end-to-end single-pilot operations. Annex III (PART-ORO) 'Organisation requirements for air operations' to the Air Operations Regulation already foresees conditions and limitations under which these types of operations are allowed. In the future, it is expected that these conditions and limitations will need to evolve in order to extend single-pilot operations to large aeroplanes, provided that compensation means (e.g. ground assistance, advanced cockpit design with workload alleviation means, capability to cope with pilot incapacitation, etc.) are in place in order to provide for an overall level of safety equivalent to today's two-pilot operations.

Conflict Zones: The number of regions and countries worldwide in which active conflicts exist or can flare up at short notice is currently high. The risk for global civil aviation of becoming the target of a deliberate terrorist attack or (in relation to civil aviation) unintentional attack due to a militant act on the ground or in the air is concerning. According to ICAO's Manual 10084, conflict zones are defined as airspaces over areas where an armed conflict between militarised parties is taking place or is likely to take place. They also include airspaces over areas where these parties are in a heightened state of military alert or tension that could endanger civil aircraft[31]. Conflict zones therefore have a massive influence on civil aviation, both from a safety and security perspective, and require close coordination between these areas. In this context, communication, coordination and cooperation between the Swiss civil air carriers and various responsible federal authorities such as the FOCA, the Federal Intelligence Service (FIS), the Federal Police (fedpol) and the Federal Department for Foreign Affairs (FDFA) but also with other States and international organisations such as ICAO and the EU is essential to ensure that Swiss civil air carriers can operate safely but also that Swiss citizens in critical areas can be reparteed quickly and humanitarian aid can be provided as safe as possible. Well-known examples affecting civil aviation operations are, on the one hand, the takeover of power by the Taliban in Afghanistan in 2021 and the current escalation of conflicts in Sudan. On the other hand, the ongoing war in Ukraine: Russia's invasion of Ukraine is affecting numerous areas, including civil aviation. The Federal Council is monitoring the situation closely and is taking the necessary measures by adopting restrictions. Switzerland is mainly referring to the restrictive measures taken by EU. EASA provides further information on how to implement those restrictive measures when relating to the rights and obligations of the aviation undertakings and people under the aviation safety rules falling under the scope

[30] GASP 2020-2022, ICAO

[31] ICAO Doc 10084 «Risk Assessment Manual for Civil Aircraft Operations Over or Near Conflict Zones", Second Edition, 2018, p. xiii.

of Regulation (EU) 2018/1139, for example regarding maintenance, crew licences and operations. EASA also took concrete actions in implementation of the European Union's restrictive measures against Russia, with regard to EASA applicants and certificate holders. FOCA is in contact with EU and EASA representative regarding those measures.

Mental health in aviation is a major concern among airlines, regulators, and passengers. This topic gained more attention after the 2015 Germanwings accident, which was deliberately caused by the plane's copilot. Little data exists on mental health in aviation, but steps to gather relevant information and provide better solutions are underway.

ATM/UTM: lack of integration between UTM and ATC systems is constraining the scale up of actual drone applications. The first step for deploying large-scale drone-based operations must be based on assuring safety by integrating UTM and ATM information providing situational awareness for all users involved. Interoperability is key for the success of ATM and UTM integration, using safe and secure technologies and standards to enable drone operations in all airspace classes. FOCA is working on that important issue and will continue work in 2024.

5G interferences: Deleted form the emerging safety issues with the SASP 2025 – 2027 edition, as there are currently no issues with 5G interferences in Europe.

ANNEX A:
ACTIONS 2025

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Bundesamt für Zivilluftfahrt BAZL
Office fédéral de l'aviation civile OFAC
Ufficio federale dell'aviazione civile UFAC
Federal Office of Civil Aviation FOCA

Annex A: Actions 2025

Annex A comprises the actions related to the safety issues outlined in the SASP.

There are various types of such actions:

FOCA actions: these are actions developed by the FOCA to address the objectives stated.

EPAS MSTs: these are the Member State Tasks (MSTs) specified in the European Plan for Aviation Safety (EPAS). These MSTs are listed in abbreviated form. The detailed actions will be found in the current version of the EPAS.

Actions from other plans: if other plans tackle a specific safety issue, these plans are mentioned in the corresponding sub-chapter.

The actions listed can have one of four statuses:

New (not started): the task has not yet been started with.

