Im Browser ansehen

Waypoints

Vereinigung Cockpit Flight Safety Newsletter Nr. 02 2019

Dear members,

It is a great pleasure to announce this year's 50th birthday of Vereinigung Cockpit on March 11, 2019. What began as a vision of six pilots and flight engineers half a century ago in a snow-covered hotel in Montreal, is now one of the world's most regarded pilot associations. From the very beginning, Vereinigung Cockpit successfully and indefatigably advocated for the improvement of flight safety on a constant basis. Among others, outstanding achievements include:

- Stimulation of an incident reporting system in Germany,
- Active participation in ergonomic cockpit design,
- Generating policies and contributing our positions to rule making,
- Advocating a just culture, thus contributing to the evolution of a positive safety culture.

The VC Waypoints represent one aspect of our aim to constantly contribute to the improvement of flight safety. Next to our popular links to publications of IFALPA, ECA, and EASA todays Waypoints edition covers the following topics:

- Pilot Careers Live fair in Frankfurt
- Portable Electronic Devices in Passenger Checked Baggage
- Behavioural Detection as a Security Measure
- Considerations when protecting Manned Aviation from Drones
- Madeira Airport Survey on Operations and Wind Limitations

I invite you to browse through the contents to learn the latest about your topic of interest.

As we continuously strive to improve our Waypoint we require and seek your feedback. Please forward your inputs to flightsafety@vcockpit.de or just use the reply function of your mail provider should you have any suggestions for improvement, tips, or wishes regarding topics to address. We will do our best

to keep the Waypoints as informative and interesting as possible for your convenience.

Kind regards,

Your Technical Director Flight Safety

Vereinigung Cockpit turns 50!

On the occasion of this anniversary and the related stories and outstanding achievements, a 50 Year Vereinigung Cockpit chronicle will be published shortly.

From March 11, 2019, each era of VCs last 50 years will be published in regular intervals on www.50jahre.vcockpit.de. Look forward to articles regarding VCs founding and evolution within the context of our interests:

- Being involved in the welfare and safety of civil aviation
- Maintaining and pursuing interests related to professional policies

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Pilot Careers Live Fair in Frankfurt

On March 09, 2019, the Pilot Careers Live fair takes place in the Frankfurt Hilton hotel. VC members can order free tickets (promotional code **VC19**). The German ALPA will again be represented at a stand informing about the pros and cons of the profession as a pilot and providing valuable advice for a successful start into a pilot's career.
See pilotcareernews.com/live/frankfurt for further information and other exhibitors.

IFALPA Position Paper: PEDs in Passenger Checked Baggage

IFALPA has issued a position paper regarding risks of portable electronic devices (PEDs) in passengers' checked baggage containing other allowable dangerous goods such as flammable aerosols or flammable liquids. FAA tests have demonstrated serious risks with consequences likely to be catastrophic. Read more in IFALPAs position paper.

See as well IATAs passenger information leaflet for traveling with electronic devices – three steps to help you fly safer.

Special Procedures for In-Flight Contingencies in

Oceanic Airspace

Applicable from 28 March, 2019, IFALPA has released a Safety Bulletin concerning procedures in the entire NAT (North Atlantic Track) Region and New York Oceanic West (WATRS).
The Bulletin covers the most frequent contingency cases potentially requiring deviation from assigned clearances, e.g. weather, medical emergencies, or loss of / significant reduction in required navigation capability.

IFALPA Security Briefing Leaflet: Behavioural Detection as a Security Measure

IFALPA issued a revised version of its 2016 Security Briefing Leaflet *Behavioural Detection as a Security Measure*. The focus is on disclosing dangerous people rather than dangerous objects in the attempt to adapt to new threats through risk-based security measures. One promising technique providing numerous benefits is behavioural detection as an additional security measure, concentrating exclusively on the observation of specific suspicious behaviour indicating a possible threat. Read more on IFALPAs position in their revised Security Briefing Leaflet.

IATA Bulletin: Key considerations when protecting manned aviation from drones

IATA reacts to the rapidly expanding use of Unmanned Aircraft Systems (UAS) and the resulting potential risks for manned aviation. With considerations to risk mitigation, IATA addresses anti-UAS operational measures including detection of and countering UASs. See IATAs Information Bulletin for detail.

Madeira Airport Survey on Operations and Wind Limitations

Our sister association, the Portuguese Airline Pilots' Association (APPLA), is conducting a research in order to gather feedback from pilots with relevant operational experience of commercial air transport (CAT) aircraft at Madeira Airport. This is mostly related to the specific wind effects and limitations during take-off, approach and landing at LPMA and is meant to provide the viewpoint of pilots to the Portuguese Civil Aviation Authority (ANAC), in regard of an ongoing project targeted at increasing

the operational availability of the airport without compromising safety. Your cooperation is much appreciated and filling out the form should take you no more than ten minutes.
Access the APPLA survey here.

IFALPA, ECA, and EASA News

We would like to draw particular attention to the following position papers and publications:

IFALPA:

- Position Paper: Remission Factor and the Risk of Reduced RFF
- Position Paper: Pregnancy and Flying – Risk Factors affecting a Pilot's Performance
- Position Paper: Unruly Passengers – Practical Steps for Prevention and Unruly Passenger Management
- Position Paper: Risks of Operating Conditions exceeding Helicopter Emergency Floating System limits
- Position Paper: Take-Off Performance Monitoring System – Calls for Technological Improvements
- Fitness to Fly Guide (ICAO / IATA / IFALPA) – Preview, Nov 2018

ECA:

- Position Paper: Pilot Supply – Ensuring Supply of Skilled, Talented Flight Crews
- Position Paper: Specific Operations Risk Assessment (SORA) for Unmanned Aircraft Operations
- Enhanced pilot background checks to feature intelligence information

EASA:

- European Plan for Aviation Safety 2019-2023
- EASA Preliminary Safety Overview of the Commercial Air Transport Operations 2018
- NEW e-learning course: EASA's new Basic Regulation (Regulation (EU) 2018/1139)
- Easy Access Rules for Standardised European Rules of the Air (SERA) are available!

IFALPA
The Global Voice of Pilots

Position

18POS15

4 December 2018

PEDs in Passenger Checked Baggage

BACKGROUND

New data demonstrates significant fire risk to commercial aircraft when Portable Electronic Devices (PEDs) are placed in checked baggage. The risk is not new but has so far been considered acceptable for several reasons. FAA testing had confirmed that a fire resulting from lithium battery thermal runaway in a PED would likely exhaust itself because of the lack of oxygen in a packed suitcase. If the contents of the suitcase did catch fire, it was believed that a Class A fire (fuelled by common flammable materials such as cloth, paper, and wood) would result. Halon fire suppression systems installed in almost all passenger cargo compartments are very effective on such fires since they were designed for this type of event.

CURRENT SITUATION

Recent tests at the FAA William J. Hughes Technical Center, however, have demonstrated serious risks when a single lithium battery installed in a PED goes into thermal runaway inside a checked passenger baggage that also contains other allowable dangerous goods such as flammable aerosols (e.g. hair spray), or flammable liquids (e.g. nail polish remover). The results of these tests show that the consequences of such a situation are likely to be catastrophic and might lead to the loss of an aircraft.

The seriousness of this risk should not be underestimated. It was originally thought that very few PED's larger than cellular telephones were placed in checked baggage by passengers, on the assumption that passengers would not subject their PED's to possible theft or damage and would most likely want them available for use in-flight, but recent data suggests otherwise. Not only do many PEDs end up in checked luggage, they are also often not powered off or not protected against inadvertent activation as required by regulation. The different modes of laptop computers (sleep, hibernation, on, off) and their lengthy shutdown routines, especially when automatic updates are being installed, can also make passengers erroneously believe that their PED is depowered.

POSITION

Due to the unacceptable risk to flight safety described above, PEDs larger than cell phones should be prohibited in passengers' checked baggage and only allowed in the aircraft as carry-on items in the passenger cabin.

NOTE

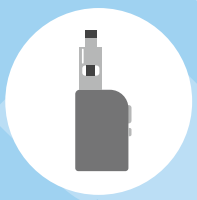
IATA has developed a multi-language infographic to alert passengers carrying PEDs on the latest requirements, https://www.iata.org/whatwedo/ops-infra/baggage/Pages/ped.aspx.

Traveling with electronic devices?

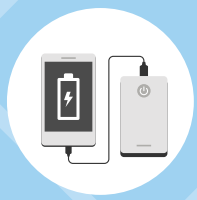
Here's three steps to help you fly safely:

1 It is best to pack **lithium-powered devices** and accessories into your **carry-on bag**.

2 Electronic cigarettes, power banks and spare batteries **MUST be kept in your carry-on bag.**



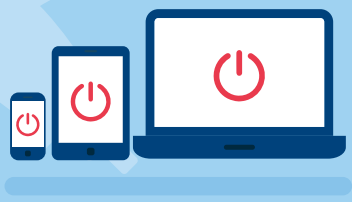
ELECTRONIC CIGARETTES



POWER BANKS

SPARE BATTERIES

3 If you must pack your tablet, mobile or laptop in your checked luggage, be sure they are **completely turned off** (not in "hibernate" or "sleep" modes).



If in doubt, contact your airline.
More information: www.iata.org/ped

IATA

IFALPA
The Global Voice of Pilots
Safety Bulletin
19SAB01 15 February 2019

Special Procedures for In-Flight Contingencies in Oceanic Airspace

Please note: This Safety Bulletin is based upon the ICAO-NATSPG NAT OPS Bulletin 2018_005Rev01

1. INTRODUCTION

1.1 These procedures are applicable in the entire NAT Region and New York Oceanic West (WATRS) from 28th of March 2019, coincident with the trial of Advanced Surveillance-Enhanced Procedural Separation (ASEPS) using Automatic Dependent Surveillance- Broadcast (ADS-B) in the Shanwick, Gander and Santa Maria Oceanic Control Areas, and will subsequently replace those currently published in the PANS ATM (ICAO Doc 4444).

1.2 Although all possible contingencies cannot be covered, the procedures in paragraphs 2, 3 and 4 provide for the more frequent cases such as:

a) inability to comply with assigned clearance due to meteorological conditions, (paragraph 4 refers);

b) en-route diversion across the prevailing traffic flow (for example, due to medical emergencies (paragraphs 2 and 3 refer)); and

c) loss of, or significant reduction in, the required navigation capability when operating in an airspace where the navigation performance accuracy is a prerequisite to the safe conduct of flight operations, or pressurization failure (paragraphs 2 and 3 refer).

NOTE: Guidance on procedures to follow when an aircraft experiences a degradation in navigation capabilities can be found in PANS-ATM, Chapter 5, section 5.2.2.

1.3 The pilot shall take action as necessary to ensure the safety of the aircraft, and the pilot's judgement shall determine the sequence of actions to be taken, having regard to the prevailing circumstances. Air traffic control shall render all possible assistance.

2. GENERAL PROCEDURES

NOTE: Figure 1 provides an aid for understanding and applying the contingency procedures contained in paragraphs 2 and 3.

2.1 If an aircraft is unable to continue the flight in accordance with its ATC clearance, a revised clearance shall be obtained, whenever possible, prior to initiating any action.

2.2 If prior clearance cannot be obtained, the following contingency procedures should be employed until a revised clearance is received:

a) leave the cleared route or track by initially turning at least 30 degrees to the right or to the left, in order to intercept and maintain a parallel, direction track or route offset 9.3 km (5.0 NM). The direction of the turn should be based on one or more of the following:

1. aircraft position relative to any organized track or route system,
2. the direction of flights and flight levels allocated on adjacent tracks,
3. the direction to an alternate airport;
4. any strategic lateral offset being flown, and
5. terrain clearance;

b) the aircraft should be flown at a flight level and an offset track where other aircraft are less likely to be encountered.

c) maintain a watch for conflicting traffic both visually and by reference to ACAS (if equipped) leaving ACAS in RA mode at all times, unless aircraft operating limitations dictate otherwise;

d) turn on all aircraft exterior lights (commensurate with appropriate operating limitations);

e) keep the SSR transponder on at all times and, when able, squawk 7700, as appropriate;

f) as soon as practicable, the pilot shall advise air traffic control of any deviation from assigned clearance;

g) use whatever means is appropriate (i.e. voice and/or CPDLC) to communicate during a contingency or emergency;

h) if voice communication is used, the radiotelephony distress signal (MAYDAY) or urgency signal (PAN PAN) preferably spoken three times, shall be used, as appropriate;

i) when emergency situations are communicated via CPDLC, the controller may respond via CPDLC. However, the controller may also attempt to make voice communication contact with the aircraft;

NOTE: Additional guidance on emergency procedures for controllers, radio operators, and flight crew in data link operations can be found in the Global Operational Data Link (GOLD) Manual (Doc 10037).

j) establish communications with and alert nearby aircraft by broadcasting, at suitable intervals on 121.5 MHz (or, as a backup, on the inter-pilot air-to-air frequency 123.450 MHz) and where appropriate on the frequency in use: aircraft identification, the nature of the distress condition, intention of the person in command, position (including the ATS route designator or the track code, as appropriate) and flight level; and

k) the controller should attempt to determine the nature of the emergency and ascertain any assistance that may be required. Subsequent ATC action with respect to that aircraft shall be based on the intentions of the pilot and overall traffic situation.

3. ACTIONS TO BE TAKEN ONCE OFFSET FROM TRACK

NOTE: The pilot's judgement of the situation and the need to ensure the safety of the aircraft will determine whether the actions outlined in 3.2 a) or b), will be taken. Factors for the pilot to consider when diverting from the cleared route or track without an ATC clearance include, but are not limited to:

a) operation within a parallel track system,

b) the potential for User Preferred Routes (UPRs) parallel to the aircraft's track or route,

c) the nature of the contingency (e.g. aircraft system malfunction) and

d) weather factors (e.g. convective weather at lower flight levels).

3.1 If possible maintain the assigned flight level until established on the 9.3 km (5.0 NM) parallel, same direction track or route offset. If unable, initially minimize the rate of descent to the extent that is operationally feasible.

3.2 Once established on a parallel, same direction track or route offset by 9.3 km (5.0 NM), either:

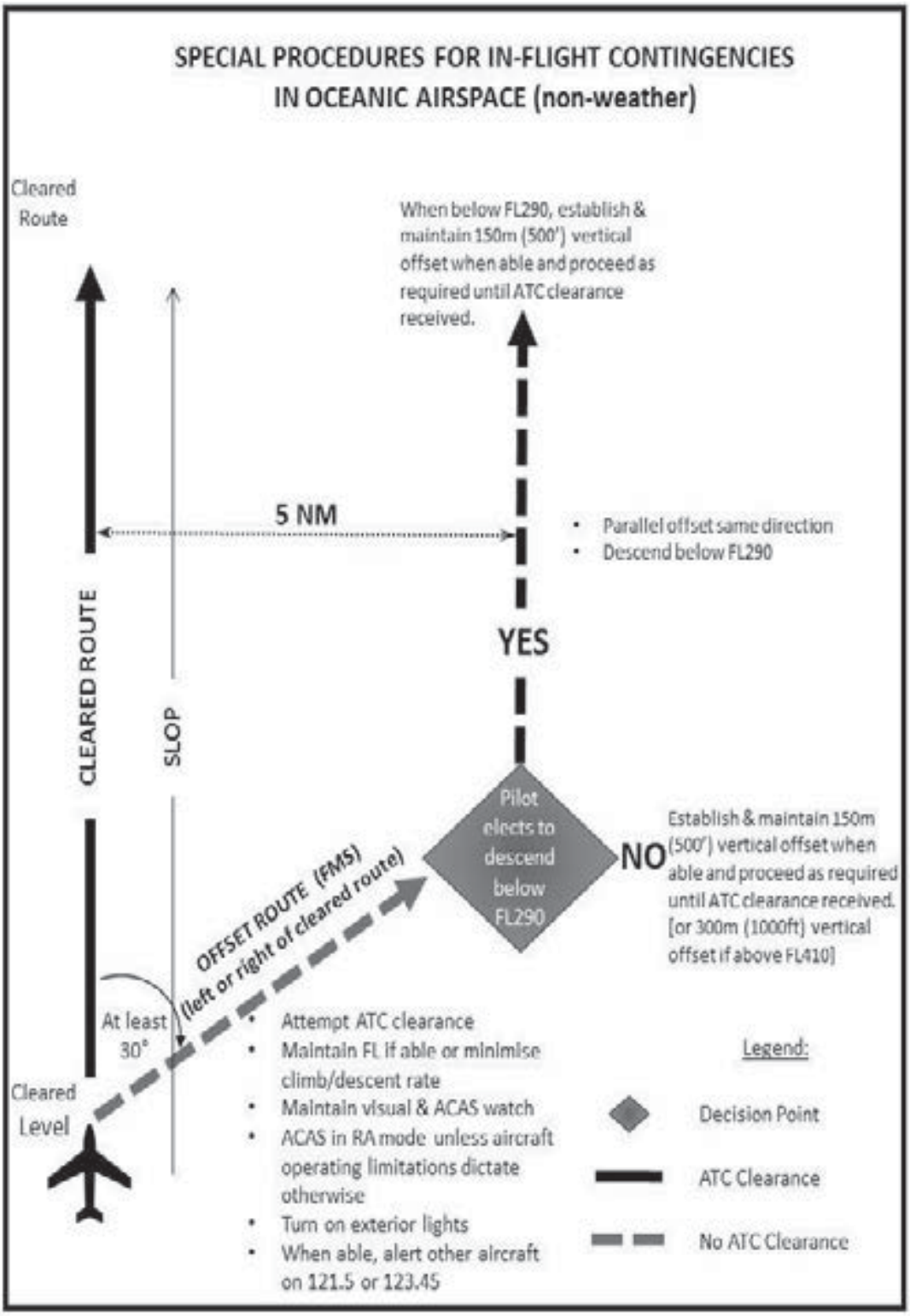
a) descend below FL 290, and establish a 150 m (500 ft) vertical offset from those flight levels normally used, and proceed as required by the operational situation or if an ATC clearance has been obtained, proceed in accordance with the clearance; or

NOTE: Descent below FL 290 is considered particularly applicable to operations where there is a predominant traffic flow (e.g. east-west) or parallel track system where the aircraft's diversion path will likely cross adjacent tracks or routes. A descent below FL 290 can decrease the likelihood of: conflict with other aircraft, ACAS RA events and delays in obtaining a revised ATC clearance.

b) establish a 150 m (500 ft) vertical offset (or 300 m (1000 ft) vertical offset if above FL 410) from those flight levels normally used, and proceed as required by the operational situation, or if an ATC clearance has been obtained, proceed in accordance with the clearance.

NOTE: Altimetry System Error may lead to less than actual 500 ft vertical separation when the above procedure is applied. In addition, with the 500 ft vertical offset applied, ACAS RAs may occur.

Figure 1. Visual aid for understanding and applying the contingency procedures guidance.



4. WEATHER DEVIATION PROCEDURES

4.1 General

NOTE: The following procedures are intended for deviations around adverse meteorological conditions.

4.1.1 When weather deviation is required, the pilot should initiate communications with ATC via voice or CPDLC. A rapid response may be obtained by either:

a) stating "WEATHER DEVIATION REQUIRED" to indicate that priority is desired on the frequency and for ATC response; or

b) requesting a weather deviation using a CPDLC lateral downlink message.

4.1.2 When necessary, the pilot should initiate the communications using the urgency call "PAN PAN" (preferably spoken three times) or by using a CPDLC urgency downlink message.

4.1.3 The pilot shall inform ATC when weather deviation is no longer required, or when a weather deviation has been completed and the aircraft has returned to its cleared route.

4.2 Actions to be Taken When Controller-Pilot Communications are Established:

4.2.1 The pilot should notify ATC and request clearance to deviate from track or route, advising, when possible, the extent of the deviation requested. The flight crew will use whatever means is appropriate (i.e. voice and/or CPDLC) to communicate during a weather deviation.

NOTE: Pilots are advised to contact ATC as soon as possible with requests for clearance in order to provide time for the request to be assessed and acted upon.

4.2.2 ATC should take one of the following actions:

a) when appropriate separation can be applied, issue clearance to deviate from track; or
b) if there is conflicting traffic and ATC is unable to establish appropriate separation, ATC shall:
    1. advise the pilot of inability to issue clearance for the requested deviation;
    2. advise the pilot of conflicting traffic; and
    3. request the pilot's intentions.

4.2.3 The pilot should take the following actions:

a) comply with the ATC clearance issued; or
b) advise ATC of intentions and execute the procedures detailed in paragraph 4.3.

4.3 Actions to be taken if a Revised ATC Clearance Cannot be Obtained

NOTE: The provisions of this section apply to situations where a pilot needs to exercise the authority of a pilot-in-command under the provisions of Annex 2, 2.3.1.

4.3.1 If the aircraft is required to deviate from track or route to avoid adverse meteorological conditions and prior clearance cannot be obtained, an ATC clearance shall be obtained at the earliest possible time. Until an ATC clearance is received, the pilot shall take the following actions:

a) if possible, deviate away from an organized track or route system;

b) establish communications with and alert nearby aircraft by broadcasting, at suitable intervals: aircraft identification, flight level, position (including ATS route designator or the track code) and intentions, on the frequency in use and on 121.5 MHz (or, as a backup, on the inter-pilot air- to-air frequency 123.450 MHz);

c) watch for conflicting traffic both visually and by reference to ACAS (if equipped);

d) turn on all aircraft exterior lights (commensurate with appropriate operating limitations);

e) for deviations of less than 9.3 km (5.0 NM) from the originally cleared track or route remain at a level assigned by ATC;

f) for deviations greater than or equal to 9.3 km (5.0 NM) from the originally cleared track or route, when the aircraft is approximately 9.3 km (5.0 NM) from track, initiate a level change in accordance with Table 1;

g) if the pilot receives clearance to deviate from cleared track or route for a specified distance and, subsequently, requests, but cannot obtain a clearance to deviate beyond that distance, the pilot should apply an altitude offset in accordance with Table 1 before deviating beyond the cleared distance.

h) when returning to track or route, be at its assigned flight level when the aircraft is within approximately 9.3 km (5.0 NM) of the centre line; and

i) if contact was not established prior to deviating, continue to attempt to contact ATC to obtain a clearance. If contact was established, continue to keep ATC advised of intentions and obtain essential traffic information.

NOTE: If, as a result of actions taken under the provisions of 4.3.1, the pilot determines that there is another aircraft at or near the same flight level with which a conflict may occur, then the pilot is expected to adjust the path of the aircraft, as necessary, to avoid conflict.

Table 1

Originally cleared track or route center line	Deviations ≥ 9.3 km (5.0 NM)	Level change
EAST (000° – 179° magnetic)	LEFT	DESCEND 90 m (300 ft)
	RIGHT	CLIMB 90 m (300 ft)
WEST (180° – 359° magnetic)	LEFT	CLIMB 90 m (300 ft)
	RIGHT	DESCEND 90 m (300 ft)

5. WEBSITES: www.icao.int/eurnat
Click on EUR & NAT Documents >> NAT Documents to obtain NAT Operations and NAT Region Update Bulletins and related project documents.

6. INFORMATION OR FEEDBACK: icaoeurnat@paris.icao.int

IFALPA
The Global Voice of Pilots

Security
Briefing Leaflet

18SECBL01 5 December 2018

Behavioural Detection as a Security Measure

Note: This Briefing Leaflet supersedes 16SECBL02 – Behavioural Detection as a Security Measure.

INTRODUCTION

One of aviation security's main challenges is to adapt to new threats and develop new methods to mitigate them. There is a wide consensus on the need for risk-based security measures. In this context, new methods ideally focus on disclosing dangerous people instead of dangerous objects regardless of who carries them. One promising technique is Behavioural Detection, a method which works in addition to existing aviation security measures. It uses trained analysts in the airport environment to identify individuals who may represent a threat. It focuses exclusively on a person's intent and is independent of any new product emerging as a threat to aviation security.

BACKGROUND

Over the last decades, States have developed an array of security procedures to prevent acts of unlawful interference against civil aviation. Likewise, new technologies have emerged: new generation metal detectors, explosive trace detection equipment, and the development of even more precise explosive detection systems. However, these systems remain very costly and time-consuming when applied to all passengers. Some of the most efficient methods are applied to only a selection of persons, usually selected at random. Alongside such selection, it is also possible to apply a system based on analysing behaviour to categorize passengers. This allows baseline measures to be applied to some passengers, and additional measures to others.

THE TECHNIQUE

Behavioural Detection concentrates exclusively on the observation of specific suspicious behaviour which may indicate a possible threat. The technique is based on the premise that individuals attempting to evade security measures typically display signs of suspicious behaviour compared to the behaviour of the legitimate travelling population. The technique can disrupt and deter activities that are either pre-cursors to attack (e.g. hostile reconnaissance or dry runs), or actual attacks on aircraft or airport.

Behavioural Detection can take various forms and be applied at various levels. It can include overt and covert techniques, as well as engaging passengers in short conversations to resolve concerns. The technique can be performed by dedicated Behavioural Detection officers, or by selected airport or airline personnel who are properly trained to interact with passengers in such a manner.

Behavioural Detection techniques have been implemented successfully worldwide, for example by police forces and customs and immigration officers. In a number of States, they are also fully integrated into the airport security chain.

ADVANTAGES/BENEFITS

Some advantages of the techniques include:

- Identification of bad people and bad intent
- Proactiveness rather than reactiveness
- Emphasis on risk-based philosophy
- Enhancement of the unpredictability aspect into the security measures
- "Out of the box" thinking and observations
- Efficiency and performance improvement of the security checkpoint
- Ability to observe and intercept also landside threats
- Introduction of more direct involvement by security staff, proven to enhance motivation

IMPORTANT ASPECTS

As with all new security measures, there are many important aspects to consider with the implementation of Behavioural Detection techniques. In particular:

- Terrorists and other individuals representing a threat can come from a variety of backgrounds. They can be of any nationality, age, sex, race, religion, and social background, and can even be fully integrated into the communities they live in. Behavioural Detection should therefore never involve any sort of discrimination and only target behaviour.

- Behavioural Detection requires psychological skills, attention to detail, good social interaction, and the appropriate personality and mindset. Personnel involved in Behavioural Detection should therefore be selected using stringent selection procedures. Their training should be regulated by the appropriate Authority, and there should be a common baseline and standards for the training contents. The competency and motivation of the personnel should be assessed regularly. Re-current/refresher training should also be considered. As part of the security personnel, consideration should also be given to the level of security clearance that the personnel should hold.

- Behavioural Detection is a risk-based philosophy where security measures are directed to where they are most needed. Therefore, implementation of Behavioural Detection ideally aims at a more efficient allocation of existing security resources, contrary to requiring more of them.

CONCLUSION

Behavioural Detection is an innovative and proactive approach to aviation security which has a lot of potential. Provided that the above considerations, and known advantages and disadvantages are taken into account, IFALPA welcomes the implementation of this new technique as part of the airport security chain.

IATA	**IATA Information Bulletin**	Bulletin No.: UAS1/2018 Date: 11 June 2018

Subject: Key considerations when protecting manned aviation from drones.

Background:

The use of Unmanned Aircraft Systems (UAS), often referred to as drones, is expanding rapidly and key aviation stakeholders (e.g. airports, aviation authorities) are considering how to mitigate the risk. One solution is to employ suitable technology with appropriate measures.

Anti-Unmanned Aircraft System (Anti-UAS) measures are a set of technological and operational tools that were developed, and are being used, to monitor, detect, identify and record inappropriate or dangerous UAS activities. These activities include the infringement of restrictive or sensitive airspace, or UAS operating dangerously close to manned aviation. These measures may include some countermeasures aimed to neutralize, or limit, potential risks posed by uncooperative UASs. These measures and associated technologies can be both beneficial and harmful to aircraft and ATM operations. Therefore, anti-UAS measures should only be implemented following an appropriate safety assessment taking into account potential impacts to all aviation stakeholders.

Anti-UAS Operational Measures:

Some States, airports and aviation agencies are considering the use of anti-UAS measures to manage safety and security risks posed by uncooperative UASs. Below are some examples of these anti-UAS measures and associated technologies.

Detection of UAS

One available technology is the use of a radio-frequency (RF) signal analyzer. This system is able to detect, monitor, and analyze all relevant radio frequencies and supporting techniques (i.e. frequency hopping) which are used to operate the UAS. The RF signal analyzer can be used in combination with a direction finder to locate the UAS operator. This technique is particularly applicable to FHSS (Frequency-Hopping Spread-Spectrum) UASs operating at 2.4GHz frequency band.

For some UASs that are flying autonomously and may not have simultaneous radio-control links, there are systems such as uncooperative RADAR[1], optical tracking (e.g. video and thermal tracking cameras) or acoustic technologies may be capable to detect these UASs.

Countering UAS

Some existing UAS countermeasures include:

1. Selectively jamming of the RF signal being used to operate the UAS.

2. Interrupting the Wireless Local Area Network (WLAN) signal being used by some UASs or broadcasting a set of radio-communication (RC)/computer commands to “take control” of the UAS are possible. This technology should however be appropriately controlled to avoid instances of possible illegal sabotage or UAS hijack.

3. Use of UAS interceptors. Interceptors may include UAS nets and trained predatory birds. These measures should however be used with proper due regard to the possible additional safety risk to manned aircraft.

[1] Uncooperative RADAR technologies include but not limited to Primary Surveillance RADAR, holographic RADAR and multi-illuminators passive RADAR.

It is very important to note that in general, any UAS countermeasures which infringe on local laws and regulations, or create higher risks and may cause danger to other aviation stakeholders, should be avoided. These high risk solutions may include the use of bullets or laser guns.

Considerations and Suggestions

Anti-UAS measures should generally only be implemented within locations or airspace where there is a recognized safety and security risk to justify any infrastructure and operational costs for anti-UAS measures. The areas of interest include the critical safety-sensitive areas around airports such as final approach, missed approach and departure corridors.

The use of anti-UAS measures should not cause unintended safety or operational hazards to aircraft or aviation infrastructures. For example, the jamming or spoofing[2] of GPS signals needs to be avoided as it may harmfully impact aircraft navigation systems as well as air traffic management systems - both of which heavily rely on functional, uninterrupted GPS signals. Implementation of anti-UAS measures must also be subject to a safety assessment and risk mitigation process in order to manage unintended risks.

In deciding in the deployment of anti-UAS measures, States, airports and aviation agencies are recommended to consider anti-UAS measures that are able to:

1. Support continuous monitoring of UAS activities;

2. Detect, identify and record UAS activities in a timely manner and, where capable, geo-locate the operator of the UAS.

3. Perform effective countermeasures that can be safely and legally activated in time to prevent a UAS from entering an area of interest.

<u>Concurrently, anti-UAS measures should NOT:</u>

1. Create unintended safety hazards and unmitigated risks to other aircraft and aviation infrastructures;

2. Infringe with local laws and regulations

3. Interfere with radio frequencies being used by aircraft, air traffic management (ATM) systems and other legally authorized applications, for example;

    a. GPS/GNSS jammers and spoofing should not be used as anti-UAS measures as they can concurrently interfere with the operations of other aircraft. Moreover, technologies for protecting UASs against GPS/GNSS jamming and spoofing are being tested and expected to soon be commercially available.

    b. RADAR technologies used for anti-UAS purposes, frequency usages by the Anti-UAS system and other RADAR-based systems used for ATM, such as primary surveillance RADARs for approach control and airport surface movements, need to be appropriately coordinated and empirically validated such that there will be no adverse impact to ATM system.

4. Result in UAS maneuvering unpredictably;

    a. Technologies used to disrupt the command/control link between a UAS and its operator, must mitigate the safety risks associated with a UAS not being under anyone's positive control, in particular during a "lost link" stage.

    b. During a "lost link" stage, some UASs are pre-programmed to perform specific maneuverings, such as "stay still", "return to base" and "land now". However, such pre-programming cannot always be guaranteed.

[2] Transmitting signals that imitate GPS signals with the intention to falsely navigate the recipient.

IFALPA
The Global Voice of Pilots

Position

18POS09

4 December 2018

Remission Factor

BACKGROUND

Adequate Rescue and Firefighting Services (RFF) are essential to ensure a high chance of survival in the event of an airplane accident. To ensure this proper RFF service is available for a certain type of operations, aerodromes are categorized. This categorization is based on the fire extinguishing requirements of the largest airplane using the aerodrome and is embedded in ICAO Annex 14 Volume 1. It is provided as information for aircraft operators, assisting them in making a risk assessment for the operation to a specific aerodrome.

In 1995, with the publication of Annex 14 Volume 1, 2nd Edition, ICAO introduced the possibility for aerodromes to lower their aerodrome category for RFF by 1 unit, while maintaining the possibility for operations by a large number of aircraft (700 movements in the 3 busiest months of the year) which would normally require a higher aerodrome category. This provision was intended to be temporary and be phased out in 2005 at the latest. However, in 2009, with the publication of Annex 14, Volume 1, 5th Edition, this temporary provision was amended to be permanent.

As result of a lower aerodrome category, aerodrome operators are only required to fulfill lower requirements for RFF services, such as the number of emergency vehicles, amount of staff and quantity of extinguishing agents. When operating to an aerodrome with a lower RFF category than normally needed by its airplane, the aircraft operator is responsible for conducting a risk assessment. By doing so, it should be determined by the operator if the aerodrome considered is still suitable for its operations.

Usage of this provision means that, for example, for the Airbus A320 with a normal RFF category of 6, reduction to RFF category 5 is possible. This reduction will result in less RFF crew, approximately 30% less extinguishing agent, but also only one crash tender instead of two normally required, making it impossible to extinguish fire from two sides of the aircraft at a time. This results in a serious degradation of the chances of survival for crew and passengers in case of emergency.

This provision in ICAO Annex 14 is also known as the Remission Factor, which has also been incorporated in ICAO doc 9137, Airport Services Manual, Part 1.

POSITION

The Remission Factor is allowing the operation of larger airplanes to aerodromes where RFF services are inadequate for these airplane categories. For several widely used airplane types, this reduction results in far less RFF service than required. This imposes an unnecessary safety risk to aircrew, RFF crew and passengers, solely for economic reasons.

Any day, something unpredictable can cause an aircraft accident, placing every one of those lives at risk. Without the means immediately at hand to apply appropriate quantities of fire retardant foam within 2-3 minutes, lives may be lost in what would otherwise have been a survivable situation. Fire is the greater killer when it happens after a crash landing. There have been numerous instances when the impact of the landing did not result in passenger fatalities, but the ensuing fire did.

IFALPA strongly opposes the use of the Remission Factor. We do not support airplane operations to aerodromes with a lower RFF category than what would normally be required. Minimum aerodrome categorization should be based on the largest airplane using the aerodrome, as specified in ICAO Annex 14, table 9-1:

Table 9-1. Aerodrome category for rescue and firefighting

Aerodrome category (1)	Aeroplane overall length (2)	Maximum fuselage width (3)
1	0 m up to but not including 9 m	2 m
2	9 m up to but not including 12 m	2 m
3	12 m up to but not including 18 m	3 m
4	18 m up to but not including 24 m	4 m
5	24 m up to but not including 28 m	4 m
6	28 m up to but not including 39 m	5 m
7	39 m up to but not including 49 m	5 m
8	49 m up to but not including 61 m	7 m
9	61 m up to but not including 76 m	7 m
10	76 m up to but not including 90 m	8 m

IFALPA
The Global Voice of Pilots

Human Performance
Briefing Leaflet

18HUPBL02 5 December 2018

Pregnancy and Flying

Note: This Briefing Leaflet supersedes 18HUPBL01 – Pregnancy and Flying.

INTRODUCTION

Pregnancy is a normal physiological condition and not an illness; however, associated physiological changes may affect a pilot's performance. Flying whilst pregnant may present a risk to the fetus, particularly during the first trimester. Risk factors may vary from one individual to another and with regard to type of flying in question. Some women are more at risk than others. Each pregnancy should be reviewed on an individual basis by both an Obstetrician and an Aeromedical Examiner /AME familiar with flight crew duties. The decision whether a pregnant pilot chooses to stop flying immediately or to continue flying during her pregnancy, should be taken in conjunction with her AME, Obstetrician and/ or family doctor. The following information is meant to educate, not to dictate.

Once a pregnancy is confirmed, the pilot should report to her own doctor, Obstetrician and to her AME. It is advisable, not only to minimize risk to the pilot and fetus, but also to ensure flight safety, that her obstetrician/gynecologist is aware of the type of flying she intends to do.

Since, the remit of this Briefing Leaflet is to highlight specific risks related to flying and pregnancy, there are other risks in pregnancy in day to day life that are not considered here.

LEGAL FRAMEWORK

ICAO PROVISIONS

The following are excerpts from ICAO Annex 1 (Twelfth Ed, July 2018), they highlight the international provisions relating to pregnancy and flying. Individual States use these provisions to develop their national legislation.

6.3.2.21 Applicants who are pregnant shall be assessed as unfit unless obstetrical evaluation and continued medical supervision indicate a low-risk uncomplicated pregnancy.

6.3.2.21.1 Recommendation. - For applicants with a low-risk, uncomplicated pregnancy, evaluated and supervised in accordance with 6.3.2.21, the fit assessment should be limited to the period from the end of the 12th week until the end of the 26th week of gestation.

6.3.2.22 Following confinement or termination of pregnancy, the applicant shall not be permitted to exercise the privileges of her license until she has undergone re-evaluation in accordance with best medical practice and it has been determined that she is able to safely exercise the privileges of her license and ratings.

NATIONAL DIFFERENCES

Regulations concerning pregnancy and flying vary considerably in different States. For example, EASA allows for female pilots to fly from the beginning of their pregnancy until the 26th week, but national regulations of EASA Member States may be different. For example, in Germany, legislation protects any pregnant women from shiftwork, and therefore she is not allowed to fly at all if she is pregnant. It is important to review the applicable legislation in your State.

INFERTILITY TREATMENT

The recommendation to ground a pilot during infertility treatment should be assessed on a case-by-case basis. The level of risk depends on both the type of treatment and medication used as well as the individual. Some medications are not compatible with flying. We recommend such an assessment should be undertaken / completed by both an Obstetrician and AME.

INCAPACITATION RISK

Miscarriage

Particularly during early pregnancy, the incapacitation risk is increased due to the higher probability of miscarriage. In the general population, we know, approximately 15 percent of embryos will spontaneously abort during the first trimester. By the 11th or 12th week of pregnancy the chances of miscarriage decrease to approximately 1-2%. More than half of all miscarriages are caused by a chromosomal abnormality in the fetus. Miscarriages may be a consequence of factors such as chronic diseases in mother, exposure to chemicals (e.g. alcohol, tobacco, caffeine), ionizing radiation, infection, hormone problems, obesity, or individual problems with the placenta, cervix, or uterus. Stress may also be a contributing factor.

Extrauterine Pregnancy

Ectopic pregnancy, also known as tubal pregnancy, is a complication of pregnancy in which the embryo attaches outside the uterus. Most ectopic pregnancies occur in the fallopian tube. Unlike the uterus, which can expand with the growing fetus, the fallopian tube will stretch, rupture, and result in life-threatening internal bleeding. An ectopic pregnancy occurs in about 1-2% of all first trimester pregnancies and is the most common cause of maternal death in the first trimester. The risk of death among those in the developed world is between 0.1 and 0.3 percent while in the developing world it is between 1-3%. Ectopic pregnancies are difficult to predict and diagnose, frequently presenting with an abrupt onset of incapacitating pain and life-threatening bleeding. Consequently, a sudden ruptured ectopic pregnancy (which constitutes an emergency) during a critical state of flight, may result in both a medical and aviation emergency simultaneously. Due to the high risk of incapacitation with an ectopic pregnancy, some countries require an ultrasound examination at six weeks of pregnancy.

Morning Sickness

Nausea or vomiting in early pregnancy may occur in 50-80 % of all pregnancies, particularly during the first trimester. The severity, periodicity, and duration of morning sickness typically varies from woman to woman. While some women are sick at specific times during the day, others experience morning sickness without warning or throughout the day. Morning sickness is not compatible with flying duties. Medication may ameliorate such symptoms, however, if morning sickness requires medication, it is an indication that sickness is so severe that one should not be flying.

Hypotension (low blood pressure) and Syncope (loss of consciousness)

Blood pressure generally decreases in pregnancy. This is due in part to dehydration, but mainly because of hormonal effects on blood vessel relaxation. The relaxation of smooth muscles in blood vessel walls lowers the baseline blood pressure. In addition, about 25 percent of blood flow is directed to the uterus and placenta. This decreases systemic blood pressure, decreases G-tolerance, and increases the risk of grey-out, black-out, and syncope.

Syncope is a transient loss of consciousness due to decreased blood flow to the brain, and usually resolves without lasting effects once blood flow is restored.

Lower G-tolerance

Hypotension is especially important to pilots exposed to G-forces as it increases the risk for G-LOC. G tolerances may differ significantly when pregnant; i.e. G tolerance may decrease when pregnant on comparison with pilot's normal G tolerance (when she is not pregnant). However, it is important for a pregnant pilot to understand these changes may vary throughout pregnancy and additionally may modify her ability to anticipate, recognize, and counter G-induced grey-out, black-out, or syncope. Pregnant pilots are generally restricted to low-G exposure aircraft for this reason.

RISKS TO MOTHER AND FETUS

Anemia

Hemoglobin (and hematocrit) begins to fall between the third and fifth month and is lowest by the eighth month. This is primarily due to increased blood volume that results from an increase in plasma, the watery portion of the blood. This dilutes the oxygen-carrying red blood cells, causing the physiologic condition anemia. Increased iron requirements in pregnancy may further complicate anemia. Usually, adequate diet with supplementary iron and folic acid is necessary; however, this will be assessed on an individual basis by the woman's family doctor, Obstetrician and or AME; self-medication should be avoided without consultation. A Class 1 Medical may be temporarily suspended in the event of a pilot becoming anemic and be reinstated following successful investigation and treatment of same.

Dehydration

Pregnancy produces an increase in urine production, commonly contributing to dehydration. Dehydration results in lower blood pressure, which may cause lightheadedness, dizziness, visual disturbances, loss of consciousness, or adverse consequences for the fetus. Lower blood pressure compromises blood flow to maternal and fetal tissue.

Hypoxia

It is known that Fetal Hemoglobin has a much higher affinity for oxygen than the mother's hemoglobin. Generally, it is believed adequate fetal oxygenation occurs at altitudes under 10,000 feet. Normal cabin altitudes in pressurized aircraft can therefore be considered safe. If flight operations with supplemental oxygen are required, these should only be done after medical consultation.

Changes occurring in the lungs, particularly, during the third trimester, are medically relevant in the context of aviation. Hormonal changes affect pulmonary function by lowering the threshold of the respiratory center to carbon dioxide, thereby influencing the respiratory rate. In addition, more fluid collects in the lungs of a pregnant woman, resulting in reduced residual lung volume. Other physiological changes during pregnancy lead to an increased oxygen demand and greater stress on the heart and lungs. For these reasons, a woman is more susceptible to the effects of hypoxia when she is pregnant.

Hypoxia may potentially cause fetal malformation, spontaneous abortion, or developmental disorders. It remains unclear how susceptible the fetus may be during transient and repeated hypoxic exposure.

Size of Abdomen

As the pregnancy progresses and the uterus expands, the girth of the abdomen may interfere with emergency egress and flight control manipulation. Abnormal flight (windshear, upset recoveries, engine loss, rapid depressurization, wake turbulence, and other emergencies) may require full deflection of flight controls and may impose increased G-loads. Depending upon the nature of the reject, force from an aborted takeoff may cause placental abruption.

Sleep

Often, a pregnant woman needs more sleep than normal due to associated hormonal and physical changes of pregnancy. During the third trimester, pregnancy-related hormones (progesterone, estrogen, cortisol, and oxytocin) markedly affect sleep quality. Studies have shown two-thirds of pregnant women suffer from sleep disorders; insomnia, restless leg syndrome, sleep apnea, nocturnal gastroesophageal reflux, and nighttime urination are common. Sleep deprivation during pregnancy is associated with longer labor, higher cesarean rates, and higher levels of pro-inflammatory serum cytokines (linked to preterm labor and post-partum depression). Irregular airline schedules negatively impact circadian rhythms and contribute to chronic sleep deprivation. Sleep deprivation attributed to shift work has been linked to a higher incidence of miscarriages and can affect pilot performance.

Edema, Deep Vein Thrombosis, and Pulmonary Embolism

The incidence of varicose veins is three times higher in women than men. Due to the expanding uterus compressing the venous cava, the risk of edema and blood clot formation increases substantially during pregnancy. Increased estrogen levels increase blood coagulation. Deep vein thrombosis and pulmonary embolism are among the most common serious vascular diseases that occur during pregnancy and account for the greatest number of maternal deaths.

Sitting for prolonged periods increases the risk of lower extremity edema, thrombophlebitis, and deep vein thrombosis. Pilots, and especially pregnant pilots, should walk around every hour or two.

Cosmic Radiation

Cosmic radiation is linked to elevated numbers of chromosome aberrations which may cause intellectual development disorders, developmental anomalies, congenital anomalies, growth restrictions, and Down Syndrome. These changes may also lead to miscarriage. According to current ICRP (International Commission of Radiation Protections) recommendations, the radiation exposure to the fetus should not generally exceed a limit of 1.0 mSv after declaring the pregnancy to the operator (the same limit applies to the general flying public and pregnant crew members). It should be noted that a flight crew member may have been exposed to some cosmic radiation prior to confirmation of pregnancy.
The average annual radiation exposure for a pilot is between 2-5 mSv.

The IFALPA position paper **18POSO2** on Ionizing Radiation provides relevant additional information about this topic.

Cabin Air Quality

Although cabin air is normally of acceptable quality, fume events may cause quality of cabin air to deteriorate. Fume events may pose a risk to passengers and crew in general and this would include to a pregnant woman and the unborn fetus.

Exposure to Viral Infections During Layovers

Several viral diseases may cause birth defects. The Zika virus is a notable example. It is carried by mosquitoes and may result in microcephaly in the offspring of exposed women. Current recommendations advise pregnant women not to travel to areas where Zika virus is present. In addition, if a pregnant woman's sexual partner lives in or has travelled to a Zika affected area, it is recommended to practice safer sex, including the use of condoms, for the rest of the pregnancy.[1] Pregnant women should check the current and updated recommendations concerning Zika from health authorities. Pregnant women may have a more severe reaction to malaria than women who are not pregnant. Malaria can increase the risk for serious pregnancy complications including, but not limited to, premature birth, miscarriage, and stillbirth. It is recommended that pregnant women should avoid travelling to areas where malaria transmission occurs.[2]

Foodborne Illness

Pregnant women should follow the advice of local health authorities on what foods should be avoided due to the risk of foodborne illness. Advice about this issue is publicly available such as **FDA Food Safety for Pregnant Women**.[3]

Returning to Flying

ICAO Manual of Civil Aviation Medicine, Third Ed. 2012 states that provided the puerperium is uncomplicated and full recovery takes place, pilots could be able to resume aviation duties four to six weeks after birth or termination of pregnancy.

Postpartum Depression

Postpartum depression (PPD) is a non-psychotic depression that women may experience shortly after childbirth. PPD is different from the "baby blues," which begin within the first three or four days of giving birth, require no treatment, and improve within a few hours or up to 10-14 days. PPD is a deeper depression that lasts much longer. It usually starts within the first month after childbirth (although it can occur any time within the first year) and can last weeks to years. In more serious cases, it can develop into chronic episodes of depression.[4] Apart from the fact that it happens soon after childbirth, PPD is clinically no different from a depressive episode that occurs at any other time in life. PPD symptoms are the same as in general depression and must meet the same criteria for diagnosis.[5] Often medical treatment is needed. A pilot has to be free of symptoms of depression and any medication prescribed should be acceptable for use while flying before they return to duty.

1. http://www.who.int/csr/disease/zika/information-for-travelers/en/ (accessed 15 Jan 2018)
2. http://www.who.int/malaria/travellers/en/ (accessed 15 Jan 2018)
3. https://www.cdc.gov/parasites/toxoplasmosis/epi.html (accessed 15 Jan 2018)
4. http://www.camh.ca/en/hospital/health_information/a_z_mental_health_and_addiction_information/Postpartum-depression/Pages/default.aspx (accessed 15 Jan 2018)
5. http://www.camh.ca/en/hospital/health_information/a_z_mental_health_and_addiction_information/Postpartum-depression/Pages/default.aspx (accessed 15 Jan 2018)

IFALPA
The Global Voice of Pilots

Position

18POS23 5 December 2018

Unruly Passengers

INTRODUCTION

IFALPA notes the ever-increasing number and degree of severity of incidents involving unruly passengers on board aircraft worldwide.[1] The term unruly passenger refers to any passenger who fails to respect the rules of conduct while on board an aircraft or refuses to follow the instructions of crew members, thereby disturbing good order and instruction and discipline.[2] Unruly behaviour includes assault of other passengers or crew, sexual abuse or harassment, abusive consumption of alcohol and/or narcotics, refusal to comply with safety instructions, making threats that could affect the safety and security of the crew, passengers and aircraft, and other types of disorderly behaviour that impact good order and discipline on board.

In many cases unruly passengers already showed distinctive or deviant behaviour during the period before boarding an aircraft which needlessly remained unidentified. Furthermore, unruly passengers rarely face prosecution or other legal or economic sanction because of jurisdictional issues or lack of a proactive attitude of the State.[3]

POSITION AND RECOMMENDATION

Despite the complexity of the issue, there are practical steps that can be taken to prevent and manage unruly passenger incidents, and which can contribute to increased safety.

1. Prevention and deterrence

Safety in the air begins on the ground, and unruly passenger incidents are best managed in a preventive manner by keeping unruly behaviour on the ground and off the aircraft.

All aviation stakeholders, including States, airports, airlines, and especially all ground and air personnel should have responsibility for, and be actively involved in, the prevention and recognition of unruly passenger behaviour.

The primary goal should be to prevent potentially unruly passengers from boarding an aircraft and should consist of a clear 'zero tolerance' policy. Awareness and warning campaigns, and an effective incident management system, including procedures for refusal, should be developed swiftly by the authorities at the appropriate level.

Awareness and warning campaigns should emphasise passengers' obligations and make clear that unruly behaviour on board will not be tolerated and will be punished accordingly, whereby a pro-active enforcement policy of all States is necessary.

1 IATA Factsheet Unruly Passengers, June 2017
2 ICAO Annex 17 to the Convention on International Civil Aviation (the Chicago Convention)
3 Presently, jurisdiction pertains to the State where the aircraft is registered, not to the State where the aircraft lands.

2. Alcohol and drugs policy
Intoxicated persons should not be allowed to enter any aircraft. Excessive consumption of alcohol either before the flight or on board should not be tolerated and passengers should not be allowed to consume their own alcohol on board. Potentially disruptive passengers should not be served any alcoholic beverages. The only acceptable drugs on-board should be those used for medicinal purposes.

3. Training
All personnel dealing with passengers should receive appropriate information (e.g. legal rights of the Aircraft Commander / crew member / staff member) and adequate training for dealing with unruly passengers (e.g. prevention, negotiation skills, defensive self-defence, reporting, etc.).

All employees should understand the importance of preventing passengers who exhibit unruly behaviour from boarding an aircraft and should be empowered to prevent such passengers from boarding. Judges and police officers working in airport areas should also be trained to provide adequate legal response to unruly behaviour from passengers.

4. Uniform Prosecution and Enforcement Worldwide
Prevention and deterrence relies on uniform international law to ensure that States have the necessary legal tools to be able to enforce criminal or other sanctions as appropriate, so that unruly passengers are held accountable for their misconduct. Lack of jurisdiction is the main reason for failure to prosecute unruly passengers at foreign destinations. In other cases, some countries lack specific provisions in their relevant laws to allow for the arrest and prosecution of unruly passengers even when jurisdiction is not an issue.

Tokyo Convention 1963 (TC63):

TC63 grants jurisdiction over offenses and other acts committed on board aircraft to the State of registration of the aircraft in question. This causes issues when the Aircraft Commander delivers or disembarks an unruly passenger to the competent authorities who may determine that they do not have jurisdiction (as the State of landing) when the aircraft is registered in another State. Likewise, the police and authorities of the State of registration may have little connection with an incident taking place in another country. The result is that the unruly passengers are often released and allowed to continue their journey without facing any sanctions for their misconduct.

States have now recognized that TC63 no longer provides a sufficient legal framework for dealing with unruly passenger behaviour due to jurisdictional gaps and the lack of clarity as to what constitutes an offense.

Montreal Protocol 2014 (MP14):

The MP14, adopted on 4 April 2014, amends the Tokyo Convention to provide States with a clearer jurisdictional framework for dealing with unruly passengers, whilst preserving prosecutional discretion.

Specifically,

- MP14 gives mandatory jurisdiction to the 'intended State of landing' (the scheduled destination). If the offense is sufficiently serious, the State of landing must consider if it is an offence in the State of operator.
- MP14 clarifies certain behaviours which should be considered, at a minimum, as offenses and encourages States to take appropriate criminal or other legal proceedings. These include physical assault or a threat to commit such assault against a crew member and refusal to follow a lawful instruction given by or on behalf of the aircraft Commander (for safety purposes).

- MP14 recognizes that airlines may have a right to seek compensation for costs incurred as a result of unruly passenger behaviour. The presence of this clause should have strong deterrent value.

It is paramount that the new rules agreed in the MP14 are swiftly implemented by all ICAO States.

CONCLUSION

Whatever the reasons for the rising number of unruly passengers, this kind of behaviour on a commercial flight, where the highest level of safety and order must be maintained, is intolerable.

IFALPA is of the firm view that in-flight unruly behaviour should be first and foremost prevented and preferably so on the ground before boarding an aircraft, or, failing that, appropriately prosecuted and punished.

Therefore, IFALPA calls for the universal adoption of the Montreal Protocol 2014 by all ICAO Contracting States. By making the consequences of unruly behaviour clear and enforceable, MP14 will provide a more effective deterrent tool against unruly passengers.

Campaigns should be developed at the appropriate level to inform the public and the aviation professionals about the importance of prevention, and prosecution of unruly behaviours on-board of aircraft and to provide adequate training to all persons involved.

IFALPA believes that both the above mentioned operational/preventive measures and the regulatory provisions of MP14 are necessary to adequately tackle the problem.

Only the combination of both will be able to contribute to decrease the number of unruly passenger incidents on board aircraft, leading to safer, more efficient, and more pleasant air travel experience for all.

IFALPA
The Global Voice of Pilots

Position

18POS13

4 December 2018

Helicopter Emergency Flotation Systems

BACKGROUND

Emergency Flotation Systems (EFS) are designed to keep the helicopter upright for enough time to allow egress from the helicopter after a ditching. While there would be virtually no design possible that could mitigate against all roll over events, a properly executed landing onto a favourable sea state should give passengers and crew sufficient time to retrieve vital survival equipment and safely egress the helicopter into the life rafts. These flotation systems have physical limitations in that they are only rated to perform given certain aircraft weights, sea states, and other factors.

The reasons for these limitations are mostly self-evident but relate to the ability of the EFS to provide its rated performance in the event of a ditching. Many pilots seem to be unaware of the design and specific limitations of the EFS installed on their aircraft and many operations manuals, SOPs, and checklists do not reference examining sea state during the planning phases of a flight.

The UK CAA conducted an Offshore Helicopter Safety Review in which they noted:
"Following the standard aviation system safety analysis methodology, in view of the historic ditching rate (3.4 per million flight hours) and the likely consequences of post-ditching capsize ('hazardous'), in order to minimise the probability of post ditching capsize, operations should be prohibited when the sea conditions at the offshore location that the helicopter is operating to/from exceed its certificated ditching performance."

POSITION

While it is operationally unlikely that helicopters will be totally removed from operating over hostile sea states in excess of the EFS' limitations, there must be better visibility of this risk and sensible mitigations made to ensure that crew and passengers have the best chances of egress and survival from a ditching event.

IFALPA
The Global Voice of Pilots

Position

18POS11

4 December 2018

Take-Off Performance Monitoring System

BACKGROUND

Take-off performance issues have been a contributing factor in a wide variety of serious incidents and accidents in recent years (1,2). However, there have been very few technological improvements to address the problem, and in particular to validate computed performance data, so that the crew can get confirmation that the calculated Take-off thrust is within a safe range for the actual weight and weather conditions. Real-time take-off acceleration check still relies on the perception of acceleration felt by the crew, which may be very different from one take-off to another.

In a 2012 study (3), NASA outlined six main error families in the field of performance data. All are human errors. Examples include erroneous data entry (wrong weight, fuel, number of passengers, etc.), erroneous copying or reading of data from a computer (EFB, MCDU, etc.), and incorrect flap and trim settings. Most of these errors should have been caught by existing procedures, but many of these procedures can also fail because the checks rely on the same set of data. Initial errors are difficult to catch because procedural checks do not match human performance characteristics and are not adequate to actual flight operations. This study recommends automated data insertion via either computer communication or data scanning, thus limiting the human data input error. It also suggests an on-board weight-and-balance sensing system.

IFALPA's preferred option is the validation of take-off performance computation and related data input via a comparison with live aircraft performance during the take-off roll. The NASA study (3), mentioned this possibility as the "TOPMS" but expresses concerns on the risk of false positive alarms, especially in a high workload phase.

POSITION

Take-off performance monitoring is a complex issue that should be addressed in several steps:

Development of a simple acceleration-based Monitoring System for large errors

In all commercial transport aircraft, there should be a simple system comparing the actual longitudinal acceleration during the take-off roll with a computed value. This computed value could be derived from take-off performance calculation made by the crew or from pilot inputs in the FMS (such as assumed take-off weight and selected thrust rating). The comparison could be done with the acceleration at a specific ground-speed or by averaging the acceleration in a given ground-speed range.

This system should provide an aural warning calling for a stop in case of major discrepancy. The actual ground speed range, when the warning is triggered, should ensure that stopping is always possible on any runway and with any runway contamination, and avoid high-speed rejected take-offs.

Existing aircraft should be retrofitted whenever possible.

Research on an advanced Monitoring System

IFALPA believes that more research should be undertaken to design an advanced take-off monitoring system. All aspects should be studied, such as the ability to call for a stop manoeuvre or for the application of maximum thrust, the estimated error magnitude, the feasibility of either a stop or a continued take-off, and the known and detected environmental and aircraft configuration parameters. The objective is to have the crew take action whenever any possible performance mismatch can be sensed. This is most important in case of an engine failure on the runway or during initial climb.