In progress: the task has been started but is not yet finished.

Implemented: the task is a continuous task for which a process is in place.

Closed: a task is classified as 'closed' if:
(1) it has been completed or
(2) it is not being implemented at all (in which case the reason for this will be stated beside the status).

This annex is updated on a yearly basis.

Stay Safe platform

To reach general aviation pilots, FOCA has launched its Stay Safe platform on social media with the aim of addressing common safety issues within general aviation. Stay Safe offers the pilot community the opportunity to inform themselves on safety topics and to share and exchange information. The platform's content is compiled by a mixed team of specialists within the FOCA.

A.1 Systemic safety issues

A.1.1 Miscellaneous

FOCA actions

NIL

EPAS MSTs (open/in progress)

MST.0001: Member States to give priority to the work on SSPs

Objective	In the implementation and maintenance of the SSP, Member States shall include particular topics (list available in EPAS).
Deliverable	• SSP document made available • SSP effectively implemented
Due Date	• 2021 (closed) • 2025
Status	In progress (for deliverable 2)

MST.0028: Member States to establish and maintain a State Plan for Aviation Safety

Objective	Member States shall ensure that a SPAS is maintained and regularly reviewed.
Deliverable	• SPAS established • SPAS reviewed i.a.w. EPAS Vol II 2023 edition • SPAS reviewed i.a.w. EPAS Vol. II 2024 edition
Due Date	• 2021 Q4 • 2024 Q1 • 2025 Q1
Status	Implemented. The process for maintaining and reviewing the SASP has been established and is working.

MST.0037: Foster a common understanding and oversight of Human Factors

Objective	The task includes some preparatory activities which will be performed by EASA with the support of the Human Factor Collaborative Analysis Group (HF CAG)
Deliverable	Implementation of the human factors competency framework
Due Date	2024-Q4
Status	New (not started). Waiting for guidance and tools.

EPAS MSTs (implemented/closed)	
MST.0019: Better understanding of operators' governance structure	
Objective	Member States' Cas should foster a thorough understanding of operators' governance structure. This should in particular apply in the area of group operations.
Deliverable	Guidance material from EASA
Due Date	2022 Q2 / 2023
Status	Closed. Addressed with various effective certification and oversight processes, directives activities and undertakings.

A.1.1 Miscellaneous (continued)

MST.0032: Oversight capabilities/focus areas

Objective	• Availability of adequate personnel in Cas • Cooperative oversight in all sectors • Organisations management system in all sectors
Deliverable	SPAS established
Due Date	2021 Q4
Status	Closed

MST.0033: Language proficiency requirements – share best practices, to identify areas for improvement for the uniform and harmonised language proficiency requirement implementation

Objective	Member States should provide feedback to EASA on how the LPRI takes place, including that ATOs deliver training in English, for the purpose of harmonisation and uniform implementation.
Deliverable	Feedback on the implementation status
Due Date	Continuous
Status	Closed. Overridden by politics.

MST.0035: Oversight capabilities/focus area: fraud cases in Part-147

Objective	Member States should focus on the risk of fraud in examinations, including by adding specific items in audit checklists and collecting data on the actual cases of fraud. They may exchange and share information as part of collaborative oversight.
Deliverable	Feedback on the implementation status
Due Date	Continuous
Status	Closed

MST.0039: Safety promotion to support ramp-up / safe return to operations

Objective	Member States should manage a dedicated safety promotion campaign in support of safe ramp-up / return to operations, making use of the safety promotion campaigns and deliverables provided by EASA.
Deliverable	Guidance/training material/best practices
Due Date	2021/2022
Status	Closed

MST.0036: PPL/LAPL learning objectives in the Meteorological Information part of the PPL/LAPL syllabus

Objective	Member States should develop proportionate learning objectives in the 'Meteorological Information' part of the PPL/LAPL syllabus.
Deliverable	Learning objectives, with related question bank
Due Date	2022 Q4
Status	Closed. FOCA uses the EASA syllabus. Meteorological Information is being tested as part of the PPL/LAPL syllabus.