This system could also be used to advise the crew on the feasibility to stop on the runway in the event of a stop manoeuvre, and on the last moment when such manoeuvre could be performed and still be successful, should it be different from the computed V1.

Special consideration should be given to runway contamination issues, especially by contaminants that can reduce aircraft acceleration.

Non-Hardware Issues related to Take-off Performance

Alongside the development of these devices, crew performance during take-off and the associated training should be considered. Specific training should be given for a systematic application of maximum thrust whenever the crew is in doubt of the aircraft performance during the take-off roll.

REFERENCES

1. ATSB, 2009, "Take-off performance calculation and entry errors: a global perspective"

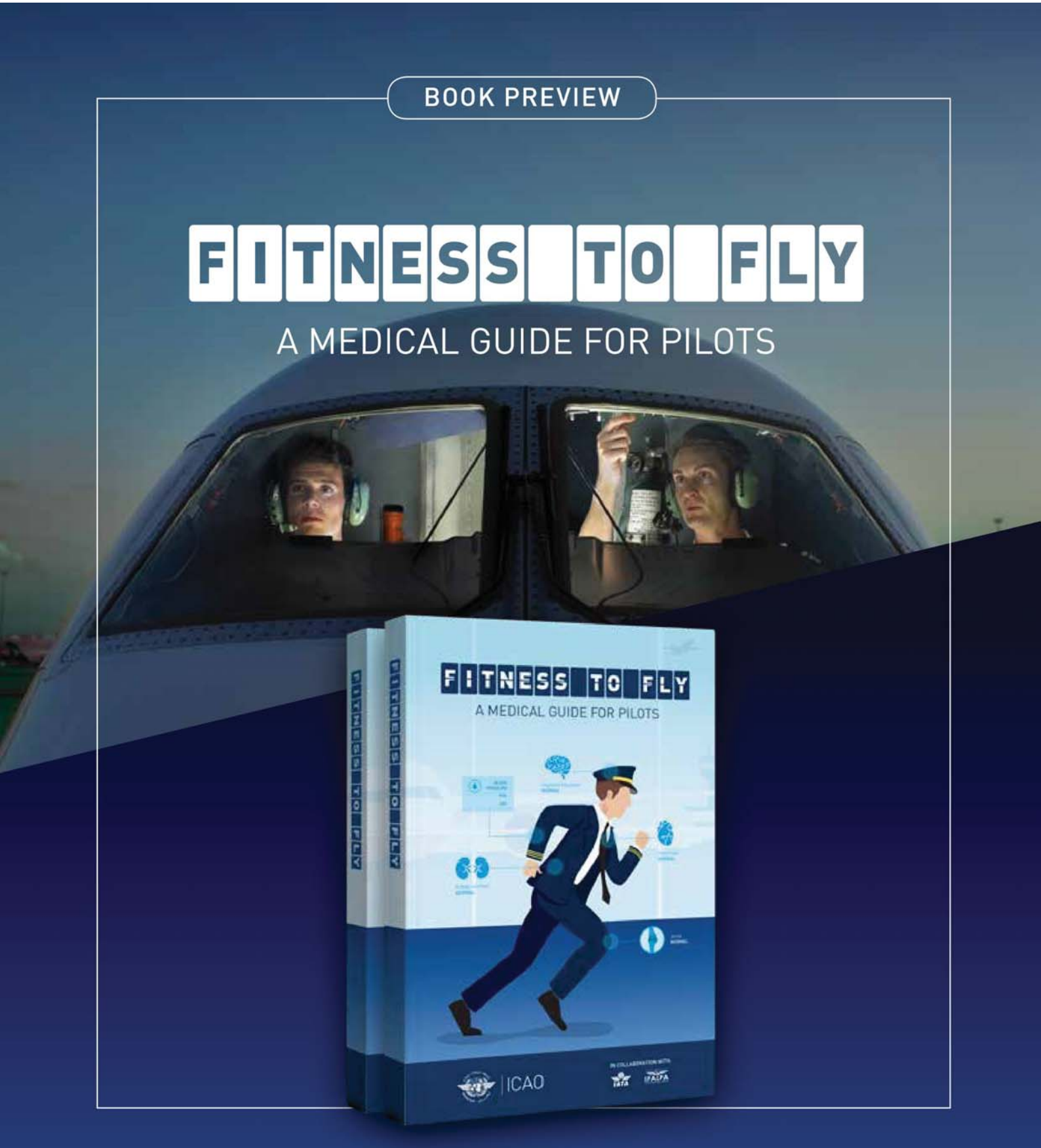
2. IATA, 2011, "Flight Crew Computer Errors (FMS, EFB), Case Studies"

3. NASA, 2012, "Performance Data Errors in Air Carrier Operations: Causes and Countermeasures"

BOOK PREVIEW

FITNESS TO FLY

A MEDICAL GUIDE FOR PILOTS



ICAO

IN COLLABORATION WITH:

IATA

IFALPA
The Global Voice of Pilots

MAINTAIN GOOD HEALTH
THROUGHOUT YOUR CAREER AS A PILOT

Fitness to Fly – *A Medical Guide for Pilots* is a preventive-medicine handbook that is easy-to-read, motivating and educational, with engaging content, graphics and charts to empower you to limit your health risks and set your own goals and strategies to maintain fitness to fly and a balanced lifestyle.

This guide was developed by the International Civil Aviation Organization (ICAO) in collaboration with the International Federation of Airline Pilots' Associations (IFALPA) and the International Air Transport Association (IATA). It is focused on the health risks pilots face during their careers and the medical recommendations that help them mitigate those risks.

This handbook is intended to close the gap between pilots' medical requirements in order to fly and the preventive measures that can help them fulfill those requirements.

The recommendations contained in this guide are also applicable for cabin crew, air traffic controllers and anyone working within the aviation industry. They will help improve the personal health of aviation personnel throughout their careers, bringing positive outcomes for all aviation stakeholders in the long-term.

This is ICAO's contribution to promoting the well-being of the aircrew community - a priority shared by all aviation stakeholders.

This book helps you to:

- ☑ Understand the most common health issues facing pilots today
- ☑ Learn how to reduce major risks to mental and physical health
- ☑ Manage your nutrition, sleep and medication for optimal flight performance

TABLE OF CONTENTS

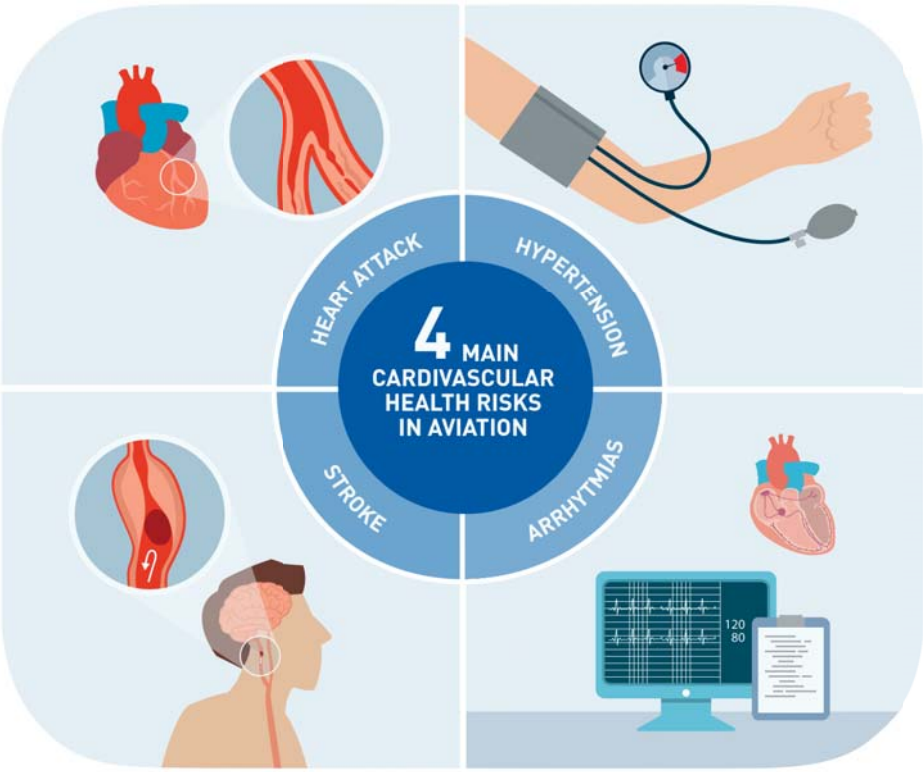
CHAPTER 1

UNDERSTANDING CARDIOVASCULAR RISK

ARE YOU EXPERIENCING ANY OF THESE WARNING SYMPTOMS?

1. **Irregular heart beat**
2. **Pressure, tightness or chest pain**
3. **Dizziness**
4. **Difficulty breathing or shortness of breath**

If your answer is yes, you may be under one of these 4 major risks:



To learn more about these recommendations, get your handbook at
www.unitingaviation.com/fitnesstofly/

CHAPTER 1

UNDERSTANDING CARDIOVASCULAR RISK

In Fitness to Fly, find

7 WAYS TO MITIGATE THESE RISKS AND ACHIEVE OPTIMUM CARDIOVASCULAR HEALTH:

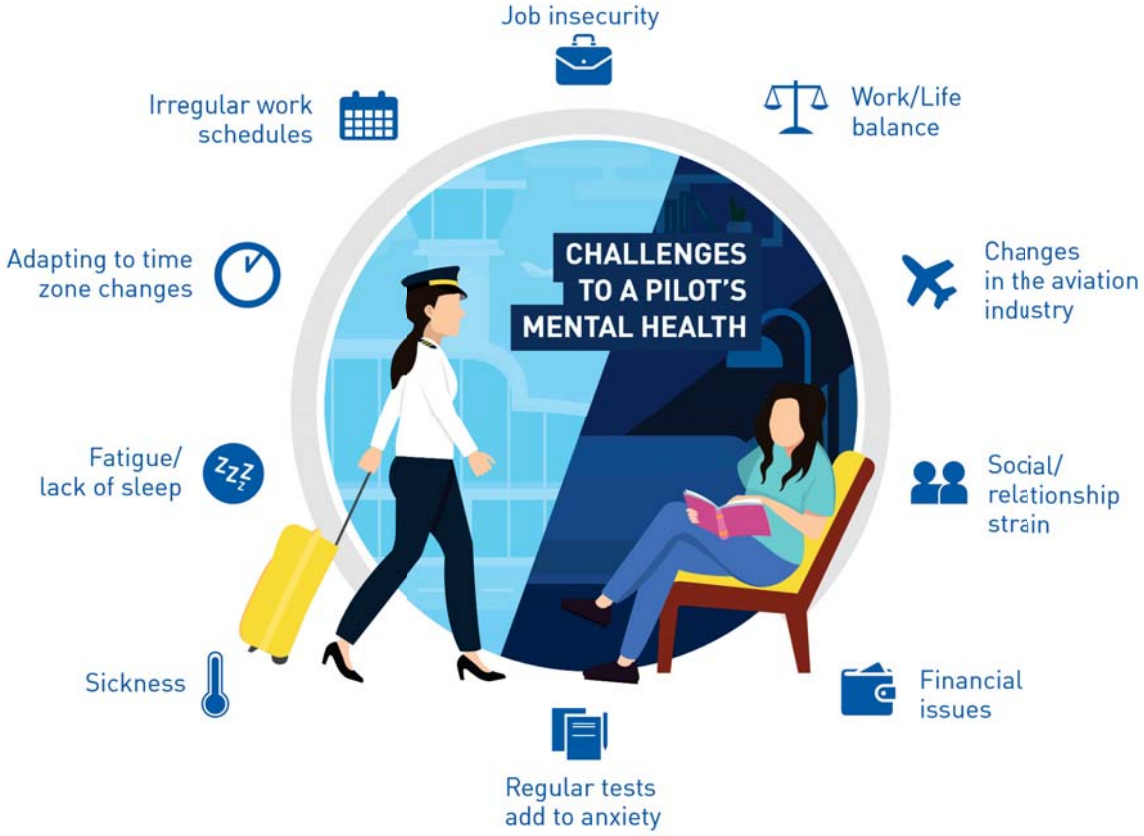
1. **Get active!**
2. **Understand your blood fat (lipid) levels**
3. **Manage your blood pressure**
4. **Eat a healthy diet**
5. **Maintain a healthy weight**
6. **Understand the risk of diabetes**
7. **Stop smoking**

To learn more about these recommendations, get your handbook at
www.unitingaviation.com/fitnesstofly/

CHAPTER 2

HOW TO KEEP MENTALLY WELL

There are several challenges pilots face during their career that can result in emotional and mental stress:



To learn more about these recommendations, get your handbook at
www.unitingaviation.com/fitnesstofly/

CHAPTER 2

HOW TO KEEP MENTALLY WELL

In Fitness to Fly, find

5 PRACTICAL WAYS TO ACHIEVE OPTIMUM MENTAL HEALTH AND WELL-BEING:

1. **Connect socially with others**
2. **Get Active**
3. **Keep learning**
4. **Give to others**
5. **Be mindful**

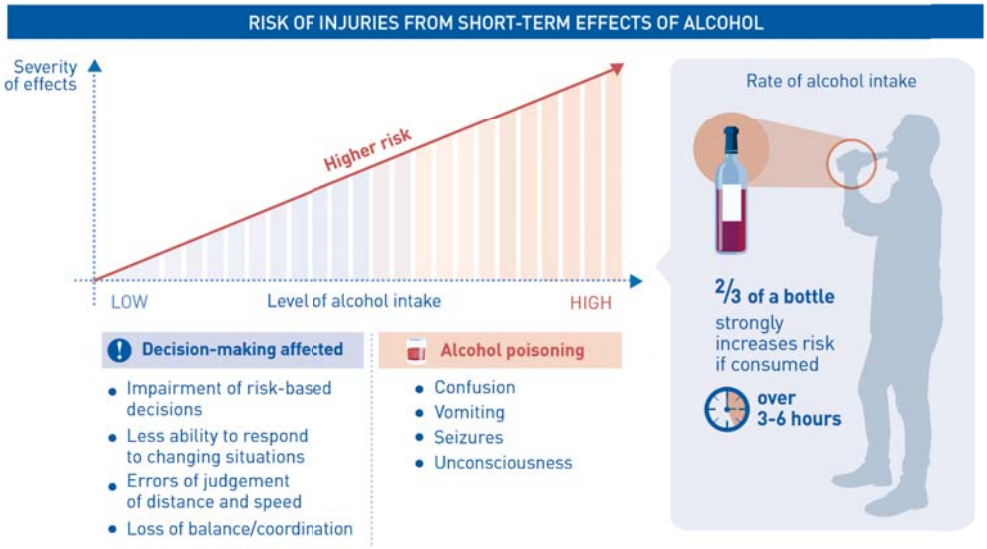
To learn more about these recommendations, get your handbook at
www.unitingaviation.com/fitnesstofly/

CHAPTER 3

IMPACT OF ALCOHOL AND DRUGS ON PERFORMANCE AND HEALTH

There is a clear flight safety risk associated with problematic use of alcohol, or other psychoactive substances. Among a variety of other detrimental effects, the following are some effects of alcohol intake:

- **Increased self-confidence and reduced anxiety that can adversely affect decision making**
- **Coordination problems**
- **Impaired reaction time and double vision**
- **Errors of judgment of distance or speed**



CHAPTER 3

IMPACT OF ALCOHOL AND DRUGS ON PERFORMANCE AND HEALTH

In Fitness to Fly, find

9 PRACTICAL WAYS TO MINIMIZE RISK FROM ALCOHOL INTAKE:

1 Assess your drinking habits

Take the AUDIT questionnaire

2 Comply with your company's alcohol policy

3 Find out the drinking guidelines in your country

4 Learn about the amounts of alcohol in different drinks

% alcohol	Spirits	Beer	Wine
	40%	5%	12%

5 Set sensible drinking levels

UNIT= small glass / 12% ABV

UK guidelines	Max **14** units/week Spread over 3+ days
US guidelines	Max Daily **1** **2**

6 Don't "binge drink"

The effects of binge drinking can last for **up to 72 hours**

4 + **5 +**

Blood alcohol level
= or + 0.08 grams

7 Have several alcohol-free days per week

8 Mitigate the short-term effects of alcohol

Alternate with water

Eat a meal prior to drinking

9 Know where to seek help

9 PRACTICAL WAYS

to minimize risk from alcohol

To learn more about these recommendations, get your handbook at
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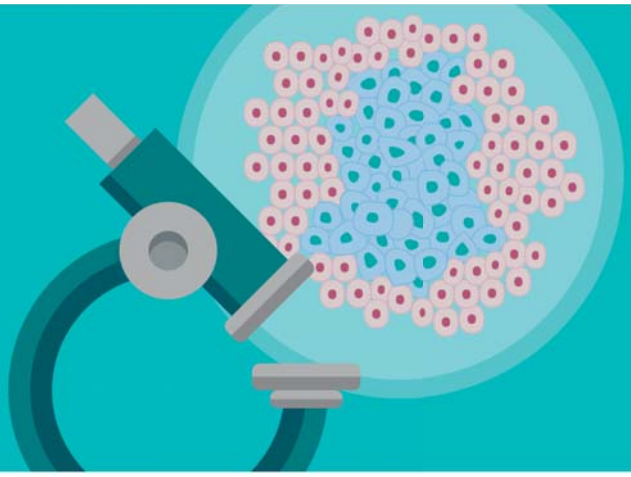
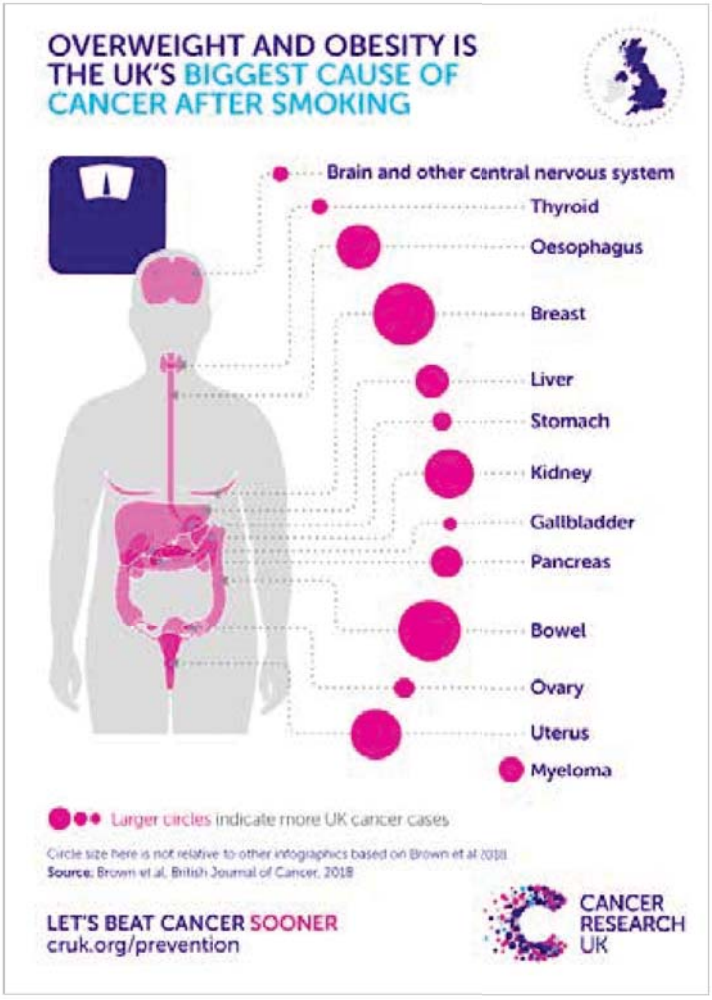
CHAPTER 4

WHAT WE KNOW ABOUT CANCER



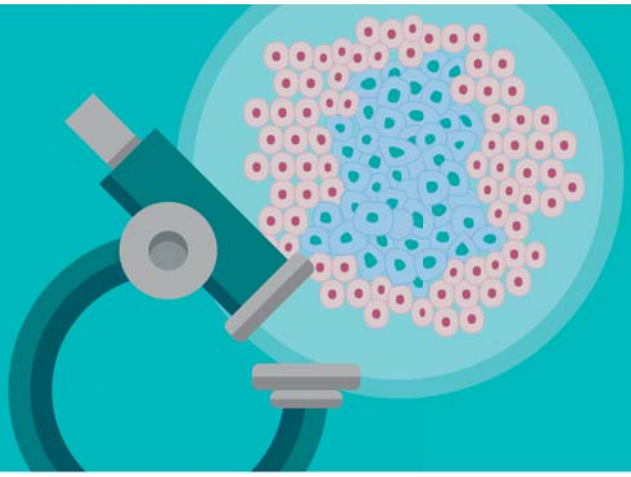
Studies indicates that cancer incidence is generally lower in professional pilots than the general population. However, an increased frequency of skin cancer has been reported in pilots which could be due to exposure to UV from sunlight.

Other types of cancer are caused by the five leading lifestyle risks: high body mass index, low fruit and vegetable intake, lack of physical activity, tobacco use and alcohol use.



CHAPTER 4

WHAT WE KNOW ABOUT CANCER



In Fitness to Fly, find

8 PRACTICAL WAYS TO MINIMIZE THE RISK OF CANCER:

1. **Stop smoking**
2. **Eat a healthy diet**
3. **Maintain a healthy weight**
4. **Cut back on alcohol**
5. **Avoid sunburn**
6. **Get active!**
7. **Reduce the risk of certain infections**
8. **Discuss with a health professional which cancer screening tests you should undergo**

SKIN CANCER CHECKLIST

To reduce the risk of developing skin cancer

Do not deliberately **sunbathe**

Stay in the shade when the sun is highest

Wear clothing that **covers as much of your skin as possible**

Protect your head, face and back of the neck (e.g. wear a hat with a wide brim)

Use sunscreen with factor (SPF) of 15 or higher

It should protect you against both UVA and UVB

Avoid using a tanning bed, booth or sunlamp

To learn more about these recommendations, get your handbook at
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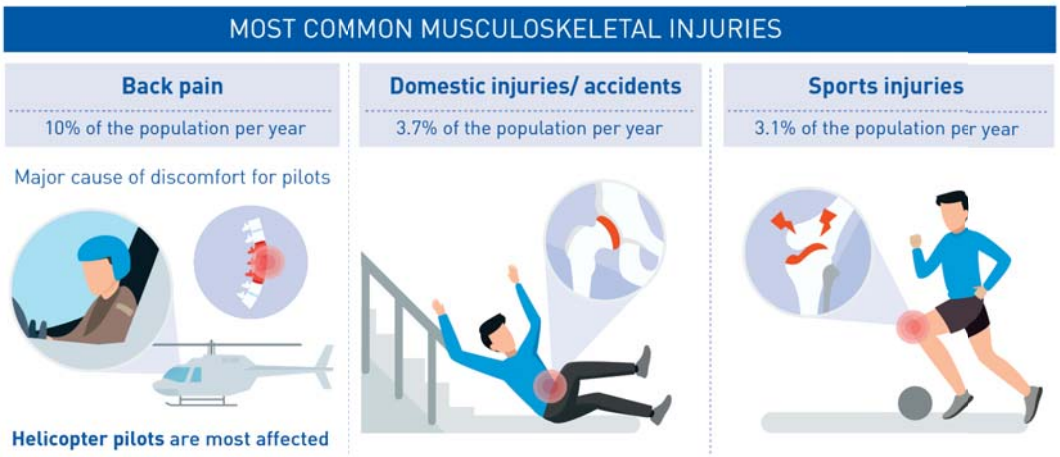
CHAPTER 5

HOW TO REDUCE YOUR HEALTH RISKS FROM MUSCULOSKELETAL INJURY

In professional pilots, musculoskeletal problems consistently rank among the most common reasons for unfitness, both temporary and long term with the potential to create a flight safety risk due to distraction and performance decrements.

While back pain is the single most important musculoskeletal problem in pilots, there are other types of musculoskeletal conditions that should be considered (e.g. those related to sporting injuries and home-based activities).



CHAPTER 5

HOW TO REDUCE YOUR HEALTH RISKS FROM MUSCULOSKELETAL INJURY

In Fitness to Fly, find

9 PRACTICAL WAYS TO REDUCE MUSCULOSKELETAL INJURY RISKS:

1. **Get active!**
2. **Build up levels of physical activity slowly, and warm up before undertaking sporting activities**
3. **Avoid exercise when feeling unwell**
4. **Adopt an ergonomically neutral posture**
5. **Keep your back straight and not twisted when lifting**
6. **Maintain a healthy weight**
7. **Take care to avoid accidents or falls**
8. **Stop smoking.**
9. **Sit less, move more - reduce risks from a sedentary lifestyle**

A GOOD EXERCISE PROGRAMME SHOULD INCLUDE:

Aerobic fitness

Running, walking, using stairs

Core exercises

Muscles of the abdomen, lower back and pelvis

Strengh training

Push-ups, squats, exercise with weights

Balance training

For example, standing on one leg and switching

Flexibility and streching

Stretching exercises when the muscles are warmed up

To learn more about these recommendations, get your handbook at
www.unitingaviation.com/fitnesstofly/

CHAPTER 6

NUTRITION AND WEIGHT MANAGEMENT

One of the main health risks for pilots is an unhealthy diet. Obesity is linked to a number of chronic health conditions. Diabetes is one of the top 10 diseases that cause long-term unfitness in professional pilots and is linked to diet and weight issues.

Healthy weight loss isn't about a 'diet' or 'programme'. It's about lifestyle changes in daily eating and exercise habits.

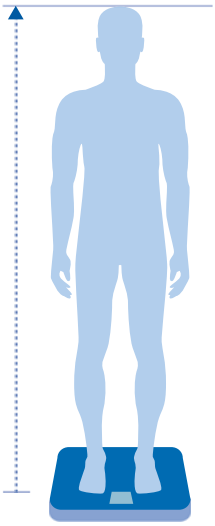
BODY MASS INDEX (BMI)

Body weight in kilograms

Height (in metres)^2

Although widely used, it has some limitations

Alternative measurement: **"waist/hip ratio"**



Health problems related to raised BMI:

Diabetes | Cardiovascular disease | Certain types of cancer

Pilots need to keep a healthy weight for safety reasons (escape in an emergency)

To learn more about these recommendations, get your handbook at www.unitingaviation.com/fitnesstofly/

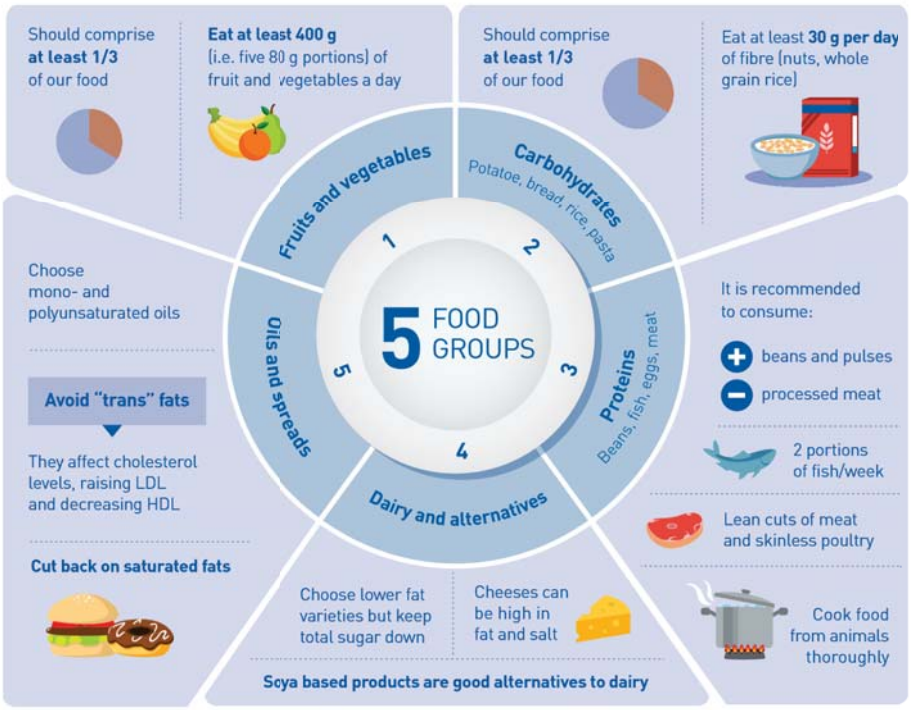
CHAPTER 6

NUTRITION AND WEIGHT MANAGEMENT

In Fitness to Fly, find

7 WAYS TO MAINTAIN GOOD NUTRITION AND SUCCESSFULLY MANAGE BODY WEIGHT:

1. **Consume the number of calories required to obtain and maintain a healthy weight**
2. **Minimize intake of food with high refined sugar content**
3. **Eat a balanced diet**
4. **Reduce salt intake**
5. **Make healthy choices when eating away from home**
6. **Take an interest in reading and understanding food labels**
7. **Lower your risk of developing Type 2 diabetes**



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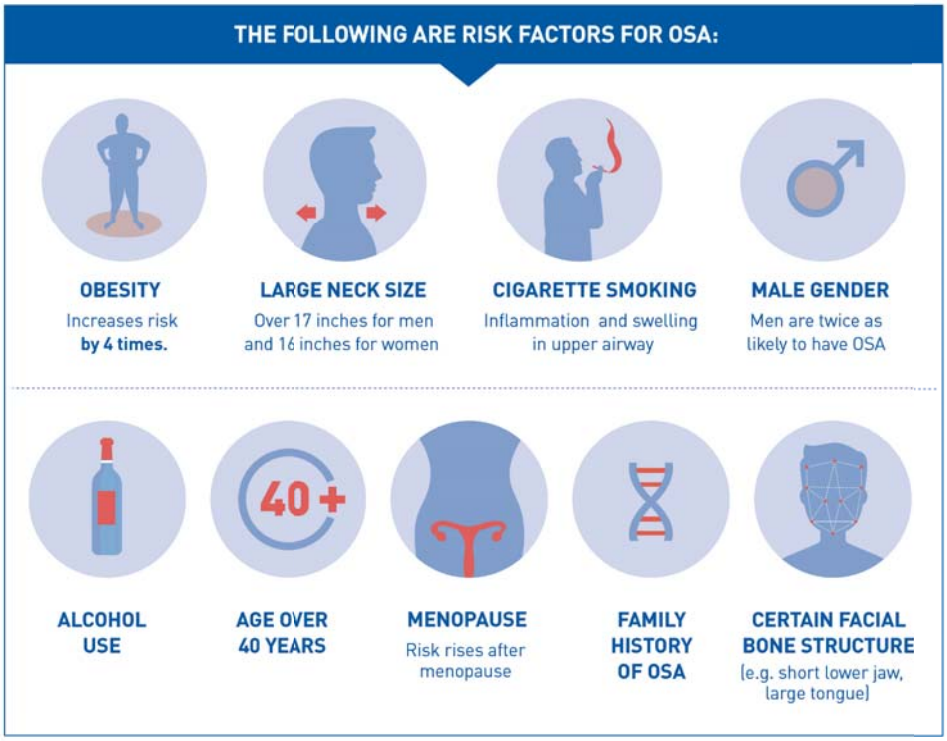
CHAPTER 7

SLEEP AND THE IMPACT OF MEDICAL CONDITIONS

Most of the scientific work related to sleep issues and professional pilots has involved the effect of fatigue on alertness and performance.