A.1.1 Miscellaneous (continued)

MST.0041: Harmonisation in Helicopter AOC approvals, procedures and documents

Objective	Member States should harmonise and, to the extent possible, simplify the application processes in the area of commercial operations with helicopters, including the use of common application forms and compliance lists
Deliverable	Different Papers
Due Date	2023 – 2024
Status	Closed

A.1.2 Safety management system

FOCA actions (open/in progress)

FOCA.02: Risk & Performance Based Oversight (R/PBO)

Objective	Implement risk and performance based oversight. • Meeting regulatory requirements • Improved used of existing resources The oversight programme shall be developed taking into account • the specific nature of the organisation, • the complexity of its activities, • the results of past certification and/or oversight activities, and shall be based on the assessment of associated risks
Deliverable	Office-wide elicitation and operationalisation • RBO POA in EMPIC • RBO AMO CAMO in EMPIC • RBO AOC in EMPIC
Due Date	• 2024 • Q2/2025 • tbd
Status	1) Closed 2) + 3) In progress

FOCA.21: Informal technical discussions with safety managers

Objective	Perform informal technical discussions with safety managers from the industry to identify blind spots or unfavourable trends.
Deliverable	Inputs from informal technical discussions
Due Date	Ongoing
Status	In progress. Next discussions planned for 2025.

FOCA actions (implemented/closed)

FOCA.01: SMS Maturity Level

Objective	Assess SMS indicator
Deliverable	SMS indicators
Due Date	Continuous
Status	Implemented

A.1.2 Safety management system (continued)	
EPAS MSTs (implemented/closed)	
MST.0002: Promotion of SMS	
Objective	Member States should encourage implementation of safety promotion material developed by the European Safety Promotion Network, the SMICG and other relevant sources of information on the subject of safety management.
Deliverable	Guidance/training material/best practices
Due Date	Continuous
Status	Implemented. There are effective mechanisms in place.
MST.0026: SMS Assessment	
Objective	Without prejudice to any obligations stemming from the SES ATM Performance Scheme, Member States should make use of the EASA management system assessment tool to support risk- and performance-based oversight. Member States should provide feedback to EASA on how the tool is used for the purpose of standardisation and continual improvement of the assessment tool.
Deliverable	• Feedback on the use of the tool • Feedback on the status of SMS compliance and performance
Due Date	Continuous with bi-annual reporting (April/October)
Status	Closed

A.1.3 Safety culture

FOCA actions (open/in progress)

FOCA.04: FOCA Safety Culture Workshops

Objective	Conduct Safety Culture workshops in the 3 Safety Departments of the FOCA
Deliverable	Workshop
Due Date	2025
Status	Open/in progress

FOCA actions (implemented/closed)

FOCA.03: Assessment of Safety Culture

Objective	Assess Safety Culture and implement a corresponding EMPIC module.
Deliverable	• Report ("Management Cockpit") • EMPIC module
Due Date	• Biannually • 2022 Q3
Status	• Implemented. Process for biannual report is established. • Closed

EPAS MSTs (open/in progress)

MST.0040: Safety and security reporting

Objective	Without affecting the obligations stemming from Regulation (EU) No 376/2014, Member States shall ensure that appropriate coordination mechanisms are established between safety and security reporting systems in order to allow for an integrated approach to the management of risks.
Deliverable	• Coordination mechanism established • Feedback on implementation of MST
Due Date	• 2023 Q4 • 2024 Q4
Status	In progress

MST.0043: Improvement of data quality in occurrence reporting

Objective	The objective of the task is to help Member States and the Agency in data-driven decision-making to improve aviation safety.
Deliverable	• Promoting good data quality in occurrence reports through safety campaigns, leaflets, circulars • Organise workshops or similar events to interact directly with the stakeholders regarding data quality in occurrence reports
Due Date	2026
Status	• Closed • Open. Workshop planned in 2026.

A.1.3 Safety culture (continued)

EPAS MSTs (implemented/closed)

MST.0025: Improvement in the dissemination of safety messages

Objective	Member States should improve the dissemination of safety promotion and training material by their competent authorities, associations, flying clubs, insurance companies targeting flight instructors and/or pilots through means such as safety workshops and safety days/evenings.
Deliverable	Safety workshops and safety days/evenings
Due Date	2021/2022
Status	Closed

MST.0027: Promotion of safety culture in GA

Objective	Member State Cas should include provisions to facilitate and promote safety culture (including just culture) in GA as part of their State safety management activities in order to foster positive safety behaviours and encourage occurrence reporting.
Deliverable	Provisions to facilitate and promote safety culture as part of SSP/SPAS
Due Date	Continuous
Status	Implemented

MST.0042: Assessment of safety culture at air operators

Objective	A strong safety and reporting culture is an essential enabler of an effective management system. This task aims to improve the Member States' capacity to assess the safety culture at air operators involved in CAT operations, and complements EPAS action RES.0053 'Mapping the socio-economic impact on aviation safety'.
Deliverable	• Guidance and practical tools • Oversight programme
Due Date	• 2023 Q4 • 2024 Q2
Status	Closed

A.1.4 Aviation cyber security

FOCA actions (open/in progress)

FOCA.16: Assisting Industry

Objective	Developing criteria to assist industry in defining criticality of aviation functions, systems and information from a holistic safety perspective. Providing information to organisations for implementing EASA Part-IS requirements.
Deliverable	• Information events • Guidance material, e.g. critical system scoping, maturity self-assessment for organisations in relation to cyber security requirements of safety and security regulations (Adoption of ICT-Minimal Standard) • EASA Part-IS Pilot Projects with selected organisations
Due Date	2023-2025
Status	In progress

FOCA.17: Effective Oversight

Objective	Establishing a coordinated, performance- and risk-based oversight regime to ensure information security risk protection for relevant organisations by recruiting appropriate personnel or by partnering with external contractors. Establishing cyber security training objectives for relevant FOCA personnel.
Deliverable	• Capacity building, • International and National coordination • Information security training for existing SMS inspectors
Due Date	2024 – 2026
Status	In progress

FOCA.18: Implement EASA Part-IS Authority Requirements

Objective	Achieve compliance to EASA Part-IS authority requirements as a minimum in order to enhance cyber security posture in regard to aviation safety, including the implementation of an Information Security Management System ISMS.
Deliverable	• ISMS Handbook / Manual • Information Security (IS) Policy • IS Risk management process with a risk register • IS Incident response plan
Due Date	2024 – 2026
Status	In progress

A.1.4 Aviation cyber security (continued)

FOCA actions (implemented/closed)

FOCA.19: National and international coordination

Objective	Ensuring national and international coordination by • Developing updated, appropriate and coordinated timelines and reporting processes for safety-relevant cyber attack scenarios in coordination with security and partners in the national cyber strategy • Collaboration with EASA and other Competent Authorities with respect to a consistent oversight of organisations • Continuing contribution to international networks and foster them. Active participation in relevant ICAO, ECAC, EU, EASA, Eurocontrol, and NCSC for a • Preparing for a coordinated implementation of Part-IS with existing cyber security and safety regulations
Deliverable	• Agreed and defined legal bases and processes • Agreed and defined appropriate AMC/GM of EASA Part-IS • Ensure well-coordinated legal bases and regulatory requirements for stakeholder
Due Date	Ongoing • 2023 Q2
Status	Implemented / Closed

A.2 Operational safety issues

A.2.1 Miscellaneous

FOCA actions (implemented/closed)

FOCA.05: Safety Performance Indicators and Safety Performance Targets

Objective	Definition of sound Safety Performance Indicators and Targets for the FOCA safety risk areas.
Deliverable	• List of Safety Performance Indicators and associated SPTs • Report ("Management Cockpit")
Due Date	• 2023 • Annually
Status	• Implemented. Internal document is set up and process for updating the SPIs incl. targets is in place. • Implemented. The mechanism for compiling and sharing the report is in place

EPAS MST (implemented/closed)

MST.0034: Oversight capabilities/focus area: flight time specification

Objective	Member States shall ensure that the Cas possess the required competence to approve and oversee the operators' flight time specification schemes.
Deliverable	Report on actions implemented to foster capabilities
Due Date	2022/2023
Status	Implemented. Process established.