Obstructive Sleep Apnoea (OSA) is probably the most common medical cause of poor sleep in pilots. It consists of repeated pauses in breathing during sleep. The effects of OSA are seen when awake, with the individual feeling very tired the next day due to repeatedly disturbed sleep, resulting in an increased susceptibility to fatigue.



CHAPTER 7

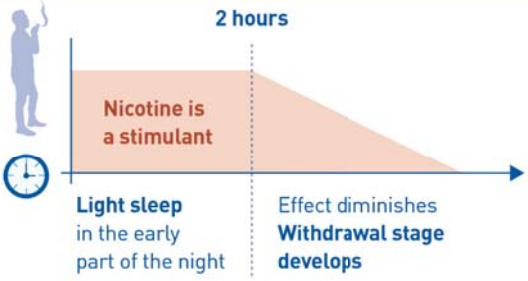
SLEEP AND THE IMPACT OF MEDICAL CONDITIONS

In Fitness to Fly, find

6 SIMPLE WAYS TO REDUCE THE RISK OF MEDICAL CAUSES OF POOR SLEEP:

1. **Maintain a healthy weight**
2. **Get active!**
3. **Avoid drinking alcohol before bedtime**
4. **Stop smoking**
5. **Use sleep opportunities wisely**
6. **Avoid caffeine and other stimulants before bedtime**

SMOKERS AND SLEEP



Smokers are more likely to feel less rested after sleep

Smokers are 2.5 times more likely to have sleep apnoea

Quitting reduces the risks to the same level as a **person who never smoked**

Know your **circadian rhythms**

Try to go to sleep at a time you are most likely to drop off

MAXIMIZE THE BENEFIT FROM **SLEEP OPPORTUNITIES**

It takes a day to fully adapt to each hour of time zone shift

Napping is a useful mitigation for lack of sleep

even for 10-20 minutes

To learn more about these recommendations, get your handbook at
www.unitingaviation.com/fitnesstofly/

CHAPTER 8

TRAVEL HEALTH

Due to the nature of the work, professional pilots travel often abroad and are exposed to a number of increased health risks such as poor food quality, road transport accidents and accidents when undertaking outdoor activities. The risk of injury is increased when under the influence of alcohol or drugs.

HOW TO PREVENT FOOD POISONING

When eating out while on a layover/ night-stop away from home base

If in doubt about the hygiene of a cafe or restaurant, **don't eat there**

Don't eat "street food", as hygiene standards are often poor

Always eat **freshly cooked food**

In a location where water is not drinkable, **avoid salads, fruit, and ice**

Ensure all meat and fish are completely cooked

Avoid shellfish

During a flight

Operating flight crew should **eat different dishes** when in-flight meals are served

Pilots at the controls should eat at different times

A separation of **at least 30 minutes** is advisable.

To learn more about these recommendations, get your handbook at
www.unitingaviation.com/fitnesstofly/

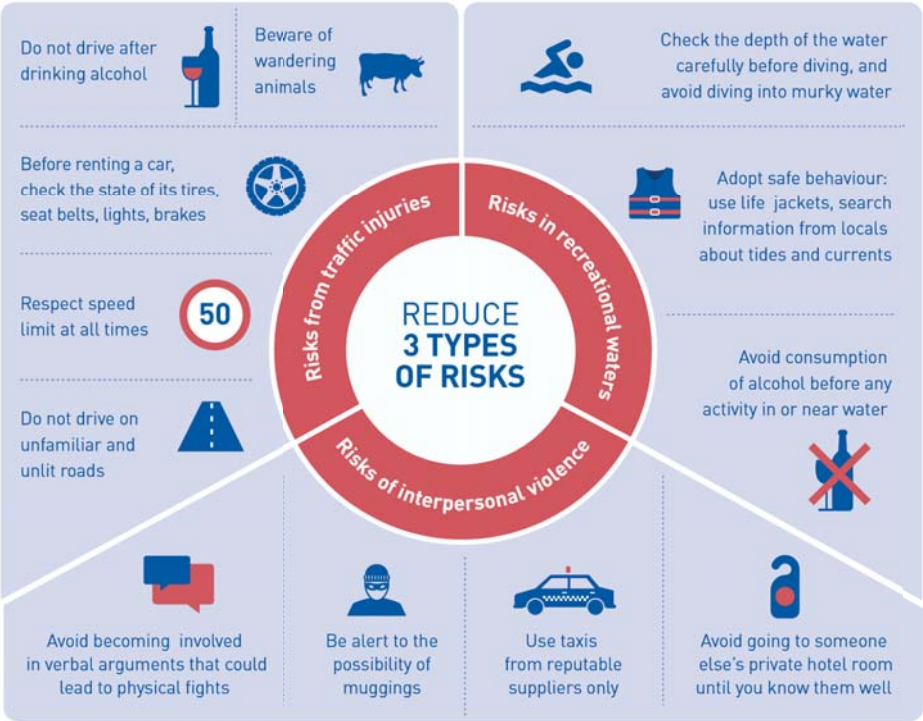
CHAPTER 8

TRAVEL HEALTH

In Fitness to Fly, find

9 WAYS TO REDUCE MEDICAL RISKS WHEN TRAVELLING ABROAD:

1. **Keep your vaccinations up to date**
2. **Check risks from insects and take preventive action as necessary**
3. **Be careful about food and water hygiene**
4. **Reduce transport, recreational and assault risks**
5. **Know your blood group**
6. **Avoid unnecessary exposure to sunlight**
7. **Do not use medications from unreliable sources**
8. **Avoid sex with casual partners**
9. **Stay away from animals**



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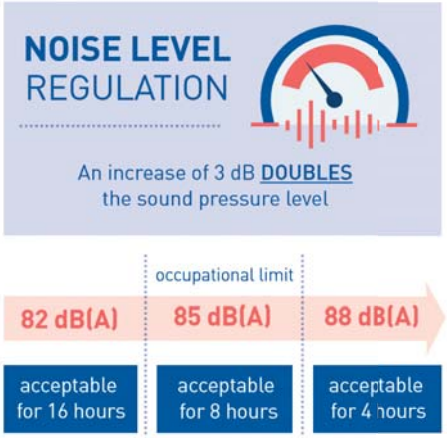
CHAPTER 9

HEARING AND VISION

The main concern with hearing loss is the risk of reduced ability to communicate clearly and the increased possibility of misunderstanding an ATC instruction. As with hearing, loss of vision has the potential to cause major safety risks for a pilot.



If you are operating noisy aircraft, the risk of NIHL is increased, so be particularly careful about protecting your hearing, both at work and during leisure time.

The most frequent eye diseases with the potential to significantly reduce vision in pilots are cataracts, age-related macular degeneration, diabetic retinopathy, glaucoma and eye injuries. All of these diagnoses can be prevented, or progression delayed.

CHAPTER 9

HEARING AND VISION

Find in Fitness to Fly

ESSENTIAL TIPS AND RECOMMENDATIONS ON HEARING AND VISION PROTECTION:

1. **Protect your hearing from long duration high level background noise and from loud noises even if it is for short duration**
2. **Keep the volume down**
3. **Use ear protectors**
4. **See your doctor if you notice any hearing loss**
5. **Reduce exposure to ultraviolet radiation**
6. **Wear eye protection**
7. **Eat healthy balanced diet**
8. **Reduce risk from diabetes**

To learn more about these recommendations, get your handbook at
www.unitingaviation.com/fitnesstofly/

Pilot Supply

Position Paper

Executive summary

- Ensuring an appropriate supply of skilled, talented flight crews is crucial to underpin Europe's aviation sector.
- There is no issue with the **availability of licensed pilots** in most European countries. There is however a **growing issue** with the employer's perceived **quality of pilots** graduating from the flight schools.
- **Attracting**, **properly selecting and training the right candidates** are the core challenges that need to be considered when discussing pilot supply.
- The industry must seek **early-stage engagement with the next generation** of professional pilots, to create enthusiasm, motivation and explain the opportunities that are out there.
- **Pilot organisations must be present** at study information days and aviation job fairs to advocate an objective storyline to young people interested in joining a flight school.
- Offering future and current pilots an **attractive work environment**, incl. optimal **work-life balance** and **stability of employment and home base,** rather than precarious atypical forms of contracts used by certain airlines in the industry, are extremely important for a candidate to decide to become a professional pilot – and subsequently to stay within the profession.
- Paying the **training costs** of new desired pilots and a modest wage (e.g. airline sponsored schemes) is also an important factor the candidates consider when choosing their career.
- Any alleged 'pilot shortage' claims must **not be used to weaken European regulations** on pilot training, flight time limitations for instructors or examiners, or other relevant safety legislation.
- The pilot **training syllabus must be brought into the 21st century** providing pilots with a real 'education' that encompasses management, economic, leadership and people skills.

Introduction

What can be done to ensure an appropriate supply of skilled, talented flight crews? Do we have enough qualified pilots currently on the market? Is there a pilot shortage or not? When answering these questions, one needs to consider various aspects, such as the region, type of operation, the experience of the pilot group considered and the economics of pilot supply.

European Cockpit Association AISBL

Rue du Commerce 20-22, 1000 Brussels, Belgium | T +32 2 705 32 93 | F +32 2 705 08 77 | eca@eurocockpit.be | www.eurocockpit.be

In fact, there is no issue with the availability of *licensed* pilots in most European countries. There is however a growing issue with the employer's perceived *quality* of pilots graduating from the flight schools, especially from the self-sponsored training schemes where insufficient initial screening has been performed. According to the airlines, the 'standard' of some of these graduated pilots is not 'fit for the purpose' of becoming an airline pilot.

Does a licensed pilot still equate to a skilled or qualified pilot? And if not, what are the systemic issues leading to that gap? The lack of oversight on quality by National Aviation Authorities (NAAs) is one of the problems in most EU countries – there is no prescribed legislation on Approved Training Organisations' (ATOs) quality, only on the syllabus leading up to a license (frozen ATPL). At the end of the chain the airline is the only judge of whether the quality of the graduated pilots is up to their standards.

Many potential student pilots and even license holders who have completed the basic training will choose a different career path, having looked at all the further necessary financial investments to obtain the qualifications and/or experience (flight hours) required by airlines, such as type ratings. Also, the assessment of working and employment conditions in many (low-cost) airlines – including the increasing phenomenon of precarious 'atypical' employment forms – and job opportunities in their country or region can lead to the conclusion that they are better off in another aviation job or working in another sector. Attracting and keeping the right people to and in the profession therefore depends a lot on the airlines' working environment and employment set-ups.

Finally, the 'pilot shortage' debate is very often a convenient way of covering up many structural problems in the industry. What may be perceived – or portrayed – by some in the industry as a 'pilot shortage' is in fact part of a complex discussion on accessing pilot supply. Some stakeholders' agendas appear to be about weakening safety regulation to 'unlock' pilot supply for certain airlines at a lower cost, and/or increasing profits for some training organisations. Both airlines and ATOs should have an interest in the highest quality, but this usually competes with a commercial motivation in their attitude towards pilot training.

Attracting, selecting, training and enabling the right talent – as well as providing an attractive and stable career perspectives – are the core challenges that need to be considered and changed when discussing the pilot supply issue. Addressing these challenges must not be a smokescreen for monetising pilot supply.

How to attract the most capable candidates?

Making sure that airlines attract and hire the most capable candidates should be the only way to ensure that sufficient numbers of highly skilled flight crews are joining a company.

Hiring on the basis of who can afford to pay the very high costs of pilot training is not going to create a body of pilots who are consistently self-motivated, ready to invest in their profession, and further develop themselves as instructors, trainers and examiners, or simply as good role models for those entering the profession in the future.

Unfortunately, this 'selection by wallet size' is a reality in some parts of the airline industry. There are a range of factors that human resource specialists and managers need to consider when looking to attract applications from high quality candidates with the right capability and potential. Investment in attracting these candidates is an absolute necessity if airlines are to have future pilots with the skills airlines need, rather than just those with a suitably big bank balance. This includes:

Finding the 'future aviators'

- Strong internal motivation makes a big difference in an individual's chances of persevering with the rigours of training, through recruitment, and with the demands of the job throughout a career. The industry must seek *early-stage* engagement with the next generation of professional pilots, to create enthusiasm, motivation and explain the opportunities that are out there.
- It is crucial that airlines, national authorities and transport departments, and professional associations take part in programs at schools that introduce children to the aviation industry and generate enthusiasm for the pilot profession early on.
- Aviation is lacking diversity and diverse role models. This results in the perception of a pilot career to be mainly an aspiration for the white, wealthy male, thereby leading many potential good candidates not to even consider it, such as females, ethnic minorities etc. This reduces the amount and quality of applicants to the profession, adversely affecting the pilot supply. Early intervention would correct this, explaining the sort of study choices that will help, and support capable and motivated candidates in the future.
- Active outreach to flying clubs and glider clubs, or even industry organised summer camps to bring the aviation 'bug' to a new audience would be a very good way to attract capable candidates. Early flying experience in gliders has been identified by the profession as an extremely valuable foundation for pilot training.

Involving pilot organisations

- Involvement of all national pilot organisations across Europe is necessary at study information days and aviation job fairs to advocate an objective storyline to young people interested in joining a flight school. These pilot organisations can provide a hands-on, realistic and non-commercially driven picture of the job opportunities, study costs and flight schools in their respective countries, as well as of the every-day working environment and demands of the profession.

Making the career & profession attractive again vs the available alternatives

- Nowadays, airlines are competing against alternative 'career paths' both outside and inside the world of aviation. With many global opportunities offered to people, be it investing in a start-up venture, pursuing a digital-nomad career, or even flying for a fast-growing drone company – there is plenty to choose from. And young people nowadays will often carry out thorough research before choosing. If not attractive enough, the pilot career will lose out.
- The attractiveness of the profession also affects however the more senior, qualified crews. With the working conditions deteriorating in many companies and regions – crews are likely to move to more attractive airlines or regions if the environment in which they work does not satisfy their work-life balance, financial or self-development needs.

Providing an attractive and stable working environment & conditions

- It is impossible to attract talented, confident people to a job where the terms and conditions are not satisfactory and precarious atypical forms of employment become ever more wide-spread. It becomes even more of a challenge when you consider the *millennials* who 'like enjoying their life' and will look for alternatives that allow them to do that. Optimal work-life balance due to rosters, part-time working possibilities, stability of employment and base – allowing the combination of family life with the profession as

a commercial pilot – is extremely important. It is something that a candidate will carefully analyse before deciding to become a professional pilot and considering employers.

- A serious effect in this regard is the rapidly increasing trend for existing experienced pilots to seek part time arrangements or early retirement in order to regain some work-life or family balance. This is producing a significant reduction in the "full time man power equivalent" available to the industry and has real effect on pilot supply. When squeezing the last few percent productivity from a pilot results in them becoming available for work only 50% of the time, the impact on pilot supply is obvious.
- Labour conditions allowing for possible repayment of high initial training costs linked to self-sponsored training are also crucial in this decision-making process. The balance between the complete cost of the training (easily between 80.000-140.000 euro), the starting salary and the cost of living – must allow for a 'normal' lifestyle for the individual to take the risk and invest time & resources in this specific career. If this balance is tilted, young people will simply move elsewhere.

Mitigating the financial cost

- Against this background, the reintroduction of airline sponsored ab-initio training schemes needs to be encouraged as a matter of urgency! This alone would make a significant difference to improving pilot supply. In some European countries these schemes still exist and show a combined investment of the candidate together with the airline which results in a long-term sustainable relationship. It is also worth expanding the (too) few states financed flight training schemes.
- Where student pilots are still funded through bank loans, they should have their loans guaranteed with university student interest rate levels and repayable in a university student-loan timeframe.
- The use of reasonable training bonds, instead of self-sponsored type-rating costs, could also provide an alternative for training financing.
- Pay to Fly schemes[1] must be forbidden. They push young pilots even deeper into financial strains, have a corrosive effect on the training environment, and conflict with flight safety.

How to select the right talent?

One of the main issues that affects pilot supply is the screening process of the candidates.

Because of that – an *independent* and *effective* assessment *prior* to the commencement of the initial professional pilot training is a must. The financial solvency of the candidate should not be the primary factor in deciding whether s/he is accepted to a flight school or not.

Overcoming Conflict of interest (ATOs)

- An independent and effective assessment would reduce the risk of a conflict of business interest by an ATO keen to get a new customer/cadet who may not have sufficient skill or ability – but might simply have enough money. To many ATOs, a pilot candidate equals a profit, and to make profit, the school needs cadets in training.

[1] https://www.eurocockpit.be/sites/default/files/eca_pay_to_fly_p2f_position_pp_15_0428_f.pdf

Standardising the assessment process

- In order to facilitate an objective process for selecting the most talented future pilots - standardisation should be created (at European level) to ensure proper assessment procedures are in place at any ATO providing training leading up to an EASA license.

Airlines to engage in recruitment

- Airline companies must be actively engaged in the pilots' recruitment process since it is the airline that knows best its operational needs and can set necessary requirements additional to the default standard.

How to satisfy the demand for qualified and not just licensed pilots?

While in most European countries there is no issue with the availability of licensed pilots, the quality of pilots graduating from flight schools – especially from self-sponsored training schemes where insufficient initial screening might have been performed – is perceived as a growing concern. How to ensure that the standard of pilots produced in the current training system is 'fit for purpose'?

- Selecting the right candidates is a first step to ensure the crews can achieve the highest standard (see point above).
- Pilots must be subject to high-quality training standards, set by legislation (both European and international) – both within an airline, and whilst undertaking airline sponsored training courses. Attempts by certain stakeholders to water down training requirements and standards to 'ease' the pilot supply, must be resisted.
- Providing adequate numbers of high quality flight instructors and examiners to the entire pilot training system is also a must. Trying to ease e.g. flight time rules for instructors and/or examiners, to increase their availability, must be resisted.
- Operators should be encouraged to invest in quality training equipment and make use of new technologies to improve training efficiency and absorbability.
- The goal must be training to *proficiency* level and not just to the minimum legal standard. Such a proficiency standard needs to be defined with the active involvement of the operators and pilot associations, not just the ATOs or regulators.

In conclusion

Ensuring a sufficient, high quality Pilot Supply DOES mean:

- **Promoting** and enabling opportunities in the profession for the next generation of pilots – early, including in schools, and from all backgrounds.
- **Attracting** applicants who are capable and enthused by the profession and by the airlines providing a professional career that is desirable, affordable, and compatible with a home and family life.
- **Selecting** from those applicants those who are highly motivated, committed to high professional standards, and capable of the skills and training needed, not just restricted to those who are able to pay.

- **Training** those selected to *more than the minimum license requirements*, i.e. to a *highly proficient* standard, and this in conjunction with airlines. The aim is that their training is properly funded, teaches the specific additional skills needed by an operator, equips them for career progression not just their first job, and is properly funded by the industry, with the stability of a job that needs to be filled at the end of a successful training program.
- **Offering** future and current pilots a positive & attractive work environment, as well as adequate and stable employment conditions, rather than precarious atypical forms of work contacts used by certain airlines in the industry.

Ensuring Pilot Supply does NOT mean:

- De-regulation or reduction of training and licensing standards, syllabus, flight time, or flying experience requirements to make training cheaper, easier, or more profitable for the training organisation.
- Pumping through high volume, low quality new trainee pilots to ensure an over-supply that keeps new pilots cheap to operators.
- Monetising operator required training or flight experience at the expense of the trainee, such as Pay to Fly schemes, which are exploitative and potentially harmful for flight safety.

* * *

19/09/2018

Specific Operations Risk Assessment (SORA)
– ECA Position Paper –

Executive summary

- SORA (Specific Operations Risk Assessment) is a **multi-stage process of risk assessment** aiming at risk analysis of certain unmanned aircraft operations, as well as defining necessary mitigations and robustness levels.
- While ECA supports the underlying idea of SORA process, it is concerned that **inadequate consideration** is given to the **complexities** involved in the **respective UAS-operation**, especially as regards the Air Risk Class (ARC), i.e. the risk of mid-air collisions.
- Any statistical analysis used for SORA must take the intrinsic **risk of mid-air collisions (MAC) into account**, rather than solely looking at potential fatalities.
- ECA believes that SORA should not be regarded as a purely quantitative process (comparable to a computer-algorithm) but at the same time as a qualitative process. For this, an adequate **detailed knowledge and expertise within both the operator and the competent authority is required**.
- Every manned aircraft has a layered approach to collision avoidance which builds its resilience. Greater consideration should be given to how similar **resilience** can be achieved **for unmanned aircraft**, since simply relying on statistical analysis is deemed insufficient.
- To facilitate the SORA process - **Standard Scenarios** (STS) may be developed for certain types of operations and be used by operators and regulating authorities as a template when approving some UAS-operations. ECA warns **against the use of STS as an "easy and quick way" to operate** UAS, as a 'tool-box' to pick and choose from, and instead **calls for a holistic approach** to ensure the safety of operation is not jeopardised.
- It is crucial that all relevant experts and stakeholders are involved in the **process and in the review of the SORA content**.
- The gathered **expertise should be consolidated preferably at the European level**, while developing and maintaining a comprehensive database of the SORA content. Incorporating into such a database a **non-punitive reporting system** is highly recommended.
- **An operation solely based upon "declaration" by the operator should not be allowed.** Until there has been enough operational experience gathered with the SORA process and STS - all operations should require an authorisation by a competent authority.

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The Background

The Specific Operations Risk Assessment (SORA) concept was developed by Working Group 6 (WG6) of the Joint Authorities for the Rulemaking of Unmanned Systems (JARUS). It has been endorsed by the European Aviation Safety Agency (EASA) as an Acceptable Means of Compliance (AMC) to fulfil the requirements of the EU Regulations (Basic Regulation, Implementing Act, Delegated Act and Annexes).

What is SORA

The Specific Operations Risk Assessment (SORA) is a novel approach on how to safely create, evaluate and conduct an Unmanned Aircraft System (UAS) operation. It focuses on assigning to a UAS-operation two classes of risk, a ground risk class (GRC) and an air risk class (ARC). The GRC and ARC form the basis to determine the so-called Specific Assurance and Integrity Levels (SAIL) for both respectively. The SAIL represent the level of confidence that the UAS operation will stay under control within the boundaries of the intended operation. The SORA allows operators to utilise certain threat barriers and/or mitigating measures to reduce both risk-classes and thereby reducing the SAIL. The final step in the risk assessment is the recommendation of the Operational Safety Objectives (OSO) to be met in accordance with the SAIL. The SORA is a method to integrate UAS operations with (commercial) manned aviation independent of the weight of the UA and altitude in the airspace with a certain level of safety.

To facilitate the SORA process, additionally the so-called Standard Scenarios (STS) may be developed for certain types of operations, with known hazards and acceptable risk-mitigations. The STS may then be used by operators and regulating authorities as a template to reduce the amount of work involved with approving UAS-operations.

ECA Position

ECA supports the underlying idea of SORA as a world-wide, standardized, and harmonized risk assessment methodology. ECA also sees the potential benefits in a risk- and performance-based approach towards the integration of UASs.

However, ECA expects several problematic issues in the practical application of SORA, especially in determining the ARC. ECA is concerned that some of the underlying principles of SORA (as outlined in the JARUS-Guidelines) might not be fully understood and/or embraced by some of the stakeholders involved. This in turn could undermine the effectiveness of SORA as a tool to assess safety risks and ensure safe UAS operations.

In this context ECA re-emphasises the following points from the JARUS-Guidelines:

- SORA document shall neither be used as a ‘checklist’ nor be expected to provide answers to all the challenges
- SORA is a tailoring guide that allows an operation to have the best fit for the mitigation means and thus a risk reduced to an acceptable level. For this reason, it does not contain prescriptive requirements but rather objectives to be met at various levels of robustness;

- SORA methodology is based on the principle of a holistic / total system safety risk-based assessment model.

While the aim of the SORA-process is to make the risk-assessment more transparent and reduce some of the workload, there is a risk that inadequate consideration is given to the complexities involved in the respective UAS-operation. This is especially the case for the determination of the ARC which is very complex.

Collision avoidance, especially avoidance of mid-air-collisions with manned aviation, has been identified by ECA as a key area to address when integrating drones into common airspace. Airspace-structure, ATC-services, right-of-way-procedures are *inter alia* all means to lower the risk of collisions between aircraft. Every manned aircraft has a layered approach to collision avoidance. For example, the principle of *see and avoid* as means to avoid collisions - is valid in manned aviation even in complex airspaces with complex rules and several safety nets. The resilience which is achieved by this layered approach is a very important safety factor, which cannot be entirely substituted by statistical methods (upon which SORA's risk determination relies). Therefore, greater consideration is to be given on how this resilience can be achieved, rather than relying on pure statistical analysis, which is based on assumptions extrapolated into the future integrated airspace.

Any statistical analysis used for SORA must take the intrinsic risk of mid-air collisions (MAC) into account, rather than solely looking at potential fatalities.

The JARUS guidelines distinguish between 14 aggregated collision risk categories, taking into account a multitude of different factors, such as airspace structure, traffic type, operational volume, ATM/UTM infrastructure, environment, etc. The JARUS WG6 has highlighted this complexity by a statement in the guidelines: "*It is important that both the competent authority and operator take great care to understand the Operational Volume and under what circumstances the definition of the ARC assignment process could be invalidated*". It is therefore crucial that both the UAS operator and the authority are able to fully understand this Operational Volume and do draw the right conclusions as to the determination and validity of the ARC, and hence the safety of the envisaged operation, especially when it comes to an operation in an airspace volume integrated with manned aviation.

Importance of competence

The assessment of risk classes is a key element of the entire process. ECA believes that SORA should not be regarded as a purely quantitative process (comparable to a computer-algorithm), but at the same time as a qualitative process. For such an adequate assessment, detailed knowledge and expertise within both the operator and the competent authority is required. However, in numerous cases, this may not be the case and may exceed their capabilities.

Consequently, an independent group of experts from competent third parties (e.g. manned aviation stakeholders, manufacturers, ANSPs (ATM/UTM), academia, associations) should be consulted on the risk assessment for certain UAS operations. It is imperative that representatives from these and other relevant stakeholders are involved in the process and in the review of the SORA content.

Ideally, this knowledge and expertise will be consolidated in “SORA competency-centres” (this could be “qualified entities”), preferably at the European level. These competency-centres could offer their services to the entire UAS community, which would also facilitate international standardisation and harmonisation.

The competency-centres could also develop and maintain a comprehensive database of the SORA content (both input and outcome). What it would mean in practice is when the UAS operation is deployed based on the SORA - the expected outcome would be matched with the gathered, relevant experience (e.g. information about the incidents). This in return would have a *learning* added value. Such a database could prove to be very helpful for the overall SORA process and especially for the development and validation of STS.

Furthermore, incorporating into such a database a non-punitive reporting system (similar to the Aviation Safety Reporting System (ASRS) in the US, or the European Coordination Centre for Accident and Incident Reporting (ECCAIRS) in the EU), is highly recommended. This would allow safety incident (and accident) data to be collected and analysed, enabling this fast-growing sector to benefit from a quick feed-back loop in order to ensure and increase the safety performance of the whole system.

Standard Scenarios

ECA has concerns about certain developments surrounding Standard Scenarios (STS). It appears that some stakeholders may, at least initially, view STS as an “easy and quick way” to operate UAS. ECA supports STS as envisioned by JARUS (see above), where STS serve competent authorities and operators as a template.

However, STS only works for the scenario it was intended and validated for. STS is not a “toolbox” from which certain elements can be picked and applied to various and differing types of operations as seen fit.

It is therefore imperative that the holistic view is kept, where changing one element may have a significant impact on the entire operation, which, in-turn, requires a re-assessment and re-validation of the entire operation. If such a holistic approach is not taken and STS are used as a convenient quick-fix solution for a variety of types of operations - the safety of such operations could be jeopardised.

Declarative Authorisations

ECA foresees potential problems with the EASA - EU-STS (Standard Scenarios for Operations of Unmanned Aircraft Systems in the Specific Category) regarding “declarative” authorisations, whereby the UAS operator self-declares compliant and safe.

The SORA process, in general, and the STS in particular, are too new to allow an operation solely based upon “declaration” by the operator. At least until there has been sufficient operational experience with SORA and STS gathered by all relevant stakeholders, all operations should require an operational authorisation by a competent authority.

Conclusion

ECA understands that SORA could be a way forward to assess and mitigate the risks for the operations in the Specific Category. ECA's objective is to maintain a high uniform level of safety in the air, achieved due to the experience built by manned aviation. Introducing a new (standard) way of risk assessment – in particular air risk – can only lead to that objective if all above stated considerations are taken into account.

28th January 2019

GLOSSARY

ARC	Air Risk Class
ASRS	Aviation Safety Reporting System
ECCAIRS	European Coordination Centre for Accident and Incident Reporting
GRC	Ground Risk Class
JARUS	Joint Authorities for Rulemaking on Unmanned Systems
MAC	Mid-air collision
OSO	Operational Safety Objectives
SAIL	Specific Assurance and Integrity Level
SORA	Specific Operations Risk Assessment
STS	Standard Scenario
UA	Unmanned Aircraft
UAS	Unmanned Aircraft Systems
UTM	UAS Traffic Management System

Source: https://www.eurocockpit.be/news/enhanced-pilot-background-checks-feature-intelligence-information 11 Feb 2019

The story in short

- *The EU introduces revised rules on pilots' background checks.*
- *One major change: As of 31 Dec 2020, intelligence information concerning an individual will become a mandatory component of background checks.*
- *The lack of such intelligence information would be sufficient to fail his/her background check even if there is no proven risk to aviation security. Pilots failing their background checks will not be able to work in any EU Member State.*
- *ECA has raised concerns that a failure of 3rd country intelligence authorities or agencies to provide (timely / correct) information will unnecessarily breach pilots' right to work. It must be addressed at national level in a pragmatic manner via appeal mechanism.*

Enhanced pilot background checks to feature intelligence information

A new revision of the EU regulation on pilots' background checks introduces an "intelligence pillar" as of 31 Dec 2020. The new requirement to include and analyse intelligence information will become a mandatory element of the thorough background checks which pilots undergo every 5 year. Such checks are vital for aviation security and assess pilots' trustworthiness. Currently, authorities look at education, employment and criminal records. But the

revision of the Regulation adds intelligence background information as a mandatory requirement for a successful background check.

This amendment* will have major consequences for pilots. In practice, if intelligence information about the pilot is missing, or is just inaccurate, he/she will fail the background check and will not be able to get a crew identification card. He/she will be deprived of the right to work as a pilot in Europe. The simple lack of information will be sufficient to fail his/her background check even if there is no proven risk to aviation security.

"If intelligence information about the pilot is missing, or is just inaccurate, he/she will fail the background check"

It is not entirely known yet how different Member State authorities will fulfil this intelligence information collection. While exchange of such information within the EU would be not so difficult to imagine, 3rd country intelligence services may not be as responsive as the EU expects. Already now there are **several cases of Dutch pilots, who have worked in 3rd countries, struggling to pass their background checks** due to insufficient or inadequate intelligence information exchange: e.g. an agency simply does not reply to a request. When this intelligence pillar requirement rolls out, more pilots will be affected and may end up in similar situations.

What happens if you fail?

The revised regulation **does not include procedures or an appeal mechanism** through which the pilot could contest any faulty or inaccurate information or challenge the decision. ECA has already raised concerns with the EU that this constitutes a disproportionate infringement of the pilot's right to work and ECA will continue to advocate for a more fair and effective system for background checks. The good news is the EU Member States could decide to set up at least an appeal procedure. This would give pilots an opportunity to make their case and maintain their right to work. Unfortunately, it would mean different approaches across Europe and an additional financial burden on someone who is unemployed.

It is important for EU pilots to know that all background checks which have been successfully completed before 31 December 2020 **will remain valid until their expiry or at the latest until 30 June 2023**, whichever date comes earlier. As of 31 December 2020, background checks will be performed only in accordance with the new rules. By 30 June 2023 all staff shall have been checked/rechecked in accordance with the new regime.

The enhanced background checks – despite their difficult and unclear practical integration within the system – will become a new piece in an already very robust European aviation security chain. European pilots are part of this chain and are committed to striving for the highest possible levels of security.

* How did this change happen?

In 2016 the EU Commission updated the whole set of legislation in the field of aviation security by adopting the new Commission Implementing Regulation (EC) N° 2015/1998. On a yearly basis, the EU Commission – in close cooperation with EU Member States but usually after only limited consultation of the stakeholders – carries out a regular 'Small Amendment Exercise'. With this, the EU Commission considers "minor changes" to the Implementing Regulation designed to adjust current rules to e.g. technology developments and threats that may have emerged within the previous year.

In principle, such 'Small Amendments' are not meant to fundamentally change EU common basic standards on aviation security. In practice, however, a number of them may entail significant changes and affect the way companies and their employees operate in the aviation industry. The 2018 exercise, that was concluded in November last year, led to the changes of the rules on pilots' background checks.

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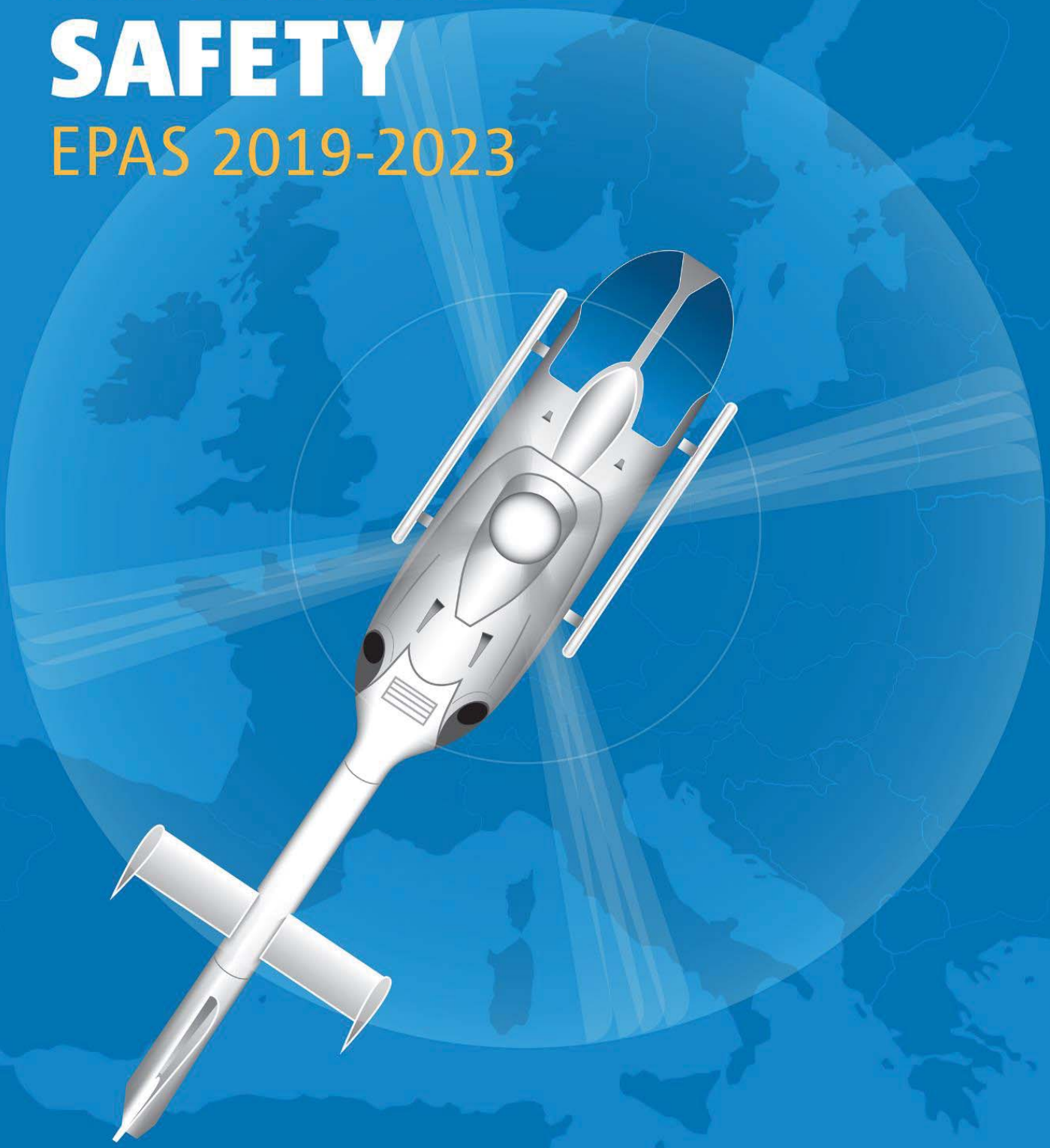
EASA
European Aviation Safety Agency

THE EUROPEAN PLAN FOR AVIATION SAFETY

EPAS 2019-2023



European Plan for Aviation Safety (EPAS) 2019-2023

including the Rulemaking and Safety Promotion Programmes

European Aviation Safety Agency, 22nd November 2018

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Volume I

Volume I

1 Executive Summary

The European Plan for Aviation Safety (EPAS) is built on a proactive approach to support the future growth of aviation while securing a high and uniform level of safety for all Member States (MSs). This proactive approach allows the European Commission (EC), the European Aviation Safety Agency (EASA) and MSs to take the necessary actions at the right time in order to prioritise the risks to be managed and to face the challenges posed by the increasing complexity and continued growth in civil aviation, as well as to ensure safe, secure and environmental friendly implementation of new business models and new technologies.

EPAS is consistent with the goals and objectives of the Global Aviation Safety Plan (GASP) to enhance the level of safety in aviation and to support MSs in fostering mature safety management capabilities.

This EPAS edition captures the GASP goals under a new vision:

'achieve constant safety improvement within a growing aviation industry'

The overall safety objective is to maintain and whenever feasible to further improve the present safety performance level of the European aviation system in the face of upcoming changes. In the field of air traffic management (ATM), the performance ambitions adopted with the ATM Master Plan (ATM MP)[1] reflect this overall objective.

The 2019-2023 EPAS edition integrates safety information from various sources, such as the Annual Safety Review (ASR), the Standardisation Annual Report (SAR), and the ATM MP, which is the European plan implementing the Global Air Navigation Plan (GANP). The objective is to obtain an overarching, consolidated aviation safety picture at European level, supporting the prioritisation of safety actions. More specifically, as safety is the highest priority for the implementation of the European ATM MP, this EPAS edition embraces European actions stemming from the ATM MP. It thus establishes an initial alignment with the ATM MP.

This EPAS edition reflects the new priorities agreed for the implementation of the new Basic Regulation (NBR), which entered into force on 11 September 2018. The related implementing rules will be aligned accordingly over the following years. The precise scope as well as the near-term priorities for 2019-2021 were agreed at the June 2018 EASA Management Board (MB) meeting, on the basis of a roadmap defining on the one hand how the work ahead to adapt to the NBR will be addressed and on the other hand setting related priorities for EASA rulemaking. While certain NBR provisions were already considered under the 2018-2022 EPAS edition, the NBR prioritisation has a major impact on this EPAS edition.

As an integral part of the NBR roadmap, EASA will provide MSs with targeted support in order to complement the Standardisation activities and to reinforce the common understanding and implementation of the European aviation safety regulations, thus enabling a robust and harmonised European aviation system.

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[1] The ATM Master Plan (https://www.atmmasterplan.eu) is developed by the Single European Sky ATM Research (SESAR) Joint Undertaking (SJU) and is adopted by the SJU governing bodies. It provides an integrated view of the European ATM system outlining the essential operational and technological changes required to deliver the SESAR contributions to the Single European Sky performance objectives.

The 2019-2023 EPAS edition comprises two distinct volumes:

— **Volume I** provides the executive summary as well as an introduction, describes the strategy and includes the key indicators. It consists of Chapters 1 to 4.

— **Volume II** contains the detailed list of EPAS actions. It consists of Chapters 5 to 8, dedicated to the four drivers 'safety', 'environment', 'efficiency/proportionality' and 'level playing field'.

Strategic priorities are described in Section **3.1.** The strategic priorities identified in the previous edition have been further refined and now specifically consider the *safe integration of new technologies and concepts*. As a result, all items previously included under 'emerging issues' are now addressed as part of this new strategic priority. A better link between EPAS and the EASA Standardisation process is presented in Section **3.2 Strategic enablers.** This section includes also a new enabler, *safety promotion* and presents the first lines of a new strategic approach to communicate with the aviation community**.**

Chapter 4 'Performance' now includes former Chapter 4 'Key indicators', as well as a proposal for a set of performance indicators to support the monitoring of EPAS implementation and effectiveness of actions so that safety achievements become more tangible. These safety performance indicators (SPIs) do not override those established under the Single European Sky (SES) ATM Performance Scheme. The ASR is the document where the new indicators will be reported in the future.

2 Introduction

2.1 The Global Aviation Safety Plan (GASP)

EPAS considers the objectives and priorities of the GASP to enhance the level of safety in aviation and to better prepare the MSs for the Universal Safety Oversight Audit Programme (USOAP) audits of their State Safety Portfolios (SSPs). The International Civil Aviation Organization (ICAO), based on USOAP audit results, identified that the States' inability to effectively oversee aviation operations remains a global safety concern. Thus, the GASP objectives call for States to put in place robust and sustainable safety oversight systems that should progressively evolve into more sophisticated means of managing safety. These objectives are aligned with ICAO Standards and Recommended Practices (SARPs) for the implementation of SSP by States and safety management systems (SMS) by service providers, and are addressed in EPAS in Section **5.1.1. Safety management**.

In addition to the GASP objectives, ICAO has identified high-risk accident categories (global priorities). These categories were initially determined based on an analysis of accident data, for scheduled commercial air transport (CAT) operations, covering the period 2006-2011. Feedback from the Regional Aviation Safety Groups (RASGs) indicates that these priorities still applied during the development of the 2017-2019 GASP edition. The global priorities are addressed in the following Sections: **5.2.1. Aircraft upset in flight (LOC-I)**, **5.2.2. Runway safety** and **5.2.6. Terrain collision**.

Since 2017 the ICAO Regional Office for the EUR/NAT region and EASA have been working together to develop a Regional Aviation Safety Plan (RASP) based on EPAS, thus allowing all States that are part of the EUR/NAT region to benefit from this approach. The aim of the RASP is to facilitate the achievement of the GASP goals at a regional level. The RASG-EUR is the main body to monitor the EUR RASP implementation and to collect feedback from stakeholders with the assistance of ICAO and EASA.

In May 2018, the draft EUR RASP was endorsed at the combined meeting of the coordination groups of the European Air Navigation Planning Group (EANPG) and RASG – EUR region (RASG-EUR) of ICAO. It is expected to be finally adopted by both groups in November 2018.

2.2 The ATM MP and the GANP

The **ATM MP** is the European planning tool for setting ATM priorities. The ATM MP ensures that the Single European Sky ATM Research (SESAR) 'Target Concept', which is aligned with the ICAO GANP, becomes a reality. The SESAR 'Target Concept' aims at achieving a high-performing ATM system by enabling airspace users to fly their optimum trajectories through effective sharing of information between air and ground. The ATM MP is evolving and is built in collaboration with and for the benefit of all ATM stakeholders. The ATM MP also provides stakeholders with a business view of what deployment will mean in terms of return on investment.

The alignment between EPAS and the ATM MP requires two actions. Firstly, that the ATM MP identifies solutions that can mitigate related safety risks identified by the European aviation safety system, and secondly that EPAS makes references to those solutions from the ATM MP that are actually mitigating those identified safety risks.

This alignment is now ensured as follows[2]:

— Volume I is in line with the ATM MP Level 1 (Executive View), Edition 2019; and

— Volume II is aligned with the ATM MP Level 3, Edition 2018, and includes references to those existing solutions in the ATM MP that aim to mitigate existing safety risks.

Future versions of both documents will mature in line with this alignment concept. For future editions, it is also envisaged to evolve to further align in terms of environment and interoperability of ATM systems.

The **GANP** represents a rolling, 15-year strategic methodology which leverages existing technologies and anticipates future developments based on State/industry agreed operational objectives. It offers a long-term vision that will assist ICAO, States and industry to ensure continuity and harmonisation among their modernisation programmes.

EASA is the body responsible for the SES safety pillar. Safety is one of the key performance indicators (KPIs) within the SES ATM Performance Scheme, and the ATM MP contributes to achieving the ambitions within the SES ATM Performance Scheme. EPAS actions and ATM MP solutions should be aligned where possible and the changes made in this EPAS edition constitute an important step towards such alignment. Such changes materialise through the inclusion of new actions for MSs and the referencing of specific research projects stemming from SESAR.

2.3 How EPAS is developed

2.3.1 The programming cycle

EPAS covers a five-year time frame. In line with NBR Article 6(1), EPAS is updated on a yearly basis. Hence, EPAS is developed as a rolling five-year plan.

EPAS is developed in close cooperation with stakeholders, drawing increasingly from an evidence-based approach. There are two distinct programming phases, each with a dedicated stakeholder consultation.

— During the strategic phase, the strategic priorities developed for the previous programming cycle (Chapter 3) are aligned with EASA's Single Planning Document (SPD). They are subsequently discussed with the EASA Advisory Bodies (ABs).

— Based on these strategic priorities, a draft EPAS is then developed and provided to the ABs for detailed comments.

Following the AB consultation, the final draft EPAS is consolidated. Following its formal approval by the EASA Management Board (MB), it is published on the EASA website[3].

The EASA ABs were formally consulted on the 2019-2023 EPAS edition from 26 June to 7 September 2018. By the end of the commenting period, 382 comments were received, out of which 139 were minor and 243 were substantial. Feedback was provided to the ABs on the outcome of the

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[2] The correspondence between this edition of EPAS and the ATM MP actions is labelled in each applicable EPAS action in Volume II.

[3] https://www.easa.europa.eu/easa-and-you/safety-management/european-plan-aviation-safety

consultation in the form of a comment-response document, provided together with a summary of the AB comments.

2.3.2 The safety risk management process

The safety actions in EPAS are developed through the European safety risk management (SRM) process, which consists of five steps as shown below:

Figure 1. European SRM process

— **Identification of safety issues**

This is the first step in the SRM process. It is performed through analysis of occurrence data and supporting information from the Collaborative Analysis Groups (CAGs). The resulting candidate safety issues are formally captured by EASA and are then subject to a preliminary safety assessment (PIA). This assessment then informs the decision on whether a candidate safety issue should be included formally within the relevant safety risk portfolio or be subject to other actions. Advice is taken from the Network of Analysts (NoAs) and CAGs. Through MS experts participating in these groups, MSs can provide inputs to the SRM process based on the risk information they have access to at State level; in particular, where it is considered that a safety issue identified at State level is also relevant at the European level. The outputs of this step are the domain safety risk portfolios. Within the portfolios, both the key risk areas and safety issues are prioritised.

— **Assessment of safety issues**

Once a safety issue is identified and captured within the safety risk portfolio, it is subject to a formal safety assessment. These assessments are prioritised within the portfolio. The assessment process is led by EASA and is supported by the NoAs and the CAGs. In addition, group members are encouraged to participate in the assessment itself. This external support is vital to achieving the best possible results. The result of the assessment is the production of scenario-based bow tie models that help to identify weak controls for which potential actions can be identified. This forms the safety issue assessment (SIA), which provides potential actions for EPAS. SIA is followed by PIA, which assesses the wider implications and benefits of different options and makes recommendations on the actions to be implemented in EPAS.

— **Definition and programming of safety actions**

Using the combined SIA/PIA process, formal EPAS action proposals are then made. During the established consultation process, ABs are expected to provide their views on the strategic priorities and individual actions. Once discussed and agreed upon, the actions are then included in the next EPAS edition.

— **Implementation and follow up**

The next step in the process involves the implementation and follow-up of the actions that have been included in EPAS. There is a number of different types of action within EPAS (refer to Section 2.4). Section 2.5 describes how EPAS is monitored.

— **Safety performance measurement**

The final stage in the process is the measurement of safety performance. This serves two purposes, firstly to monitor the changes that have resulted from the implementation of safety actions, and secondly, it serves to monitor the aviation system so that new safety issues can be identified. To ensure that there is a systematic approach to the work in this step of the SRM process, a safety performance framework has been developed that identifies different tiers of outcome-based SPIs. Tier 1 transversally monitors all the domains and provides the overview of the performance in each domain. Tier 2 then covers the key risk areas at domain level, whilst Tier 2+ monitors the safety issues. Section 4.2 provides an overview of outcome-based SPIs and also proposes a number of system- and process-based SPIs.

The ASR is the annual review of the safety performance framework. It identifies safety trends and highlights priority domains, key risk areas and safety issues. From this step, the SRM process begins again.

Evaluation is another tool to measure performance whose intent is to conclude whether the existing regulations are delivering the results they were designed for and in which areas improvements are needed. Additional information on evaluations is provided in Section 2.4.

2.3.3 How to submit a new proposal to be included in EPAS

A new proposal, such as a new issue or a proposal for a new action to be included in EPAS can be submitted at any moment in the programming cycle. For this purpose, a 'Candidate issue identification form'[4] has been created. This form replaces the old Rulemaking Proposal Form and is meant to encompass a larger range of proposals for actions, including proposals for new rulemaking tasks/activities as well as the identification of new issues in the EPAS areas of safety, environmental protection, level playing field or efficiency/proportionality.

An initial review of the received candidate issue identification forms is carried out in order to identify the type of proposal. While the safety-related proposals are dealt with through the European SRM process, the non-safety-related proposals are subject to an initial review carried out by the operational Directorates (Flight Standards and Certification Directorates). The core data on the candidate issues and the outcome of the proposals is recorded in a 'candidate issue register'. Accepted proposals are included in EPAS after they have been carefully assessed.

[4] https://www.easa.europa.eu/rulemaking-proposal-candidate-issue-identification-form

2.4 How EPAS is structured

The 2019-2023 EPAS edition comprises two distinct volumes:

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Volume I

Volume I provides an executive summary with the main highlights of each edition. This is followed by an introductory chapter where the link with other planning documents at European and global level is explained. Chapter 2 also explains the structure of the document, how actions are presented as well as how new proposals to be included in EPAS can be submitted.

The structure of Chapter 3 'Strategy' is revised in this edition.

Section 3.1 'Strategic Priorities' now addresses the following priorities:

— 3.1.1 Systemic safety

— 3.1.2 Operational safety

— 3.1.3 Safe integration of new technologies and concepts

— 3.1.4 Environment

The new Section 3.1.3 addresses the need to facilitate the safe implementation of emerging technologies and innovation.

Section 3.2 'Strategic enablers' now includes two new enablers:

— 3.2.2 Safety promotion

— 3.2.4 Digitalisation

The text of the existing sections has been revised to reflect the latest developments.

Moreover, two new Sections are included in Chapter 3 as follows:

— 3.3 'Better regulation'

— 3.4 'New Basic Regulation'

The strategic priorities included in the previous EPAS edition under Section 3.1.4 'Efficiency' and Section 3.1.5 'Level playing field' are reallocated on the basis of the new Chapter 3 structure.

Volume II

The list of EPAS actions in Volume II is structured around four main drivers, which correspond to different chapters. The drivers are**:**

— **Safety (Chapter 5):** the actions in this category are driven by the need to increase or maintain the current level of safety in the aviation sector.

— **Environment (Chapter 6)**: the actions in this category are driven by the need to improve the current environmental protection in the aviation sector, while striving to ensure a level playing field globally.

— **Efficiency/proportionality (Chapter 7)**: the actions in this category are primarily driven by the need to ensure that rules are cost-effective in achieving their objective, as well as proportionate to the risks identified. Having included an action in this category by no means signals that there are no related safety objectives; however, the effects on efficiency and proportionality prevail over those on safety.

— **Level playing field (Chapter 8)**: the actions in this category are mainly driven by the need to ensure that all players in a certain segment of the aviation market can benefit from the same set of rules, thereby promoting innovation, supporting fair competition and ensuring free movement of persons and services. This is particularly important for technological or business advancements where common 'rules of the game' need to be defined for all actors. 'Level playing field' may either relate to ensuring standardisation within EASA MSs or address the need to harmonise with the rules of main EASA counterparts, such as the Federal Aviation Administration (FAA) or the Transport Canada Civil Aviation (TCCA), in order to ensure fair competition or facilitate the free movement of goods, persons and services. Actions in this category will directly contribute to maintaining or even increasing the current level of safety.

These four drivers should be understood as *main* drivers. A number of actions could well fall under several of these drivers, but to avoid duplication they are included under the most relevant one.

Chapters 5 to 8 are further organised in 'safety issue categories' and 'action areas'. Each action area shows the issue, the objective and the related actions. An action area may contain several actions and types of tasks: rulemaking task (RMT), safety promotion task (SPT), focused attention topic (FOT), evaluation task (EVT), as well as research actions (RES[5]). These chapters also include MSs tasks 'MSTs'.

RMTs lead to new or amended regulatory material (implementing rules, AMC or GM), but the related work is usually not limited to rules drafting. Depending on the scope and issues addressed, an RM project may also include supporting activities, such as the organisation of conferences, workshops, roadshows, the creation of frequently asked questions (FAQs), etc. An RMT may also be supported by a dedicated SPT managed in accordance with EASA's Safety Promotion Strategy (see Section 3.2.2), or by a research task.

MSTs tasks are EPAS actions based on safety priorities identified in collaboration with MSs and owned by them. Most of them are continuous actions to ensure continuous monitoring of the underlying safety risks and regular reporting on progress of those MS actions. Results are discussed with MSs during the regular Safety Management Technical Body (SM TeB) meetings. Different implementation approaches, difficulties or best practices are brought up and discussed to enhance the collaboration amongst MSs and between MSs and EASA.

[5] The list of research tasks includes only the ones which are covered by a financing source. Other research needs, not covered in this list, can be found in the EASA research agenda (https://www.easa.europa.eu/easa-and-you/safety-management/research).

In **Section 5.2** 'CAT by aeroplanes', a 'miscellaneous' category is created to gather the actions that are too broad to be classified under only one category because they impact multiple aviation domains while involving different types of actions.

Chapter 6 (Environment) is divided in two main environmental topics: climate change and aircraft noise.

Chapters 7 (Efficiency/proportionality) and 8 (Level playing field) are grouped as per the main stakeholders affected by the actions.

Evaluations

In Chapter 7, Section 7.2 includes all EVTs that are planned for the coming years. These projects intend to conclude whether the existing regulations are delivering the results they were designed for and in which areas improvements are still needed.

Two main criteria are taken into account in order to decide on future evaluations conducted by EASA. The first one is whether there is an obligation in the existing regulation to undertake an evaluation. The second criterion is whether the rules are controversial, complex, potentially sensitive, generating safety risks and/or regulatory inefficiencies. Guideline questions were elaborated to assess the second criterion:

— Which are the rules that generate requests for exemptions (NBR Articles 70 and 71 (Article 14 in the previous Basic Regulation), requests for alternative means of compliance (AltMoC), many queries by stakeholders?

— Which are the rules identified by the stakeholders as creating undue administrative burden, regulatory inefficiencies, or imposing costs that exceed benefits?

— Which are the permanently open findings from the Standardisation continuous monitoring activities, standardisation actions that request/recommend evaluation on this subject?

— Which are the rules that create a serious inconsistency or are not coherent with other related rules?

— Which are the rules that are outdated, unnecessary or ineffective that request/recommend evaluation on the subject?