A.2.2 Airborne collision

FOCA actions aeroplanes + helicopters (open/in progress)

FOCA.07: Awareness of airspace issues

Objective	Increase awareness of airspace issues in pilot training and improve flight crew discipline (IFR and VFR).
Deliverable	• Leaflet (with all airspace classes and Swiss specialties) • Survey with all stakeholders • Awareness campaign for all stakeholders (including ATCO).
Due Date	• 2023 (closed) • 2024 • 2025
Status	• Closed • In progress • Open

FOCA.08: AVISTRAT-CH

Objective	The acronym AVISTRAT-CH stands for the "new national airspace and aviation infrastructure strategy Switzerland". FOCA got the mandate from the department DETEC in 2016. The goal is to set up a strategy to redesign Swiss airspace, ground infrastructure and the relevant processes while maintaining the safety level, improving capacity and not exceeding today's environmental impact of aviation. These goals shall be reached by applying a "cleansheet" / holistic approach and by a close collaboration with the airspace users and the responsible federal offices. The horizon of the program is 2035 which means that the stakeholder needs as of 2035 shall be met. Safety is addressed in all main parts of the strategy (e.g. better equipment of airspace users to increase conspicuity, national target level of safety, etc.).
Deliverable	• Vision (based on stakeholder needs) • Strategy • Realization Plan • Realization
Due Date	• Was published in 2019 • Was published in 2022 • Was published in 2023 • 2035
Status	In progress

A.2.2 Airborne collision (continued)

FOCA.22: Future Aviation Surveillance Services and Technologies in Switzerland (FASST-CH)

Objective	The Federal Office for Civil Aviation (FOCA) has set up the Future Aviation Surveillance Services and Technologies in Switzerland (FASST-CH) working group with the mandate to describe the perspectives of surveillance (SUR) services within the FIR Switzerland and supporting technologies (both aligned with the AVISTRAT-CH strategy & initiatives) for 2035. The objective is to improve the electronic visibility of aircraft in Swiss airspace, with the aim of achieving 100% conspicuity (based on on-board equipment and ground stations), reducing the number of airprox and laying the foundations for the digitalisation and optimisation of the airspace. This visibility is essential for low-flying helicopters or general aviation airspace users, as well as for unmanned aircraft to fly safely beyond visual range. This cross-divisional working group is also in contact with representatives of the Swiss aviation industry, the Military Aviation Authority (MAA), the Federal Office of Communications (OFCOM) and the European Union Aviation Safety Agency (EASA).
Deliverable	• Development of i-conspicuity ConOps and test plan (2025) • Dedicated i-conspicuity ConOps validation (2026-2027) • Implementation of conspicuity Mandate in class E (2025-2028) • E-conspicuity promotion and recommendation in class G (2025-2028)
Due Date	2028
Status	In progress

FOCA.23: Project TMA Redesign Zürich

Objective	The aim of the TMA adjustment is to increase the safety and efficiency of air traffic handling to and from Zurich.
Deliverable	1) Implementation of new airspace structure around LSZH 2) Analyse how the number and severity of airspace infringements and airborne collisions change with the new airspace structure. Monitor whether mitigation measures may need to be considered.
Due Date	• March 2025 • 2026/2027
Status	In progress

A.2.2 Airborne collision (continued)

FOCA actions aeroplanes + helicopters (implemented/closed)

FOCA.06: Identification of IFR / VFR Hotspots

Objective	Identifying hotspots regarding possible airborne collision in airspace G and E. Assessment of TMZ Listening Squawk as mitigation measure for airspace infringements.
Deliverable	• Risk Assessments and Mitigation Assessments • "Better visibility of airspace infringements" analysis in cooperation with Skyguide
Due Date	• Various risk assessments with various due dates (according project planning), Review of the first risk assessments start Q3/2022 • 2022 for airspace LSZH, other areas 2023
Status	Closed

FOCA.20: IFR without ATC

Objective	A pilot project entitled 'IFR without air traffic control service' was launched at Grenchen regional airport in 2017. Its aim was to accumulate experience in managing IFR arrivals and departures without air traffic control and without compromising safety.
Deliverable	Implementing «IFR without air traffic control service»
Due Date	2019
Status	Closed

EPAS MSTs (open/in progress)

MST.0024: 'Due regard' for the safety of civil traffic

Objective	Member States must have due regard for the safety of civil aircraft and must have established respective regulations for national State aircraft.
Deliverable	Report to EASA on related incidents and actions taken
Due Date	Continuous
Status	In progress

EPAS MSTs (implemented/closed)

MST.0030: Implementation of SESAR solutions aiming to reduce the risk of mid-air collision en-route and in terminal manoeuvring areas