How individual actions are presented

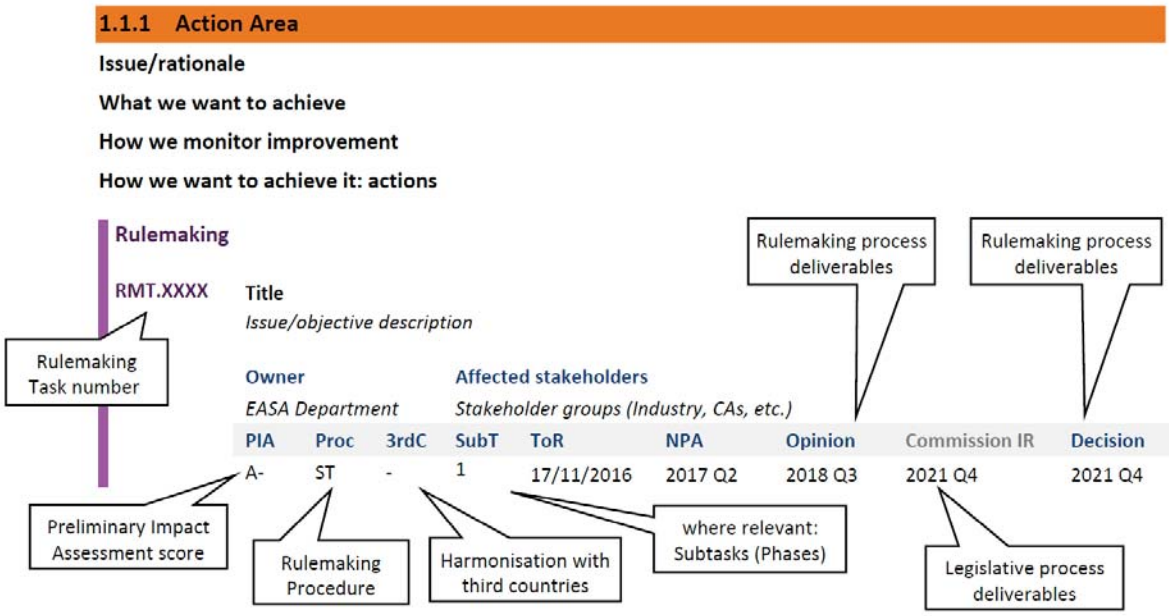

Figure 2: Overview of the conventions used in this plan

For each EPAS action, the following information is provided as a minimum:

— the objective and main timelines (task schedule); and

— the rationale as well as basic information related to responsibility for the action and affected stakeholders.

The results from PIAs are presented, where available, in the form of a score consisting in a letter and a numeric value. The letters indicate strategic ('A'), standard ('B') or regular update ('C') tasks. The numeric value represents the result of the cost-effectiveness indicator that takes into account the level of potential benefits divided by the level of associated implementation costs of a specific action (for example, if the benefit level is equal to 3 and the cost level equal to 1, the final PIA indicator would be 3). A value higher than 1 indicates that the action is estimated to be cost-efficient. Please note that 'n/a' for a PIA score is attributed when the task has been previously justified by a former indicator (i.e. Pre-RIA score), which is no longer used.

Further information provided only for RMTs indicates whether they are harmonised with third countries (field '3rdC') in order to alleviate differences between EASA and other aviation authorities, while ensuring an equivalent level of safety. RMTs that follow a special rulemaking procedure (EASA Management Board Decision No 18/2015 'Rulemaking Procedure', Article 15 'Direct publication' or Article 16 'Accelerated procedure') are indicated in the field for the procedure type called 'Proc'. Accelerated procedure is identified as 'AP', direct publication as 'DP', and standard procedure as 'ST'. For all documents already delivered, the document reference and publication date is provided (date format DD/MM/YYYY). For tasks not yet delivered, the planned date is given by quarter (YYYY QX).

As a general rule the planning indicates two years from the publication of an opinion to the publication of the related decision by the EC. In some cases this is adjusted to reflect specific requirements.

Tasks that have been newly added to the plan are identified by using red colour in the **action number**.

Appendices

EPAS is complemented by a number of appendices with additional information on action status and progress, the link between the EPAS and the EC strategic priorities and the EASA strategic plan respectively.

An overview of new, de-prioritised and deleted tasks is available in Appendix C.

Relevant EASA policies providing direction to specific EPAS actions are also included as appendices to EPAS.

Finally, Appendix H provides a full index of EPAS actions per type of action, for easy access.

2.5 How EPAS is monitored

Reporting on State actions (MSTs)

In previous years, the actions owned by MSs (MSTs) were monitored by means of an online survey. The survey was addressed to all EASA MSs, as well as non-EASA MSs applying EPAS, and initiated once EPAS was published. The survey sought States' feedback on the status of implementation of MST EPAS actions. The results were summarised in an implementation report[6]. EASA will discontinue the EPAS survey and the production of implementation reports by the end of 2018.

In 2019-2020, EASA will focus on providing implementation support to facilitate compliance with the new requirements of NBR Chapter II. States are required to develop a State Plan for Aviation Safety (SPAS), taking into consideration the actions they own in EPAS and providing justifications when such actions are not considered relevant to them.

SPAS will be the primary tool for MSs to report on action implementation. States are expected to provide an up-to-date SPAS at least annually or, where the SPAS is not updated annually, a report on the implementation of EPAS actions. EASA will make available an online platform for MSs to upload their SSP, SPAS and any other relevant material. The online platform is also intended to facilitate the exchange of information amongst States on EPAS and SSP implementation.

Reporting on other actions in EPAS (RMT, FOT, SPT, RES and EVT)

For the remaining actions, where EASA is in the lead, feedback on implementation is regularly provided during AB meetings. Most of the deliverables planned in EPAS are published on the EASA website (see rulemaking process site, safety promotion site, research projects site and evaluation of rules site).

[6] Latest States' implementation report on EPAS 2017- 2021: https://www.easa.europa.eu/document-library/general-publications/states-implementation-report-epas-2017-2021

3 Strategy

In the 2017-2021 programming cycle, EASA introduced the notion of strategic priorities for EPAS. The strategic priorities were based on the Commission's Aviation Strategy and EASA's strategic plan (see Appendix D). The safety priorities are based on the European Safety Risk Portfolios published in the ASR. The efficiency and level playing field priorities are based on stakeholder feedback. The environmental priorities are based on the European Aviation Environmental Report (EAER) 2016 and are aligned with the 2019 issue (under preparation) of said report.

EASA consulted these priorities with stakeholders from March to May 2018. The comments received led to a number of adjustments and improvements, notably the identification of priorities to be addressed first. In the detailed Chapters 5-8 of this document, the actions linked to strategic priorities are identified with an 'A' in the PIA score field.

In line with the total system approach to aviation safety management, EPAS is evolving to ensure better integration of relevant sources and key inputs in terms of safety information, such as the ASR, the SAR, and the ATM MP. The objective is to obtain on overarching, consolidated aviation safety picture at European level, supporting strategic planning and prioritisation of safety actions.

How priorities are established

The rulemaking activities in this EPAS edition have been prioritised to take into consideration the need to make resources available to tackle NBR responsibilities (not only related to rulemaking), as explicitly requested by the EASA MB in April 2018. The NBR roadmap (see Section 3.4) clearly identifies the areas where work will need to start within the next three years, therefore not all new responsibilities will be tackled immediately. The prioritisation takes into account the compromise to continue working towards mitigating major safety risks across domains and addressing the strategic priorities which are described in this chapter and have been agreed with industry and States.

In order to revert back to a more manageable rulemaking throughput in the near future, the EC and EASA have also agreed to put a temporary hold on the publication of further EASA Opinions initially planned in 2018. In parallel, the EC and EASA set priorities for the Opinions to be published in 2019, taking due account of the work already performed and Opinions already delivered to the EC, with due consideration of the calendar of the EASA Committee meetings in 2019.

A number of already programmed activities have therefore been postponed. The decision to postpone tasks has been made following a careful assessment of the impact on stakeholders. It reflects a realistic evaluation of the capacities both at EASA and EC level to process and finally adopt rulemaking deliverables, considering in particular the capacity of the EU Comitology process to 'absorb' the draft rules prepared by EASA.

This adjustment follows the below principles:

— **Certification specifications (CSs) and acceptable means of compliance & guidance material (AMC & GM)** do not impact MSs and Commission resources. In particular, CSs are needed by industry.

— **Decisions (AMC and GM) that are pending the adoption of the IR** by the Commission have a low impact on EASA resources. They complement Opinions that are now being dealt with by the Commission. Those AMC and GM have already been drafted.

— For **new Opinions**, priority has been given to strategic tasks. Some non-strategic tasks have been postponed until after 2022.

— Opinions related to **regular/non-controversial updates** of the rules have been postponed until 2022, unless EASA resources are available and they can be processed by the EC quickly due to the non-controversial nature.

— **New rulemaking tasks** will not be started unless they relate to strategic priorities and are duly justified (e.g. urgent safety issues).

Chapters 5 to 8 contain the full list of tasks that are programmed for the next 5 years. **Appendix C** provides the overview of all tasks that have been de-prioritised.

3.1 Strategic priorities

3.1.1 Systemic safety

3.1.1.1 Improve safety by improving safety management

Despite the fact that the last years have clearly brought continued improvements in safety across every operational domain, the latest accidents and serious incidents underline the complex nature of aviation safety and the significance of addressing human factor aspects. Aviation authorities and organisations should anticipate new emerging threats and associated challenges by developing SRM principles. Those principles will be strengthened by SMS implementation supported by ICAO Annex 19 and Regulation (EU) No 376/2014 on occurrence reporting, follow-up and the protection of safety information.

EASA defined an SMS policy for the regulation of SMS in the different aviation domains. This policy is included in Appendix E.

Key actions:

- Support States in implementing State Safety Programmes (MST.001) and States Safety Plans (MST.028)
- Encourage international harmonisation of SMS implementation, and human factor principles (MST.002 and SPT.057)
- Ensure that national aviation authorities have the ability to evaluate and oversee the operator's management system (FOT.008)
- Incorporate safety management requirements in initial and continuing airworthiness (RMT.0251)

See Section **5.1.1.**

3.1.1.2 Human factors and competence of personnel

EASA monitors data relating to human performance and assesses feedback from stakeholders, through the Human Factors CAG (HF CAG) and through other regulatory and oversight activities. As the aviation system changes, it is imperative to ensure that human factors and the impact on human performance are taken into account, both at service provider and regulatory levels.

Human factors and human performance are terms that are sometimes used interchangeably. While both human factors and human performance examine the capabilities, limitations and tendencies of human beings, they have different emphases:

— Human factors (HF) – this term focusses on why human beings function in the way that they do. The term incorporates both mental and physical processes, and the interdependency between the two.

— Human performance (HP) – the output of human factors is HP. This term focuses on how people do the things that they do.

Note: Throughout Chapters 5 to 8, actions with a strong HF component are identified by adding 'HF' in the field 'activity sector'.

The HF CAG prioritised the following safety issues for a more in-depth analysis to be performed throughout 2018. These issues are systemic safety issues, and the other CAGs address safety issues that also have HP elements[7].

— **Senior management knowledge, competence, and commitment to HF/HP** — Unless senior management takes the lead in implementing HF, the culture does not permeate through the organisation, with consequences for safety and efficiency.

— **Human factors competence for regulatory staff** — Without HF competencies, regulators cannot adequately oversee HF implementation in the aviation industry.

— **Design and use of procedures** — It is imperative for procedures to be designed so that they are usable, but this is increasingly difficult in the context of a complex system.

— **Organisational and individual resilience** — Organisational and individual resilience are key factors in successfully managing safety, but there is little regulatory guidance on how to apply the concept.

— **Training effectiveness and competence** — There can be too large a gap between work as imagined and work as done, resulting in ineffective or negative training. Some changes to training regimes may exacerbate the problem.

The results of the in-depth analysis of the above issues may lead to the determination of additional actions for future EPAS editions.

As new technologies and new business models or operational concepts emerge on the market and the complexity of the system continues to increase, it is of key importance for aviation personnel to have the right competencies and adapt training methods to cope with new challenges. It is equally important for aviation personnel to take advantage of the opportunity presented by new technologies to enhance safety.

The safety actions related to aviation personnel are aimed at introducing competency-based training in all licences and ratings, updating fatigue requirements, and facilitating the availability of appropriate personnel in competent authorities (CAs). These actions will contribute to mitigating related safety issues, which play a role in improving safety across all aviation domains. Training and education are considered key enablers. The new EASA strategy for technical training takes this into

[7] As a result, the HF CAG also provides expertise to assess HF-related safety issues identified by the other CAGs.

account, i.e. '[to] continuously improve the technical competence of Agency staff and manage the harmonisation of training standards for aviation authority staff within the EASA system'.

Key actions:

- Introduce evidence- and competency-based training into all licences and ratings (RMT.0599 and SPT.012);
- Review learning objectives and syllabi for commercial pilot licenses (RMT.0595);
- Improve the fidelity of flight simulators (RMT.0196);
- Support CAs with training and expertise to attract suitably qualified staff (FOT.003).

3.1.1.3 Impact of security on safety

— Cybersecurity

Citizens travelling by air are more and more exposed to cybersecurity threats. In order for the new generation of aircraft to have their systems connected to the ground in real time, ATM technologies require internet and wireless connections between the various ground centres and the aircraft. The multiplication of network connections and the surge in digitalisation of aviation systems increases the vulnerability of the whole system. It is essential that the aviation industry and authorities share knowledge and learn from experiences to ensure systems are secure from individuals/organisations with malicious intent.

EASA signed a Memorandum of Cooperation with the Computer Emergency Response Team (CERT-EU) of the EU Institutions on 10 February 2017. EASA and CERT-EU are cooperating in the establishment of a European Centre for Cyber Security in Aviation (ECCSA)[8]. The ECCSA's mission is to provide information and assistance to European aviation manufacturers, airlines, maintenance organisations, air navigation service providers (ANSPs), aerodromes (ADR), etc. in order to protect critical elements of the system such as aircraft, navigation and surveillance systems, datalinks, etc. The ECCSA will cover the full spectrum of aviation. In addition to the information-sharing initiatives intended to be implemented through the ECCSA, the strategy to address cybersecurity risks should be focused on research and studies, event investigation and response, knowledge and competence building, international cooperation and harmonisation and regulatory activities and development of industry standards.

Key actions:

- Develop and implement a strategy for cybersecurity in aviation (SPT.071);
- Implement a regulatory framework for cybersecurity covering all aviation domains (RMT.0720 and RES.012);
- Introduce new cybersecurity provisions in the certification specifications (RMT.0648).

[8] https://www.easa.europa.eu/eccsa

— Conflict zones

Since the tragic downing of Malaysian Airlines flight MH17, there is a general consensus that States shall share their information about possible risks and threats in conflict zones. Numerous initiatives have been taken to inform the airlines about risks on their international flights.

At global level, ICAO launched in April 2015 a central repository where each State can notify on a voluntary basis its information about a particular risk in conflict zones.

An EU high-level task force was set up to define further actions to be taken at European level in order to provide common information on risks arising from conflict zones. The task force handed over its final report to Ms Violeta Bulc, European Commissioner for Transport, on 17 March 2016. It contains recommendations for various stakeholders and a proposal to set up a conflict zone alerting system at European Level, through cooperation between MSs, European institutions, EASA and other aviation stakeholders.

The objective of the alerting system is to join up available intelligence sources and conflict zone risk assessment capabilities in order to enable the publication of information and recommendations on conflict zone risks in a timely manner, for the benefit of all European MSs, operators and passengers. It complements national infrastructure mechanisms, when they exist, by adding, when possible, a European level common risk picture and corresponding recommendations.

EASA acts as coordinating entity for activities not falling directly under MSs or EC's responsibility and initiates the drafting, consultation and publication of Conflict Zone Information Bulletins[9], in cases of both availability and unavailability of a common EU risk assessment.

Key action:

- Disseminate information to air operators in order to mitigate the risk associated with overflying conflict zones (SPT.078).

3.1.1.4 Data4Safety

Data4Safety (also known as D4S) is a data collection and analysis programme that aims at collecting and gathering all data that may support the management of safety risks at European level. This includes safety reports (or occurrences), flight data (i.e. data generated by the aircraft via the flight data recorders), surveillance data (air traffic data), weather data — these being only a few from a much longer list.

More specifically, the programme will allow to identify better where the risks are (safety issue identification), determine the nature of these risks (risk assessment), and verify whether the safety actions are delivering the needed level of safety (performance measurement). It aims to develop the capability of discovering vulnerabilities in the system across terabytes of data.

An initial proof of concept (PoC) phase has been launched with a limited number of partners to test the technical challenges as well as the governance structure of such a programme. After a year, a number of key-building blocks have been achieved, in particular:

[9] https://www.easa.europa.eu/easa-and-you/air-operations/information-on-conflict-zones

— The partnership principles have been framed into a programme charter.

— The data protection rules have been agreed upon and captured into the rules and procedures document and in a data sharing and protection agreement template.

— The use cases for the PoC phase have been agreed upon and specified.

D4S is, in essence, a collaborative partnership programme that aims at inferring safety intelligence. This is done by organising a massive collection of safety data and, equally important, organising the analytical capacity amongst all European aviation safety system stakeholders. This will take the collaborative work with the industry at a scale never done before in Europe.

D4S will therefore directly respond to the GASP Objective 11A — 'Work with industry stakeholders to leverage best practices with safety information analysis.'

3.1.2 Operational safety

3.1.2.1 Address safety risks in CAT aeroplane operations and NCC business operations

During 2017, there were no fatal accidents involving European air operator certificate (AOC) holders performing CAT passenger/cargo. Likewise, no fatal accidents occured in NCC business operations with aeroplanes having a maximum take-off weight above 5 700 kg. In this category, there were 15 non-fatal accidents; however, the number of non-fatal accidents was lower than the average of the previous 10-year period.

In 2017 the number of serious incidents in this category increased in comparison with the average of the previous 10-year period, with 99 serious incidents recorded in 2017 in comparison with the 10-year period average of 79,2.

This operational domain remains the greatest focus of the EASA safety activities. The CAGs and ABs will help EASA to learn more about the safety challenges faced by airlines and manufacturers.

The European SRM process identified the following as the most important risk areas for CAT aeroplane and NCC business operations:

— <u>aircraft upset in flight (loss of control)</u>

Aircraft upset or loss of control is the most common accident outcome for fatal accidents in CAT aeroplane operations. It includes uncontrolled collisions with terrain, but also occurrences where the aircraft deviated from the intended flight path or aircraft flight parameters, regardless of whether the flight crew realised the deviation and whether it was possible to recover or not. It also includes the triggering of stall warning and envelope protections.

Key actions:

- Review and promote training provisions on recovery from upset scenarios (RMT.0196, RMT.0581 and SPT.012);
- MSs to address loss of control in flight by taking actions at national level and measuring their effectiveness (MST.028).

See Section **5.2.1**.

— runway excursions, runway incursions and collisions

Runway excursion covers materialised runway excursions, both at high and low speed, and occurrences where the flight crew had difficulties maintaining the directional control of the aircraft or of the braking action during landing, where the landing occurred long, fast, off-centred or hard, or where the aircraft had technical problems with the landing gear (not locked, not extended or collapsed) during landing. Runway excursions account for 81 high-risk occurrences recorded in the period 2013-2017 in CAT aeroplane and NCC business operations.

Runway incursion refers to the incorrect presence of an aircraft, vehicle or person on an active runway or in its areas of protection. Their accident outcome, runway collisions, account for 28 high-risk occurrences recorded in the period 2013-2017. Despite the relatively low number, the risk of the reported occurrences was demonstrated to be very real.

Key actions:

- Require on-board technology to reduce runway excursions (RMT.0570);
- Improve aircraft performance in CAT operations (RMT.0296);
- Promote and implement the European Action Plan for the Prevention of Runway Incursions (EAPPRI) and Excursions (EAPPRE) – (RMT.0706);
- MSs to address runway safety by taking actions at national level and measuring their effectiveness (MST.028).

See Section **5.2.2.**

3.1.2.2 Rotorcraft safety

The EASA Executive Committee reviewed European and worldwide rotorcraft safety data and decided to launch a strategic approach and to set an ambitious target to reduce the number of rotorcraft accidents and incidents.

As an initial step, EASA launched in mid-2018 an external task force, tasked to deliver a **Rotorcraft Safety Roadmap** focusing on safety and transversal issues that are affected by the different domains including training, operations, initial and continuing airworthiness, environment and innovation.

The focus of this roadmap is on traditional/conventional rotorcraft including General Aviation (GA) rotorcraft where the number of accidents is recognised to be greater. Drones, electrical vertical take-off and landing (VTOL) aircraft and urban air mobility vehicles are outside the scope of this activity.

The vision of the roadmap is to 'achieve significant safety improvement for Rotorcraft with a growing and evolving aviation industry'. This roadmap will be the backbone of the rotorcraft-related actions in the future EPAS. In order to make the most impact, it will be necessary to focus the available resources on the most critical subjects. At the time of closure of EPAS, the roadmap has not been formally released; however, the main elements of the strategy were agreed upon and initial actions have started.

The following objectives have been defined in order to deliver the vision stated above:

— **Improve overall rotorcraft safety by 50 % within the next 10 years**

Most of the accidents can be attributed to operational causes and it is recognised that influencing behaviour in the wider community is a complex process where step changes are difficult to achieve in the short term. However, for accidents caused by technical failures, an ambitious target is set to reduce the number of accidents caused primarily by technical failures by one order of magnitude.

— **Make positive and visible changes to the rotorcraft safety trends within the next 5 years**

The aim of this objective is to drive the implementation of the quick-wins that are identified and to rapidly progress a number of safety improvements.

— **Develop performance-based and proportionate solutions that help maintain competitiveness, leadership and sustainability of European industry**

This objective also aims to support the development of new business models and encourage innovation.

The specific set of rotorcraft objectives align with the EASA Strategic Objectives (described in Appendix D), which have been used to derive the strategic priorities for EPAS. The details can be found in the EASA SPD (Chapter 5)[10].

The following enablers were identified by the task force as ways to 'incentivise' safety and potentially positively impact all the different types of operations:

— Creating market incentives to push for safety/environmental protection;

— Gaining EU financial support for safety action implementation;

— Prioritising improvements in training and the availably of simulation;

— Achieving industry consensus on key solutions;

— Implementing continued aviation education (CAE);

— Establishing strategic safety partnerships, data and communication; and

— Reducing administrative burden and costs for operators.

The main elements of the roadmap have been presented in several fora, including the Rotorcraft Committee (R.COM). The feedback received has been integrated into the roadmap that will be formally delivered by the task force to EASA at the end of 2018. In 2019, the above subjects will be further investigated.

The new set of tasks for EPAS that have been identified include the following:

— **Helicopter training improvement initiative**: There is a wide consensus that better training is one key way to improve safety. EASA will promote a 15' safety briefing during recurrent training and focus actions on instructors. EASA will additionally promote the development of simpler

[10] SPD 2017-2020 is accessible here: http://www.easa.europa.eu/system/files/dfu/EASA%20MB%20Decision%2011-2016%20Annex%20SPD%202017-2020.pdf

and less expensive simulators for light helicopters. Finally, EASA will develop a proposal (including a training need analysis) for an **innovative approach enabling the use of affordable training devices** and associated credit for crew licensing for rotorcraft GA types. Milestones include: *concept definition by end of 2018, implementation plan by June 2019. Decision to amend CS FSTD (RMT.0196) and Opinion (RMT.0678) for Aircrew by June 2020.*

— Assess whether the scope of RMT.0677 on modular **basic instrument rating** to simplify access to instrument flight rules (IFR) can be extended to private pilot licence (helicopter) (PPL(H)) and commercial pilot licence (helicopter) (CPL(H)).

— Work with original equipment manufacturers (OEMs) to set up a common design **safety benefit evaluation** in support of the safety rating scheme and engage with OEMs and NAAs to collect and analyse **utilisation data.**

Safety rating scheme: It is proposed to learn from the experience in other industries that have already put in place a safety rating classification such as the EuroNCAP for cars or SHARP for motorbike helmets. This mechanism could lead to safety enhancements both on the manufacturers and on the operators' side. This could be an effective way for manufacturers to identify improvement areas and focus on safety performance. In addition, it can be used as a valuable marketing tool that provides operators with detailed knowledge on the safety characteristics of rotorcraft. EASA will make an initial evaluation and establish a way forward.

Key actions:

- Improve the certification specifications and standards relating to the certification of rotorcraft hoists (RMT.0709);
- Improve specifications on the use of vibration health monitoring (VHM) systems to detect imminent failures of critical rotor and rotor drive components (RMT.0711);
- Improve mitigation of risks relating to restricted pilot vision (RMT.0127);
- Introduce requirements for rotorcraft terrain avoidance warning system (RMT.0708).

3.1.2.3 Address safety risks in GA in a proportionate and effective manner

In the last years, accidents involving recreational aeroplanes have led to an average of 92 fatalities per year in Europe (based on 2007-2016 figures, excluding fatal accidents involving microlight airplanes), which makes it one of the sectors of aviation with the highest yearly number of fatalities. Furthermore, in 2017, there were 34 accidents causing 62 fatalities in non-commercial operations with aeroplanes and 25 fatal accidents causing 27 fatalities in the domain of sailplane operations (the 2007-2016 average is 29 fatalities per year in Europe). These two areas present the highest numbers of fatal accidents in 2017. The GA roadmap is key to the EASA strategy in this domain.

Although it is difficult to precisely measure the evolution of safety performance in GA due to lack of consolidated exposure data (e.g. accumulated flight hours), it is reasonable to assume that more initiatives and efforts are needed to mitigate risks leading to these fatalities.

Therefore, EASA organised in 2016 a General Aviation Safety Workshop to share knowledge and agree on the safety actions that will contribute to the improvement of safety in this domain. A key element of discussion is the appropriate assessment of risks, taking into account the specificities of GA flying with different risk profile and minimal risk for uninvolved third parties. The following strategic safety

areas were identified during the workshop: preventing mid-air collisions (MACs), coping with weather, staying in control, and managing the flight.

Further to this workshop, actions were recorded in the EPAS 2017-2021 and several safety promotion and rulemaking activities performed including:

— Safety promotion task on airspace infringement (SPT.089), developed in cooperation with the Safety Promotion Network (SPN) of the MSs;

— Sunny Swift comics, the first five issues dealing with fuel management (SPT.090), CO intoxication, airspace infringement and MAC (SPT.089), loss of control (SPT.090, SPT.089, SPT.086) and coping with weather (SPT.087);

— Creation of the 'Technology for Safety think tank' (T4S) (SPT.084);

— Basic instrument rating (NPA 2016-14), cooperation with EUROCONTROL to promote the results of RMT.0677 (SPT.088).

Moreover, to improve the dissemination of safety messages (MST.025), EASA introduced in 2018 the GA Community website and organised its Annual Safety Conference on 'Promoting Safety Together: a vision for the future of General Aviation'. Other dissemination actions include the GA roadmap roadshows and continued participation in AERO Friedrichshafen, the 'global show for General Aviation'.

EASA, in cooperation with its ABs, is launching the GA Roadmap 2.0. It will concentrate on making GA safer and cheaper thanks to innovation and technology.

Key actions:

- Improve the dissemination of safety promotion and training material by authorities, associations, flying clubs, insurance companies targeting flight instructors and/or pilots (SPT.092);
- Encourage the installation and use of modern technology (SPT.084);
- Address airspace infringement risks through an EU-wide promotion campaign (RES.021).

3.1.3 Safe integration of new technologies and concepts

Establishing and maintaining a high uniform level of civil aviation safety remains the highest objective. EASA will in the future allow for a more integrated approach to the introduction of new technologies and concepts. To continue to maintain the highest possible safety standards in the future to come, such integrated approach considering the total aviation system will be essential.

In the ATM domain, SESAR is the research programme for the modernisation of the European ATM systems to update them in the light of the expected traffic increase by 2035. The SESAR programme aims to improve the performance of the ATM systems so as to enable traffic increase in a safe and efficient manner.

3.1.3.1 Facilitate European emerging technologies and innovations

This strategic priority guides the introduction of new technologies, innovative solutions and operating concepts to support their safe integration into the aviation system.

Many of the technologies and innovations emerging in the aviation industry bear significant potential to further improve the level of safety, e.g. by improving the collection and analysis of operational data, better condition monitoring of aircraft for the purpose of preventive maintenance, improved accessibility and better quality of meteorological information, etc.

Digitalisation and automation are rapidly increasing in aviation systems. While this has resulted overall in significantly improved safety, the trend towards increasing automation requires a renewed safety focus on the interactions between humans and automation.

The next generation of automation will be artificial intelligence. This domain, no longer the province of science fiction, could well be the next 'game-changer' for aviation[11]. In the near future, new EPAS actions will be required to maximise related safety benefits, while mitigating any threats induced by the implementation of these new technologies.

EASA is also very active in developing an Artificial Intelligence (AI) Roadmap to be released by mid-2019. This AI Roadmap aims at identifying the opportunities, challenges and impact of this emerging technology on the various domains under EASA's mandate and to propose a corresponding action plan. It will allow EASA to be prepared in accompanying industrial strategic changes and developments in the coming years. The introduction of a 'learning assurance' concept to complement the existing 'development assurance' processes will also be assessed in due time.

In parallel, EASA is developing new tools such as innovation partnership contracts with industry stakeholders also with the objective of easing the introduction of new technologies and better preparing the certification of future programmes with significantly increased automation, ultimately aiming at full autonomy.

Research on new technological advances will play an important role to prepare for their safe integration into the aviation system. An objective of EASA's research strategy[12] is the upstream support to industry's, research centres' and universities' research activities by contributing a regulator's views and advice to ensure that the regulatory framework is not an impediment to innovation. This assures safety, security and environmental protection of novel technologies and simultaneously assists to reduce 'time-to-market' of new products and new kinds of operation.

At the same time, new types of aircraft or propulsion systems are emerging and their novel features may not be addressed in existing certification specifications.

For example:

— Open rotor engine technology

  The related activity will identify and recommend harmonised draft requirements and advisory material for CS-E, 14 CFR Part 33, CS-25 and 14 CFR Part 25 to address the novel features inherent in open rotor engine designs and their integration with the aircraft.

— Electric propulsion for aircraft

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[11] See AVIATION SAFETY – Challenges and ways forward for a safe future, Research & Innovation Projects for Policy, EC – Directorate General for Research and Innovation, January 2018 https://publications.europa.eu/en/publication-detail/-/publication/b4690ade-3169-11e8-b5fe-01aa75ed71a1/language-en/format-PDF/source-75248795

[12] https://www.easa.europa.eu/easa-and-you/safety-management/research

The market potential is considered significant with related effects on wealth and job creation. Environmental benefits for Europe are also potentially significant both in terms of gaseous emissions and noise.

3.1.3.2 System integration — system safety

To cope with the ever-growing complexity of the aviation system, EASA's work will increasingly focus on managing interfaces and interdependencies between aviation system 'components' with due consideration of the total aviation system. This focus is expected to increase the efficiency in certification and oversight processes, as well as more generally in risk management.

For example, for RMT.0379 'All-weather operations', it is essential to consider the interactions among the different system components involved (aircraft, aerodromes, operational procedures, involved personnel, etc.). Therefore, EASA applied the systems-theoretic process analysis (STPA) methodology developed by the Massachusetts Institute of Technology. The adopted STPA methodology represents a hazard analysis technique based on systems thinking and a model of accident causation based on systems theory rather than reliability theory.

Engine/aircraft certification

In 2016 EASA, together with the FAA, initiated a dedicated Engine/Aircraft Certification Working Group (EACWG) to streamline the overall certification process by improving engine/aircraft interface certification and standard-setting practices. The EACWG aims at reducing unnecessary burden in the certification process and better address the interdependencies between aircraft and engine certification programmes of transport category aircraft with turbine engines. This work will also lead to better identifying and addressing gaps and overlaps when updating related CSs.

An effective and efficient certification process, combined with streamlined certification requirements and standards will have clear safety benefits.

The EACWG identified a total of 29 recommendations, in the following areas:

— conducting a certification programme;

— understanding and developing the regulatory requirements;

— understanding if the engine/airframe certification interface is working effectively;

— addressing specific rule and policy gaps.

A number of recommendations were made beyond the scope of the EACWG, such as reviewing the operating regulations, to determine whether discrepancies exist between certification and operational regulations.

The list of recommendations is included as Appendix D in the final report issued by the EACWG in June 2017[13].

In September 2018 the Certification Management Team (CMT), following a request from EASA and the FAA, approved the creation of the Engine Aircraft Certification Tracking Board (EACTB). The EACTB will be tasked with tracking the implementation of the EACWG recommendations, as well as monitoring and reporting any new issue identified either during or outside projects; for instance,

[13] https://www.easa.europa.eu/sites/default/files/dfu/EACWG_final_report_June_2017.pdf

associated with new technologies. CMT approved the EACTB request with follow on actions/comments. The EACTB will be framed under the Certification Authorities for Bilateral Agreements & Certification Procedures (CABA).

3.1.3.3 Ensure the safe operation of drones

The number of drones within the EU has multiplied over the last two years. Available data shows the increase of drones coming closer to manned aviation (both aeroplanes and helicopters), thereby confirming the need to mitigate the associated risk — 10 non-fatal accidents were included in the European Central Repository in 2017 and the number of high-risk incidents reported significantly increased over the last 5 years.

The introduction of new airspace users should not degrade the level of safety. Rules should ensure that all risks are identified and appropriately mitigated, taking into account the opportunity provided by new technologies or, when they are not mature enough, identifying appropriate operational limitations.

Furthermore, the lack of harmonised rules at EU level makes unmanned aircraft system (UAS) operations dependent on an individual authorisation by every MS, which is a burdensome administrative process that stifles business development and innovation. In order to remove restrictions on UAS operations at EU level, so that all companies can make best use of the UAS technologies to create jobs and growth while maintaining a high and uniform level of safety, EASA is engaged in developing the relevant regulatory material.

As technology advances, consistent requirements and expectations in an already crowded airspace will help manufacturers to design for all conditions and make it easier for operators to comply with requirements.

As the number of UAS operations increases, there is a need to establish unmanned traffic management (UTM) systems (named 'U-space'[14] in Europe). There has been a huge development of U-space during the last year and it is expected that this will develop even faster in the years to come. The ATM MP will reflect the details about the integration of UAS in the EU airspace.

Key actions:

Highlights of EASA's recent work on drones:

- An opinion and draft AMC & GM were published in February 2018 and the draft implementing/delegated acts are being processed (RMT.0230).
- A first set of standard scenarios is planned to be adopted in 2019 to facilitate the obtainment of authorisations for well-defined operations.

For the fully-certified drone category, EASA opinions and decisions will be issued between Q2/2019 and Q2/2023. In the meantime: Certification of large drones could be done using Part 21 and Special Conditions.

[14] As per definition in the SESAR Joint Undertaking U-space Blue print: 'U-space is a set of new services and specific procedures designed to support safe, efficient and secure access to airspace for large numbers of drones.'. The U-space blue print can be found in: http://www.sesarju.eu/sites/default/files/documents/reports/U-space%20Blueprint%20brochure%20final.PDF

An outlook on EASA's future work:

— Drafting the necessary standards to support the performance-based rule in cooperation with standardisation and industry;

— Developing the necessary actions to ensure a uniform implementation of rules in cooperation with MSs, including promoting the safe operation of drones to the general public (SPT.091);

— Developing the regulatory framework for the safe integration of drones in the airspace (RMT.0230).

EASA will continue to assess the need for action in order to ensure safe and harmonised development and deployment of U-space across the EU.

3.1.3.4 New operating concepts and business models

Address current and future safety risks arising from new operating concepts and emerging business models

Some new business models such as those responding to the increased demand for flying in the cities, 'urban air mobility' or those generated by the increased digitalisation in the aviation industry, the introduction of more autonomous vehicles and platforms, single-pilot operations and completely autonomous cargo aircraft, will challenge the way authorities regulate and oversee the aviation system.

Until now the air travel over urban areas has been limited to very special operations, such as police operations or helicopter emergency medical services (HEMS). New aviation partners are seeking new business models to provide more services to citizens, ranging from parcel delivery by air within the cities to flying air taxis. These new business models and operations need to be performed in a safe and secure manner to maintain the confidence that citizens have in the air transport system. EASA has a key role to play in this area.

Key actions:

- Support Competent Authorities in the practical implementation of cooperative oversight (FOT.007);
- Improve the understanding of operators' governance structures (MST.019).

3.1.3.5 Electric & hybrid aircraft

Innovation in any industry is a key factor influencing its competitiveness, growth and employment potential. With this strategic priority in mind, and looking at the increasing number of new aircraft manufacturers and suppliers working on aircraft using electric propulsion (and increasingly electric systems), it becomes apparent that there are very strong prospects as well as demand, from industry and governments, to have hybrid propulsion and eventually fully electric aircraft. Environmental benefits, in terms of emissions and noise, as well as social enhancements (e.g. mobility and accessibility) are also determining factors. Development efforts will cover also electrical systems, electrical urban taxis, electrical HEMS, etc.

To encourage the safe integration of new technological advancements in the wider electrical aviation sector overall, flexibility in the approach on all types of concepts, variations and designs types will be enhanced.

To allow for the projects to thrive, a number of complex issues need to be tackled from a regulatory perspective. In terms of rulemaking, until such time as enough experience will have been gained, Special Conditions/Derogations will be applied in a flexible and innovative way, as already allowed by the system and in line with Better Regulation principles. The use of performance-based and non-prescriptive regulations has been used for e.g. CS-23, CS-VLA and for the future rules for drones.

EASA launched at the end of 2018 a public consultation on its proposal for airworthiness standards which will enable the certification of small VTOL aircraft. This is to develop the first component of the regulatory framework to enable the safe operation of air taxi and electric VTOL (eVTOL) aircraft in Europe. By spring 2019, the first fully electric propulsion small aircraft type model is planned to be type-certificated. Other projects are on their way, including two application for eVTOL. Additionally, the first positive investigations, also for large transport aeroplanes, have been conducted.

Likewise, in electric and hybrid aviation, EASA aims to take care of future technology knowledge captivation, support of certification, networking, as well as all operations philosophy, internal training, derogations support, procedures, specifications, and finally rules. In this last instance, coordination and development of the necessary research initiatives and/or safety promotion as well as accommodating these in the best possible manner, will be considered in future EPAS editions.

Rulemaking actions are only foreseen for future EPAS editions, beyond 2019, once EASA will have collected practical technical experience with the type certification of these types of aircraft. This includes some already identified gaps for electric propulsion as certain future operational environments are currently not covered by existing rules and specifications, for e.g. use of urban areas, specifically designated areas at aerodromes, special landing pads, off airfields, etc. This approach would help to define in advance the necessary steps towards properly changing, updating and/or introducing regulations, specifications or procedures.

Equally, interaction has to be established between electric and hybrid aviation and the relevant EU bodies, MSs and foreign authorities, promoting and communicating on European and global harmonisation on electric and hybrid aviation regulations. Activities are also foreseen to assess the extent to which expected environmental benefits are realised and what kind of new challenges may arise, e.g. the increased noise level in urban areas.

3.1.3.6 Enable the implementation of new technologies developed by SESAR

EPAS also caters for the regulatory and implementation needs of the SESAR essential operational change and other new technological advancements (such as, but not limited to, U-space technological solutions, virtualisation and cloud-based architecture and remote tower operations). Global interoperability, civil-military cooperation and compatibility with other regions, such as NextGen, will form an integral part of EASA's work in impact assessment and future rulemaking or other related actions. Furthermore, EPAS provides a proactive and forward-looking view to the implementation of essential operational changes that support safety improvements required to safely manage the SESAR target operational concept.

In addition, EASA will consider additional implementation support actions that facilitate the achievement of operational improvements and new ATM operational concepts. These actions should approach the implementation needs of the enabling infrastructure in a comprehensive manner, thus facilitating the safe, secure and interoperable implementation of cost-effective solutions considered as necessary. These solutions could include GNSS, SATCOM, other satellite-based CNS solutions or

other technical solutions coming from the telecommunications field. It should avoid requiring specific technological solutions while specifying clear performance requirements to be met.

Key actions:

- Support the datalink operations (RMT.0524);
- Performance-based navigation implementation in the European ATM network (RMT.0639);
- Implementation of the regulatory needs of the SESAR common projects (RMT.0682).

3.1.3.7 Enable all-weather operations

The European industry should have the capability to take full advantage of the safety and economic benefits generated through new technologies and operational experience. This represents a widely recognised interoperability subject touching on a wide range of areas, including ADR minima, ADR equipment, and procedures both for CAT and GA.

Aircraft operations have always been influenced by the weather. Whilst modern aircraft design and the availability of weather observations and forecasts contribute to a predominantly very safe flying environment, there remain occasions where severe weather events have been identified as being a contributing factor in the causal chain of accidents and incidents. Such events remain of concern within the aviation community and corresponding safety recommendations (SRs) have been addressed to EASA by accident investigation authorities.

Since 2015, EASA has increased its focus on weather-related challenges and, as part of that work, has sought to identify whether the meteorological information available to pilots could be enhanced. Accordingly, EASA organised a first workshop dedicated to 'Weather information provided to pilots'. Following the workshop and the acknowledged need to take further action, EASA integrated the 'Weather Information to Pilots' project within the 'All Weather Operations' (AWO) activities (RMT.0379). A project team put together in April 2016 — involving representatives from international organisations, associations and industry — was tasked with an assessment of the situation and this resulted in the 'Weather Information to Pilots Strategy Paper'[15] issued in January 2018. The EASA Strategy Paper focuses on the weather phenomena that introduce risk to aviation, describes the current mitigation measures, the deficiencies and how to overcome them. The scope of the paper is focusing on CAT aeroplanes. In the near future, similar work will be undertaken to address weather information to pilots in GA and rotorcraft operations.

The EASA Strategy Paper proposes nine recommendations to further improve weather information and awareness, as follows:

— **Recommendation #1: Education and training:** weather hazards, mitigation, and use of on-board weather radar; require specific education and training on weather hazards and associated mitigation means, including optimum use of on-board weather radars and new services. Related EPAS action: Consistent with RMT.0379, 'miscellaneous items through improvement of existing rules' (it is **proposed** to modify AMC1 FCL.725).

— **Recommendation #2: Improved weather briefing presentation:** promote improvements to the presentation of weather information in-flight briefing packages by promoting use of intuitive,

[15] https://www.easa.europa.eu/sites/default/files/dfu/EASA-Weather-Information-to-Pilot-Strategy-Paper.pdf

interactive displays, appropriate use of standardised colour graphics and symbols, and intelligent filtering of information.

— **Recommendation #3: Promotion of in-flight weather information updates:** promote the use of the latest information available — what is available is as (if not more) valuable in the cockpit — to ensure up-to-date situational awareness. Encourage the development and introduction of in-flight weather information applications on electronic flight bags (EFBs). Related EPAS action: RMT.0601 (Opinion No 10/2017 — already published)

— **Recommendation #4: Pan-European high-resolution forecasts:** support the pan-European developments regarding the provision of high-resolution forecasts for aviation hazards (e.g. CAT, icing, surface winds, cumulonimbus (CB), winter weather). Related EPAS action: RMT.0379, see statement '… should be enabled to take full advantage of safety and economic benefits through new technologies and operational experience'.

— **Recommendation #5: Use of supplementary, 'Tier 2' weather sources for aviation purposes:** develop the necessary provisions to support the use of supplementary' 'Tier 2' meteorological information by pilots.

— **Recommendation #6: Development and enhancement of aircraft sensors/solutions:** promote the development of intrinsic aircraft capabilities to facilitate the recognition and, if required, the avoidance of hazardous weather. (e.g. on-board sensors for turbulence, sand/dust/volcanic ash, ice crystals). Related EPAS action: RES.010.

— **Recommendation #7: Connectivity to support in-flight updates of meteorological information:** promote deployment of connectivity solutions (uplink and downlink) to support the distribution of meteorological information to pilots. Related EPAS action: RMT.0379, see statement '… should be enabled to take full advantage of safety and economic benefits through new technologies and operational experience'.

— **Recommendation #8: Provision of enhanced meteorological information:** promote provision of high-resolution observed and forecast meteorological information, particularly data with high spatial and temporal resolution such as imagery derived from satellite and ground weather radar sources. Related EPAS action: RMT.0379, statement '… should be enabled to take full advantage of safety and economic benefits through new technologies and operational experience'.

— **Recommendation #9: On-board weather radar, installation of latest generation equipment:** promote the installation of the latest generation of on-board weather radars, with emphasis on including capability for wind shear and turbulence detection. Related EPAS action: RMT.0379, 'miscellaneous items' through improvement of the existing rules.

The list of actions proposed to address these nine recommendations is included in Appendix A to the Strategy Paper. Where such actions cannot be implemented as part of existing EPAS actions, a PIA will be performed to determine the need for additional EPAS actions. These could then be considered for the 2020-2024 EPAS planning cycle.

Key action:

- Review and update the AWO rules in all aviation domains (RMT.0379).

3.1.4 Environment

Ensuring sustainability is a huge challenge for the aviation industry, MSs and EASA. Sustainable aviation is about combatting climate change, and reducing the health effects from aircraft noise and air pollution. It is also about ensuring that European industry stays competitive on a level playing field in a rapidly changing world. The introduction of novel technologies (including electric air taxis and drones, hybrid systems) require particular attention from an environmental perspective.

EPAS contains the status of the environmental standards related to sustainable aviation — see the EAER (**easa.europa.eu/eaer**) for a concise view of the status and actions of Europe as regards environment and sustainability. The below actions are aligned with the recommendations from the EAER.

Climate change and noise: Introduce the CAEP/11 recommendations

The aviation industry needs to minimise its impact on the environment as much as possible while providing safe air transport. In addition, it is key to have environmental requirements that are consistent with the rest of the world to ensure a level playing field.

Actions in this area will contribute to European policies on climate change, air quality and noise reduction. ICAO Committee on Aviation Environmental Protection (CAEP) is expected to adopt in February 2019 a new standard on non-volatile particulate matter (PM) emissions, and propose improvements to the existing noise and emissions standards. The agreed updates to the environmental standards will need to be implemented into European legislation in order to become effective.

The actions to implement ICAO standards in Europe will be adjusted and detailed once the outcome of the CAEP/11 process is known and communicated in ICAO State Letters, which are expected in 2019. Future actions will also need to address the new environmental challenges of new technologies, e.g. noise of drones and air taxis, recyclability of batteries and the requirements of the circular economy.

Key actions:

- Implement ICAO CAEP amendments (RMT.0513 and RMT.0514).
- Develop PM regulations and guidelines (RES.018);
- Obtain high-quality technical expert support on standardisation issues (RES.019).

In addition, EASA is also involved in the following activities:

— Environmental fraud prevention;

— Development of an ecoLabel/LifeCycle assessments concept;

— Novel technologies and LifeCycle Assessments

— Sustainable fuels project;

— REACH monitoring process together with European Chemical Agency under the Memorandum of Understanding.

3.2 Strategic enablers

3.2.1 Research

The European aviation industry has gone through a successful development in the past decades placing Europe at a leading position in the global competitive market. Significant elements of this success story are the European aviation research and innovation programmes of the EU as well as the MSs' and industry's research activities. Therefore, these initiatives are of high relevance to the setting-up of EPAS actions. They contribute to EASA's objectives for ensuring the highest level of aviation safety, security and environmental protection in Europe.

Recently developed technologies, notably in the areas of complex software, propulsion, new materials, connectivity, digitalisation, data science, autonomous vehicles, space operations, business models are planned for entry into service at an unprecedented pace in the aviation economic system.

Further evolutions may address emerging risks such as security, including cybersecurity, AI applications and systems or aviation impact on climate change.

Moreover, aviation growth is calling for solutions that are resilient to weather hazards, continuous traffic growth and increased complexity of traffic ranging from operation at low altitudes to commercial aircraft operations and operation in remote areas.

The European and national research & innovation programmes, including Clean Sky and SESAR, are developing new aviation concepts and solutions, which will need to be certified or approved prior to entering operation in Europe as well as in third countries. Furthermore, new entrants, in particular in the drone sector, bring new requirements to the European aeronautics arena, which also necessitate new European regulatory responses.

It is essential for Europe that EASA is in the position to support and assist the streamlining of the deployment of those new solutions. To meet these objectives, notably with regard to the safer integration of new technologies and concepts, and to measures improving environmental protection, EASA must be equipped with new tools, agile methods, test/demonstration standards and modular evolutionary approaches for product certification and operational approval processes. This requires a number of evolutions to the current regulatory framework in order to cope with these current and future expected developments.

Playing a pivotal role between innovation and the development of safety, security or environmental protection standards, EASA is positioned to federate the future aviation research and innovation network comprising MSs, the industry and the aviation research community. It can also support development of new instruments for European aviation research and innovation projects' prioritisation and coordination, in support to the EU ACARE Strategic Research and Innovation Agenda (SRIA)[16].

EASA's Basic Regulation permits EASA to launch and finance research projects within its competence, which includes safety, environmental protection and security issues. Regularly, EASA experts and external stakeholders suggest or request research activities topics that are needed to tackle these issues. These topics are prioritised on a yearly basis and included in the 'Research Agenda', which

[16] 2017 edition of ACARE SRIA: http://www.acare4europe.org/sria

groups the requests for a given period. The projects becoming part of EPAS are only the ones covered by a financing source and included in the internal yearly research plan.

The Research Agenda aims at supporting the development of coordinated research actions and their implementation as part of EU and national research programmes. It encompasses a series of innovation- and efficiency-related actions besides safety-focused research. Actions resulting from the extension of EASA's remit following the adoption the NBR might trigger the need for additional research activities. In the case of ground handling, detailed objectives and actions will be defined by a ground handling roadmap that will be subject to focused consultation.

As some of the prioritised research projects have a high likelihood of (but not yet confirmed) funding at the time of the publication of this document, their planning has been kept flexible on purpose, allowing for projects to be launched during the timeline of the Research Agenda mentioned above (between 2019 and 2021).

The list of research-related EPAS actions is included in Appendix H.

3.2.2 Safety promotion

From the beginning of 2019, EASA will launch a new safety promotion strategy that will take an increasingly proactive approach to the way EASA communicates with the European aviation community. This will position EASA as a safety promotion leader in Europe and worldwide having influence and a recognised brand. This will be achieved through EASA's 'Safety Together!' brand. Understanding that different aviation stakeholders have very different needs in terms of information and communication channels, the strategy will take a domain-based approach. It will be split into operational domains such as aircraft operations, aerodromes and ground handling, General Aviation, rotorcraft and drones.

When possible, safety promotion will be used as a light and effective alternative to rulemaking and oversight. It will also support a better understanding of EU civil aviation regulations and provide more information on safety intelligence and analysis results. The strategy will also provide continual information on a wide range of safety topics at domain level. A wide range of communication tools will be used to spread safety messages and this will see EASA becoming more active on social media and using new and novel ways to inform people about safety. Within EPAS, there is a number of specific SPTs and this is augmented by a number of new actions to promote important safety topics in each of the main operational domains.

3.2.3 International cooperation

One of the EC's 10 key priorities is that the EU becomes a stronger global actor. EASA supports the EU and cooperates with national, regional and international organisations alike in order to enhance global aviation safety, and supports the free movement of European products and services. Furthermore, ICAO acknowledges that aviation safety can be better managed at regional level and recognises the importance of Regional Safety Oversight Organisations (RSOOs) in this respect. This supports a stronger role of EASA in a broader European context.

In this perspective, the strategic priorities at an international level are the following:

— **Strive, through international cooperation, that citizens' interests for safety and environmental protection are being met at global level.** This can be achieved through:

- contribution to improving global safety and environmental protection;
- support to the resolution of safety deficiencies through technical assistance; and
- promotion of regional integration wherever effective.

— **Ensure a global level playing field for European industry.** This can be achieved through:

- promotion of fair and open competition and removal of barriers to market access;
- enabling efficient oversight between international partners; and
- promotion of EU aviation standards around the world.

— **Enable the European approach.** This can be achieved through:

- coordination of common positions at ICAO;
- centralisation of international oversight actions and intelligence;
- bringing together different European actors in technical assistance; and
- promotingthe recognition of the European system at ICAO level.

3.2.4 Digitalisation

Aviation moves into the digital era at an unprecedented pace. Almost all aviation sectors are affected by those developments. Aircraft manufacturers are moving from trend monitoring of key components to using increasingly connected digital systems, such as on-board sensors and digital engine twins. Digitalisation also affects aircraft operations by allowing certain operations to be carried out or controlled remotely. In certain extreme cases, such as drones, digitalisation can take the shape of full automation with minimal remote human intervention. Digitalisation is furthermore transforming the way training is performed and supports the move towards fully data-driven decision-making.

These developments are increasingly challenging traditional aviation regulations and calling for an evolution towards more performance-based, technology-neutral requirements, which will enable the novel business models that emerge from the digital transformation, increasing at the same time safety and efficiency.

EASA is engaged in defining its roadmap to digitalisation in order to determine the following:

— changes needed in the regulatory system to accompany and benefit from industry digitalisation;

— actions needed to keep abreast of digitalisation issues, in particular in relation to product certification and operations;

— key EASA digitalisation activities needed, both for external purposes (e.g. e-licence for pilots) or internal purposes (e.g. digitalisation of processes); and

— actions needed to implement EU’s digital agenda and e-government action plan.

The roadmap will have due regard to digitalisation-induced cybersecurity issues and related EPAS actions.

Figure 3. Overview of the digital transformation strategy drivers

Once approved, the EASA digitalisation roadmap will feed into EASA's strategic priorities. The roadmap and the updated strategic priorities will be considered for next year's EPAS planning cycle.

3.2.5 Technical training

According to ICAO Annex 19, qualified technical personnel is a critical element (CE-4) of the State safety oversight system. Annex 19 stipulates that States shall establish minimum qualification requirements for the technical personnel performing safety-related functions and provide for appropriate initial and recurrent training to maintain and enhance their competence at the desired level.

Consequently, as in ICAO's GASP, EPAS considers technical training as a strategic key enabler for an effective State oversight system.

Aviation is a very dynamic sector with rapidly innovating technologies and business models. At the same time, it is confronted with evolving new risk scenarios in terms of both safety and security. These rapid changes are a challenge for the staff of aviation authorities, as well as for aviation organisations, to keep abreast of new developments and to update their knowledge and competencies to fulfil their responsibilities.

Furthermore, the NBR proposes a framework for pooling and sharing of technical resources between the MSs and EASA. The implementation of this new approach requires a stronger harmonisation of the description of job profiles, minimum qualifications, as well as of training and assessment standards of aviation personnel.

EASA will therefore continue to focus on the following key areas:

— Maintenance and further development of the competence of EASA staff based on training programmes specifying initial and recurrent training subjects

— Further harmonisation of training and assessment standards for aviation inspectors within the EASA system, together with the Common Training Initiative Group (CTIG). For this purpose, the CTIG will be integrated into the management structure of EASA's ABs

— Implementation support to aviation authorities and aviation organisations and support to universities and similar educational institutions through lectures

— Support of the international cooperation strategy through dedicated training services

— Continuous improvement of the European Central Question Bank (ECQB), used for knowledge examinations of commercial pilots; taking into account EPAS priorities, where relevant for the training of pilot competencies.

Through the CTIG and the NAA training focal points, EASA makes available its catalogue of technical training courses to all MSs. The catalogue includes a number of safety-management-related training courses, such as training on SSP, EPAS, safety data collection & analysis, as well as on SRM. Additional training needs to support the implementation of the SSP (MST.001) and SPAS (MST.028) will be discussed with the Safety Management TeB on an ongoing basis.

In line with the NBR priorities, EASA will roll out an implementation support programme that will entail targeted support to MSs in order to complement standardisation and rulemaking activities. Such targeted support activities will cover SSP and SPAS development and implementation.

3.2.6 Oversight

Having proper oversight capabilities is a key prerequisite for the SSP as well as EPAS actions' implementation. Authority requirements, introduced in the rules developed under the first and second extension of the EASA scope, define what MSs are expected to implement when performing oversight of the organisations under their responsibility. In particular, they introduced the concept of risk-based oversight with the objective of addressing safety issues with a consideration to efficiency. Likewise, the cooperative oversight approach is explored in terms of how CAs could work together, as well as how EASA could evaluate whether the existing safety regulatory system adequately addresses risks resulting from the increased complexity of the aviation industry, and the number of interfaces between organisations, their contracted services and regulators.

Section 4.2 'Safety performance, introduces two new EPAS indicators, namely: MSs' oversight capabilities based on the Standardisation rating, and the status of compliance with SMS requirements in aviation organisations, based on information provided by MSs on the number and type of related findings.

To support MSs, this EPAS edition includes four projects identifying focused attention topics (FOT). They include both actions for EASA, led by its Standardisation team within the Flight Standards Directorate, as well as oversight actions led by MSs.

In terms of oversight capabilities, the latest SAR (2017) identified the following areas of concern:

— The implementation of authority requirements remains a major challenge in the areas where they are applicable, calling for creative solutions that will help to solve the problems encountered. In that sense, EASA already undertook some initiatives[17] aimed at providing support and is available for further assistance.

— It is also possible to note a polarisation of States in terms of level of maturity in the application of the rules: some States have difficulties in meeting the minimum standard, while others are constantly trying to improve the way they perform oversight and organise themselves accordingly. The presence of the former could undermine the integrity of the European aviation system and needs to be properly addressed. Further analysis of Standardisation inspection results shows that some CAs still show a reactive attitude and do not use inspection findings and safety information such as those that derived from occurrences, incidents, and accidents in order to adapt and improve their oversight system. Undertaking non-compliances (UNCs)

[17] Such as concept development and testing, sharing of best practices and development of enforcement strategies.

demonstrate that the quality/management systems of organisations are not always compliant and/or effective.

On cooperative oversight, EASA proposes to extend the scope of support in action FOT.007 to CAs in the practical implementation on all sectors, e.g. by way of existing trial projects and by exchanging best practices and guidance, dedicated workshops, etc.

EASA will also continue to support CAs in the application of very large-scale demonstration (VLD) activities in support of essential operational changes that are intended to improve the European ATM system.

3.3 Better regulation

Better regulation: rules are evidence-based, where appropriate performance-based, proportionate, fit for purpose, simply written and contribute to the competitiveness of the industry

Legislation is not an end in itself. Modern, proportionate rules that are fit for purpose are essential in aviation safety to uphold high common standards and ensure the competiveness of the European industry. The EC's Better Regulation Agenda aims at delivering tangible benefits for European citizens and at addressing the common challenges Europe faces. To meet this policy goal, EASA must ensure that its regulatory proposals deliver maximum safety benefits at minimum cost to citizens, businesses and workers without creating unnecessary regulatory burden for MSs and EASA itself. To that end, EASA must design regulatory proposals transparently, based on evidence, understandable by those who are affected and backed up by the views of stakeholders.

To be fully effective, better regulation must cover the entire regulatory cycle, i.e. the planning phase, design of a proposal, adoption, implementation, application, evaluation and revision. To ensure that the EU has the best regulation possible, EASA must examine each phase of new or existing projects with a view to ensuring that the objectives, tools and procedures adhere to better regulation principles.

Applying better regulation principles means for EASA that efforts must aim at:

— a transparent and streamlined regulatory process that is supported by an efficient stakeholder consultation;

— a plain and easily understandable language also for non-native English speakers;

— communication and IT platforms that give stakeholders easy access to consulted deliverables and regulatory material, including soft law;

— a regulatory approach that is performance-based where appropriate and respects the principles of subsidiarity and proportionality; and

— actors involved in the drafting of regulatory material that have been appropriately trained in drafting performance-based rules.