Objective	Member States should evaluate together with the ANSPs that are delegated to provide services in their airspace, the needs for implementing SESAR solutions related to enhanced Short Term Conflict Alerts (STCA)/enhanced safety nets such as solutions #60 & #69.
Deliverable	SPAS established
Due Date	2021 Q4
Status	Closed

A.2.2 Airborne collision (continued)

MST.0038: Airspace complexity and traffic congestion

Objective	Member States should consider 'airspace complexity' and 'traffic congestion' as safety-relevant factors in airspace changes affecting uncontrolled traffic, including the changes along international borders.
Deliverable	Best practice
Due Date	2023
Status	Closed

European Action Plan for Airspace Infringement Risk Reduction

The actions from the Airspace Infringement Action Plan, published on 01 January 2010, have been implemented where feasible. A new version of the Action Plan is expected.

A.2.3 Aircraft upset

FOCA Actions – general aviation (implemented/closed)

FOCA.09: Safety Promotion for General Aviation regarding operational factors

Objective	Increase awareness concerning inadvertent flight into IMC, flight planning & preparation, loadsheet calculation.
Deliverable	Stay safe publications
Due Date	2022-2024
Status	Closed

FOCA.10: Safety Promotion for General Aviation regarding technical failures

Objective	Safety Promotion about various topics concerning GA aircraft engine and fuel systems.
Deliverable	Stay Safety publications, SAND
Due Date	Ongoing
Status	Implemented

EPAS MSTs (implemented/closed)

MST.0003: Member States should maintain a regular dialogue with their national aircraft operators of flight data monitoring programmes

Objective	• Making the professionals concerned aware of the European operators FDM forum (EOFDM) • Promoting FDM good practice
Deliverable	• Information on EOFDM published in the SMS section of MS website • Detailed report of the workshop
Due Date	Q3 2024
Status	• Closed. EOFDM documents were actively communicated in the industry SSC (Swiss Safety Committee) at the SSC Meeting #1-2024, held on the 5. September 2024. • Closed. No SOFDM-workshop was held after 2019 (due to low number of participants). Information and discussions are given and held via the SSC.

MST.0015: Helicopter Safety Events

Objective	Member States' Cas, in partnership with industry representatives, should organise helicopter safety events annually or every two years.
Deliverable	Workshop
Due Date	Continuous
Status	Implemented. The SHA (Swiss Helicopter Association) is holding these workshops.

A.2.4 Terrain collision

FOCA actions – commercial aviation (open/in progress)

FOCA.13: National LFN

Objective	Operate and maintain a national IFR low altitude network for helicopter flights of authorized operators
Deliverable	Extensive network (network connects all geographical regions of Switzerland)
Due Date	2027
Status	In progress

FOCA actions – commercial aviation (implemented/closed)

FOCA.11: Safety Promotion for General Aviation regarding operational factors

Objective	Increase awareness concerning inadvertent flight into IMC, flight planning & preparation, loadsheet calculation.
Deliverable	Stay safe publications
Due Date	2022-2024
Status	Closed

EPAS MSTs (implemented/closed)

MST.0031: Implementation of SESAR solutions aiming to facilitate safe instrument flight rules operations

Objective	Member States together with their ANSPs and their flight procedure designers (if different from ANSPs) should evaluate the possibility to establish a network of low-level IFR routes in their airspace to facilitate safe helicopter operations. These SESAR solutions, such as solution #113 that are designed to improve safety, should be implemented as far as it is feasible.
Deliverable	IFR routes/report
Due Date	2025
Status	Closed (by EASA with EPAS 2024). SESAR solutions are implemented as feasible.

A.2.5 Fire, smoke and pressurisation

FOCA actions (implemented/closed)

FOCA.12: Electrical aircraft batteries - increase awareness

Objective	Determine risks associated with an intervention of a crashed and battery-damaged electrical aircraft and raise awareness of these dangers.
Deliverable	• Internal Risk Assessment • Information campaign to raise awareness of electric aircraft operators, aerodrome operators and first responders (such as firefighters). • Add rescue sheet to the aircraft details of electrical aircraft in the Swiss aircraft register
Due Date	2023
Status	Closed

A.2.6 Security
FOCA actions
NIL
EPAS MSTs
NIL

A.2.7 Obstacle collision in flight
FOCA actions
NIL
EPAS MSTs
NIL

A.2.8 Ground damage

FOCA actions (open/in progress)

FOCA.24: Vehicle traffic violation on aerodrome

Objective	Ensure effectiveness of airport ground traffic risk management
Deliverable	• Monitor occurrence trends 1) Review airport ground risk management concept
Due Date	2027
Status	Open

EPAS MSTs (implemented/closed)

MST.0029: Implementation of SESAR runway safety solutions

Objective	Member States should evaluate together with the ADR operators and ANSPs the needs for implementing the related SESAR solutions such as those related to ground situational awareness, airport safety net vehicles and enhanced airport safety nets. These SESAR solutions (solutions #01, #02, #04, #26, #47, #48, #70), designed to improve runway safety, should be considered as far as it is feasible.
Deliverable	• SPAS • SPAS reviewed
Due Date	• 2021 Q4 • 2024-Q1
Status	Closed (by EASA with EPAS 2024). SESAR solutions are implemented as feasible.

A.2.9 Collision on runway

FOCA actions (open/in progress)

FOCA.25: Continue specific oversight to push stakeholders to improve their operational concept at airports in order to minimize the risk.

Objective	Keep focus on the Runway Collision risk
Deliverable	• RI monitoring (including precursors and tech related events) • Meeting minutes of Runway Safety Teams • Safety assessment reviews
Due Date	Continuous
Status	In progress

FOCA.26: Support efforts to get a common and harmonized understanding of the definition of Runway incursion in the RST (Runway Safety Teams)

Objective	Improve common understanding, monitoring and measurement of the runway collision risk
Deliverable	Meeting minutes of Runway Safety Teams
Due Date	Continuous
Status	In progress

Additional info

Furthermore, the local Runway Safety Teams, which are led by the airfields and consist of various stakeholders, are analysing Runway Safety Events and take action where necessary. If necessary FOCA enters into dialogue with the Runway Safety Team and discusses possible actions directly.

EPAS MSTs

NIL

European Action Plan for the Prevention of Runway Incursions (EAPPRI)

All recommendations addressed to the regulators of the EAPPRI V3.0, published on 20 November 2017, have been implemented by the FOCA: Recommendations of new versions will be checked and implemented wherever possible.

FOCA advises the airfields and local Runway Safety Teams about new versions of the EAPPRI. The decision on the implementation of the individual recommendations is left to the respective organisations.

A.2.10 Runway excursion

FOCA actions

NIL. The local Runway Safety Teams, which are led by the airfields and consist of various stakeholders, are analysing Runway Safety Events and take action where necessary. If necessary FOCA enters into dialogue with the Runway Safety Team and discusses possible actions directly.

EPAS MSTs

NIL

Global Action Plan for the Prevention of Runway Excursions (GAPPRE)

The GAPPRE was published on 5 May 2021, the recommendation addressed to the regulators are in the process of being checked and will be implemented wherever possible. The recommendations of the predecessor, the European Action Plan for the Prevention of Runway Excursions, have all been implemented by the FOCA

FOCA advises the airfields and local Runway Safety Teams about new versions of the GAPPRE. The decision on the implementation of the individual recommendations is left to the respective organisations.

A.2.11 Other injuries and damages

FOCA actions (implemented/closed)

FOCA.28: "ERFA-FH Helikopter"

Objective	Reduce the number of injuries and damages during sling load operation
Deliverable	Annual refresher and advanced training course for TSOP on the subject of lifting gear and sling load operation
Due Date	Continuous
Status	Implemented. The training course was introduced many years ago and is conducted annually by the Swiss Helicopter Association.

A.2.12 Unmanned aircraft systems

FOCA actions (open/in progress)

FOCA.15: U-space

Objective	Test, implement and oversee new mandatory U-space services in Switzerland
Deliverable	Implemented U-Space airspaces and services
Due Date	2025
Status	In progress

FOCA actions (implemented/closed)

FOCA.14: Adoption EU regulation

Objective	Reach an agreement with the Swiss Modelaircraft association (SMV) regarding the Motion 20.3916, which instructs the Federal Council to exclude traditional model aircraft when adopting EU Regulation 2019/947 and leave this category under national law.
Deliverable	Revised OSCA
Due Date	2022
Status	Closed

A.3 Emerging safety issues

NIL.