Regulating elements of aviation safety by describing the desired outcome is not new. This so-called performance-based approach is intended to make aviation safer, more efficient and flexible. This approach promotes the principles of subsidiarity and proportionality by prescribing safety objectives instead of prescribing how to achieve them.

The expected benefits of performance-based regulations (PBRs) are :

— **Resilience**: the increased complexity in operations and aviation activities, the dynamics of aviation business models, and fast and proliferating technological advancements require a regulatory framework capable of anticipating changes (technology-neutral regulations).

— **Flexibility**: by focusing on safety outcomes, PBRs provide flexibility and encourage innovation by not restricting a priori the means to control specific risks.

— **Safety management**: by providing a flexible implementation framework and focusing on safety outcomes, PBRs allow organisations and authorities to foster risk management capability and to better allocate resources against risks identified under their SMS and SSP.

The suitability of topics for a performance-based solution shall be assessed early on. Elements of aviation safety regulation that can be addressed cost efficiently in a performance-based manner shall be:

— identified as part of the rulemaking programming process, in particular in the context of PIAs;

— confirmed through impact assessment or ex post evaluation of rules;

— discussed and agreed with stakeholders on that basis; and

— formalised in EPAS.

Regulations should be as efficient and performance-based as possible, and as prescriptive as necessary to provide legal certainty. An early on assessment in the PIA shall assess at least the following to indicate which elements of a regulation can be performance-based:

— measurability;

— predictability of performance variance;

— need for flexibility;

— impact on innovation;

— impact on bilateral agreements;

— impact on level playing field;

— efficiency gains (through a performance-based solution); and

— need for interoperability.

To this end, EPAS identifies which actions have a particular focus on PBRs and contains an entire section dedicated to evaluation (see Section 7.2), which will focus on introducing more performance-based elements following a thorough assessment.

Finally, EASA is fully engaged in developing simpler, lighter and better rules for GA. This will be achieved in line with the GA Roadmap[18] created in partnership with the EC and stakeholders by addressing the recognised importance of GA and its contribution to the European economy and a safe European aviation system.

[18] Available on EASA website: https://www.easa.europa.eu/newsroom-and-events/news/easa-ga-roadmap

3.4 New Basic Regulation

3.4.1 General

The NBR prepares the grounds for the future challenges ahead while maintaining aviation as a safe, secure and environmentally friendly form of transport for EU citizens. It entered into force on 11 September 2018.

The NBR Chapter II 'Aviation safety management' creates a solid legal foundation for EPAS and transposes ICAO Annex 19 SARPs for State safety management.

The NBR conforms with the EU Commission's Aviation three key strategic priorities, namely: maintaining high EU safety and security standards, hence strengthening the EU's role as a global actor; tapping into growth markets while promoting job creation; and tackling limits to growth in the air and on the ground.

The main NBR objectives and related provisions are included below:

Main objective	NBR provisions
Making better use of the EASA system's limited resources with the following initiatives	• A pool of European aviation inspectors • New framework for transferring responsibilities • Oversight support mechanism • Additional privileges for qualified entities • Repository of information (including aero-medical) and Big Data • Updated framework for better working at international level
Having a flexible and performance-based system, by introducing the following principles:	• Risk- and performance-based elements reinforced • Additional flexibility for General Aviation (e.g. use of declarations) • Safety plan for Europe and national safety plans • Opt-in for Annex I aircraft manufacturers • Opt-in for 'state aircraft' • Opt-out for light sport aircraft
Integrating unmanned aircraft, by applying these conditions:	• 150 kg threshold removed from Annex I (all unmanned aircraft within scope) • Operation-centric framework • Use of market harmonisation legislation • Registration requirements • Protection and efficient use of radio-spectrum • Amendments to the accident investigation and occurrence reporting regulations
Closing previous gaps and inconsistencies, such as:	• Interdependencies with other domains, such as security, environmental and ATM legislation • Essential requirements and cooperation framework for cybersecurity • Proportionate safety requirements for ground handling (GH) • EU environmental protection requirements to the extent not covered by ICAO Annex 16

Allow for a better governance in EASA, with:	• Alignment with the 'common approach' on EU decentralised agencies
	• New forms of EASA revenue (grants)
	• Making best use of EASA resources, by:
	  ○ furthering the use of EASA expertise by the Commission (security, environment, research, SES implementation)
	  ○ allowing for demand-driven resources for certification (more flexibility in adjusting fee-financed staff according to workload)

3.4.2 NBR roadmap

On 10 April 2018, the EASA MB requested EASA to present a roadmap outlining the priorities for the implementation of the NBR. The roadmap received the MB's support during the June 2018 MB meeting and has been used as an input to this EPAS edition. It identifies the areas of the NBR where work will be started in the next three years.

The roadmap identifies not only rulemaking activities, but also certification- and standardization-specific projects, involving policies' or procedures' drafting, initiatives with roadmaps, support to MSs, etc. All actions stemming from the roadmap are reflected in EPAS.

When it comes to rulemaking and policy setting, the following activities identified in the NBR were already included in the previous EPAS edition and will continue to be delivered:

— Development of a regulatory framework for drones

— Work on cybersecurity

— ADR/apron management services (AMS) (see Opinion No 02/2014)

— ATM/ANS (Article 44) Opinion covering interoperability issues:

- RMT.0639 — PBN: IR expected in 2019 Q2
- RMT.0679 — SPI: Report to be published (no Opinion)
- RMT.0524 — DLS: Opinion due in 2020

As of 2022, EASA will start working on ATM/ANS systems and constituents and organisations involved in their design, production and maintenance (Articles 42, 43, 45 and 47), including where they contribute to the implementation of SESAR. This is an area where no safety evidence requires EASA to prioritise work on and thus starting in 2022 is proposed.

In order to better encapsulate and reflect in EPAS the new areas introduced by the NBR, the strategic priority 'Safe integration of new technologies and concepts' has been introduced (see Section 3.1.3).

A new Opinion to implement the **Airworthiness GA Roadmap** phase 2 has been added to the planning for publication in 2020. It will include priority items such as: extended use of declarations; non-installed equipment; considerations on amended scope of the list of aircraft excluded from the scope of the NBR (Articles 9, 10, 11, 12, 13, 18, and 19).

In the areas of ground handling and on new aspects of environmental protection (not covered by ICAO Annex 16), no specific rulemaking actions are required at this stage. The following activities will be undertaken:

— On **ground handling** (Article 33), during 2018 EASA will be engaged in a fact-finding phase, via safety assessment and dialogue with MSs and stakeholders. This will lead to the definition of the scope, objectives and performance indicators to draft a ground handling roadmap, to be implemented as of 2019. A new RMT is added in EPAS to address ground-handling-related rulemaking (RMT.0728).

— On **environmental protection** (Article 87), EASA will engage in developing a measurement methodology for novel technologies (supersonics, electric propulsion/urban mobility) as well as updating the EAER.

Moreover, the **NBR in Chapter II**, 'Aviation safety management' Article 7 requires States to establish and maintain an SSP in accordance with international SARPs (ICAO Annex 19) and with the European Aviation Safety Programme (EASP). NBR Article 8 requires States to complement their SSP with a SPAS. Such a plan shall include the risks and actions identified in EPAS that are relevant for the MSs concerned. A new EPAS action is included in this edition to account for this new requirement (see MST.028).

The development of new technologies, new business models and more generally speaking economic/social/societal changes, may have an impact on aviation safety. It is important for the Agency to have a clear vision on those changes that can potentially impact safety. Stakeholders and **Social Partners** should help to build this vision.

Article 89 of the NBR requires EASA to consult relevant stakeholders when addressing interdependencies between civil aviation and related socioeconomic factors. EASA is therefore enhancing the cooperation with EU social partners in aviation in order to reinforce its capacity in assessing potential social impacts of the EU aviation regulations and to address socio-economic risks to aviation safety. The resulting actions will be formalised in EPAS and will be subject to a 3-year reporting, as required by Article 89 of the NBR.

Point 2 of **NBR Article 140** stipulates that 'Not later than 12 September 2023 the implementing rules adopted on the basis of Regulations (EC) No 216/2008 and (EC) No 552/2004 shall be adapted to this Regulation'. Except for Part 21 (RMT.0727), EASA has not identified the need to change any IRs for the sole purpose of complying with the NBR deadline. Changes to rules will instead be driven by concrete safety, proportionality or level playing field improvements. In addition, the limited capacity of the EASA Committee will need to be taken into account when setting priorities.

Finally, even though a lot of work has already been initiated, the NBR roadmap also identifies the need to provide more implementation support to MSs, both on systemic issues, as well as in the implementation of specific tasks to implement the above provisions. A new programme will be initiated in 2019.

4 Performance

4.1 Key indicators in terms of EPAS actions

The safety driver is the one that contains most of the actions in the plan, followed by efficiency/proportionality

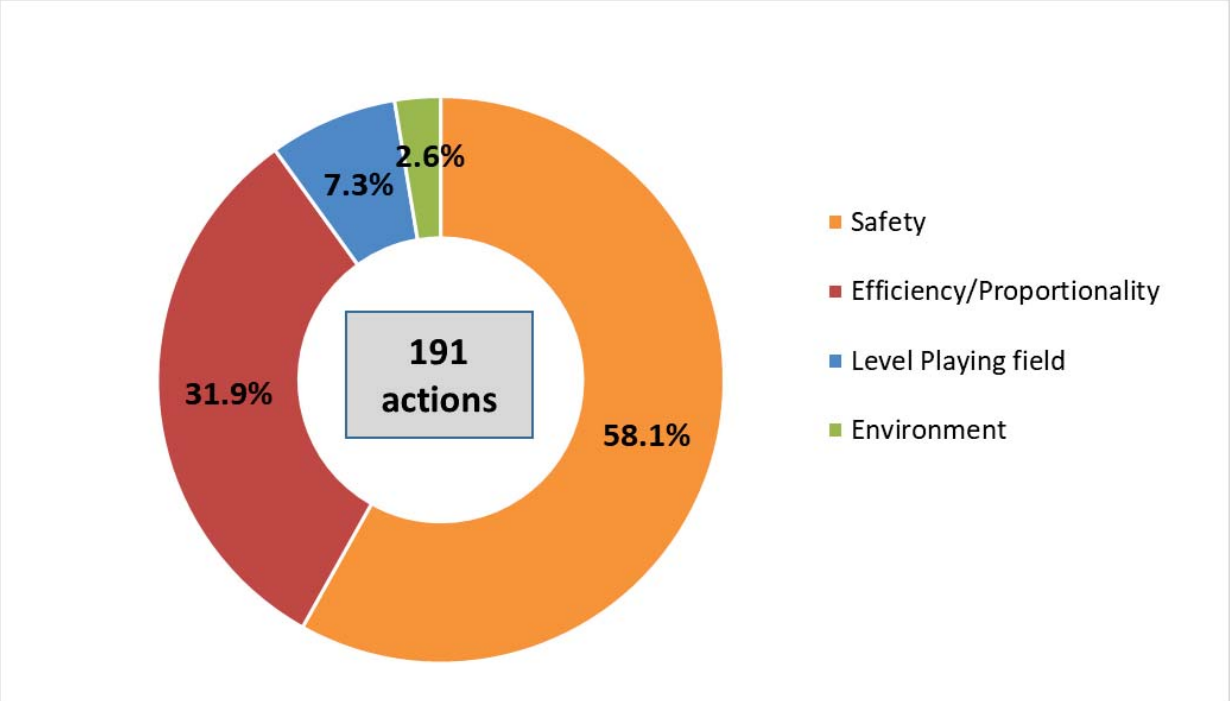

Figure 4. Share of actions by driver

Half of the actions in EPAS are strategic

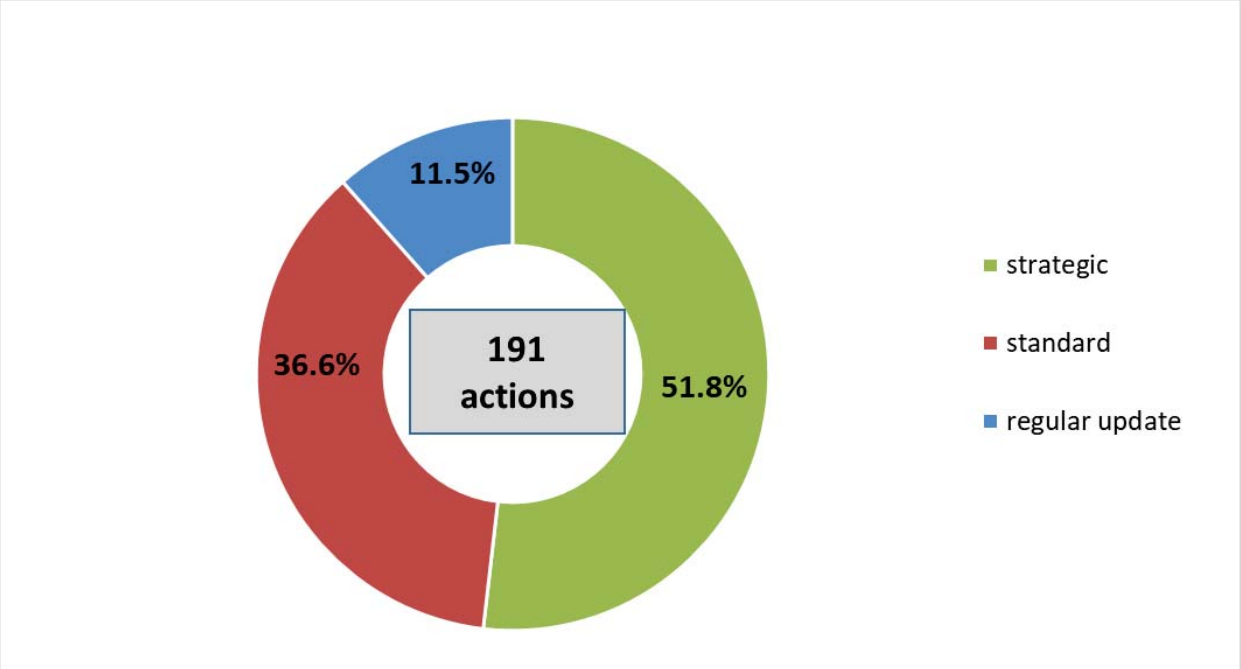

Figure 5. Share of actions by priority type

Most of the actions in EPAS are rulemaking projects

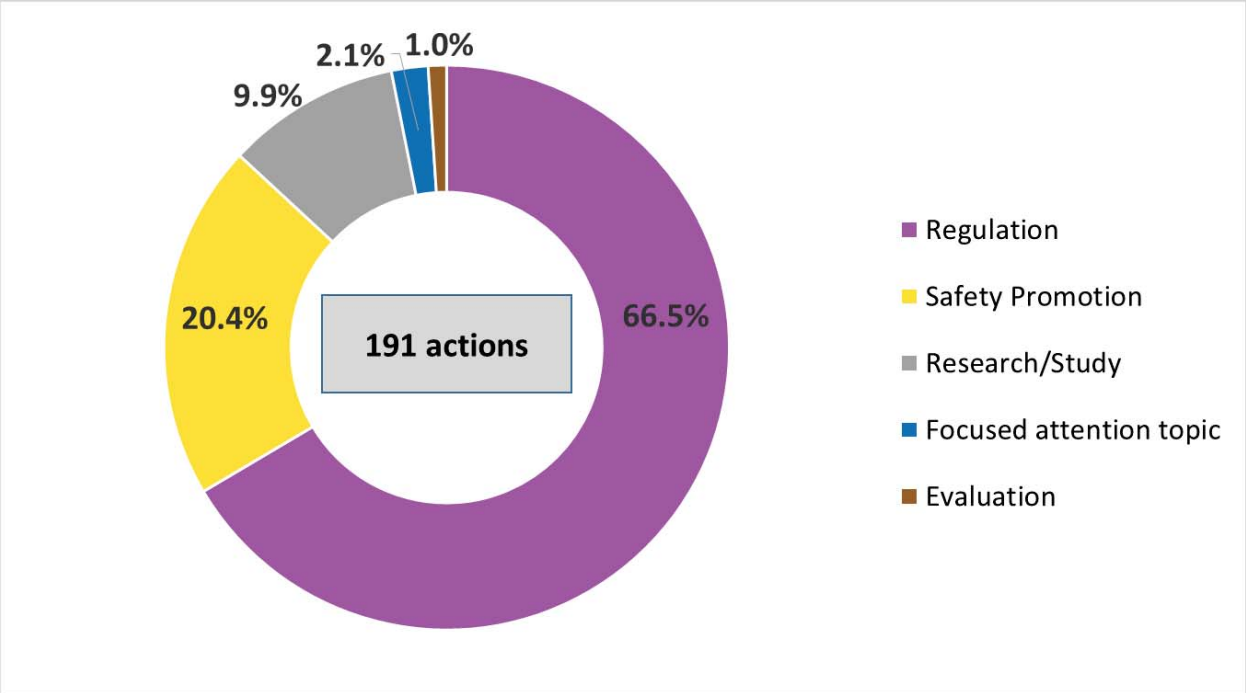

Figure 6. Share of actions per activity type

Average duration of rulemaking tasks and adoption process

The table below shows the average duration of rulemaking tasks for Opinions and Decisions published by EASA in 2018 (meaning from ToR publication to Opinion/Decision publication), as well as the average duration of the adoption process for Opinions adopted by the European Commission in 2018 (meaning from Opinion publication to the vote in the EASA Committee). Appendix A provides these indicators for all 2018 publications.

Average duration - Decisions published by EASA in 2018	*Average duration - Opinions published by EASA in 2018*	*Average duration - Opinions adopted by EC in 2018*
3,2 years	3,4 years	2,7 years

Rulemaking output

The rulemaking activity shows an overall decrease between 2015 and 2018. The volume of hard law deliverables planned for the next 5 years has been adjusted to the actual capacity of the regulatory system.

The graphs on the next pages show not only the total rulemaking output of EASA (Figure 7), but also separately the rulemaking activity leading either to Opinions (hard law and associated soft law, Figure 8) or to stand-alone Decisions[19] (soft law, Figure 9), as the latter have little impact on the MS resources.

These graphs do not reflect Decisions (AMC and GM) that are waiting for the adoption of the related Opinions by the EC.

[19] Decisions that are not linked to any Opinion

Rulemaking activity – EASA

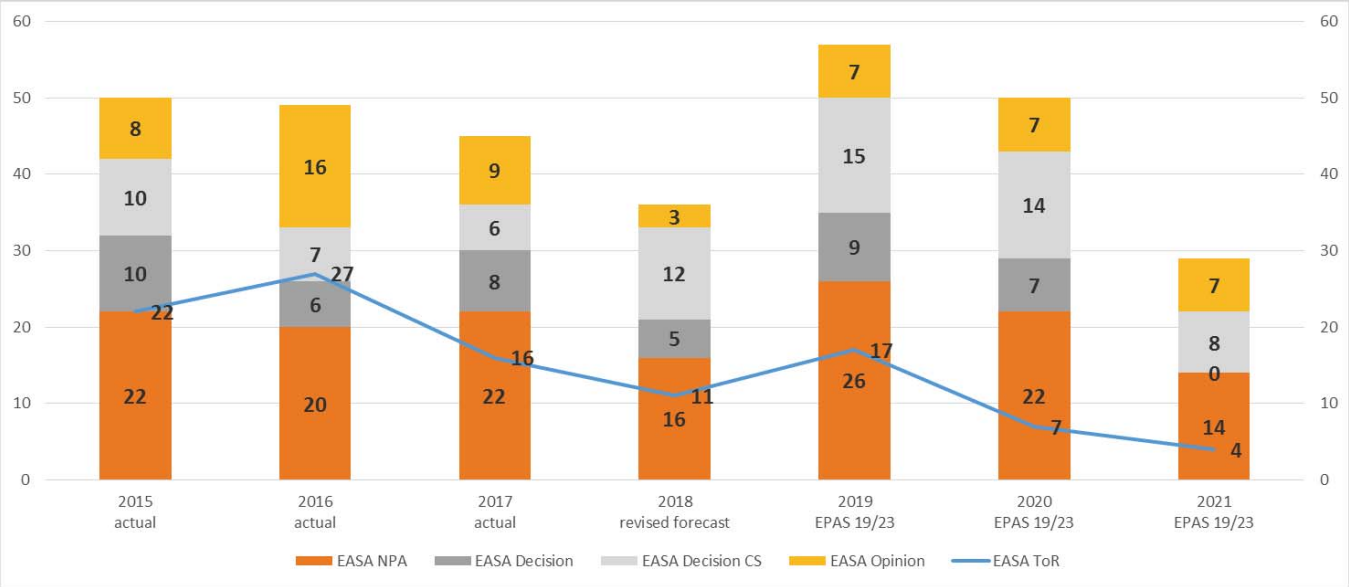

Figure 7. Rulemaking activity EASA 2015–2021 – total rulemaking output

EASA plans to publish 7 Opinions per year as of 2019. The number of Certification Specifications (CS) already increased in 2018 and will continue to increase in 2019. The updating of CS' to keep up with safety needs and new technologies provides adequate support to the manufacturing industry.

Rulemaking activity leading to Opinions (hard law and associated soft law)

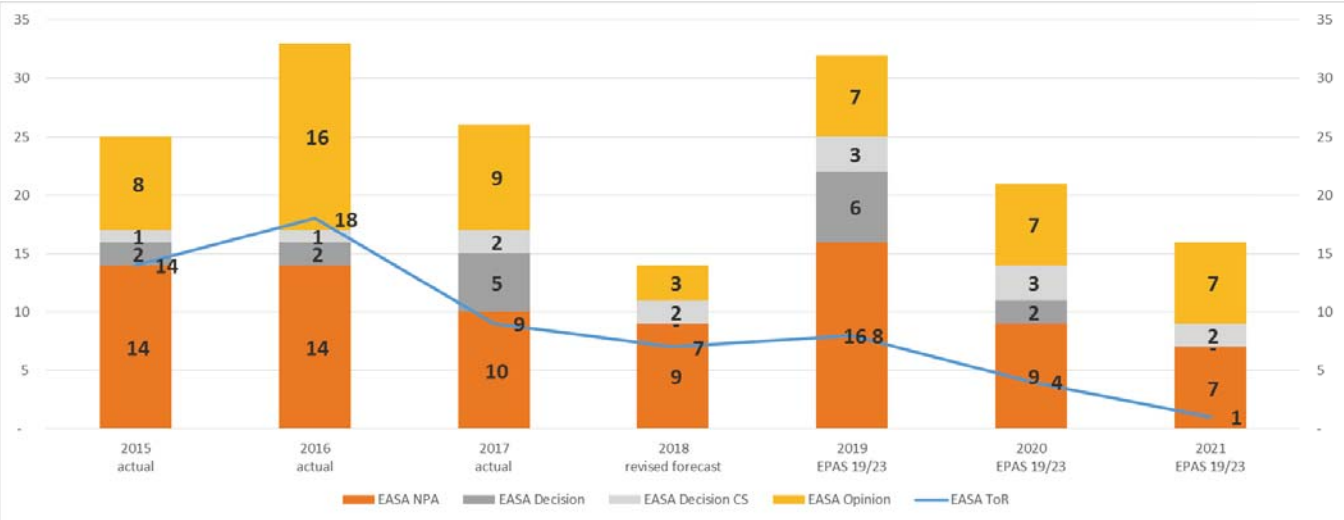

Figure 8. Rulemaking activity EASA 2015–2021 – Opinions and related soft law

The above graph shows the rulemaking output related to Opinions and related soft law, meaning any rulemaking task that contains at least one Opinion and related soft law. Generally, the development of an Opinion and the related soft law is done in parallel, as part of the same rulemaking project.

Rulemaking activity related to soft law

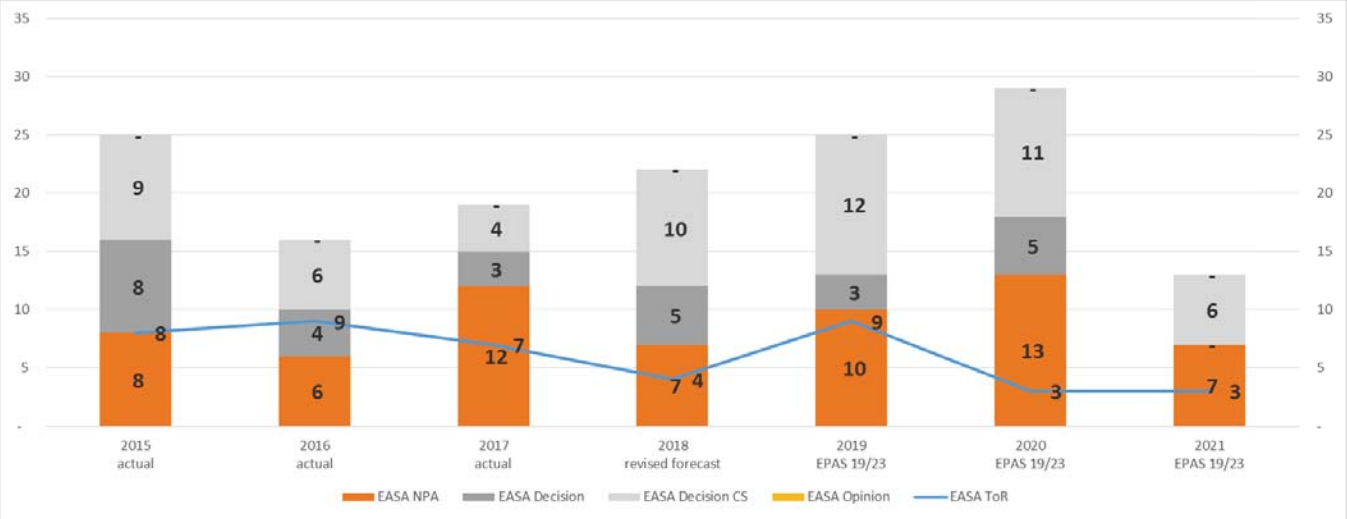

Figure 9. Rulemaking activity EASA 2015–2021 related to soft law

The above chart shows the outputs related to soft law, meaning those resulting from rulemaking tasks that only lead to 'stand-alone' Decisions. These tasks do not require the involvement of the Commission, nor the EASA Committee, and have less impact on MS resources.

Split between hard/soft law and soft law (compared to the 2018-2022 EPAS edition)

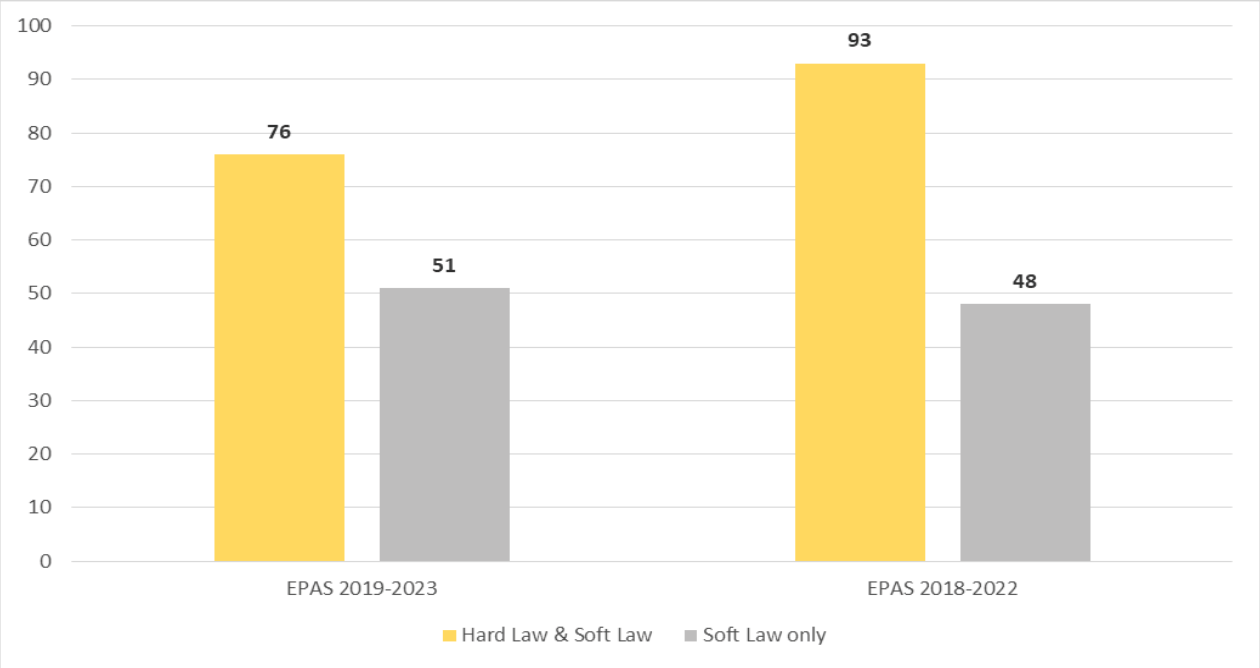

Figure 10. Split between hard/soft law and soft law

Following the review of priorities the output leading to Opinions has significantly reduced compared to the EPAS 2018-2022 edition

The above chart shows the impact of the de-prioritisation of a number of Opinions in the current EPAS edition. Appendix C contains the list of rulemaking tasks that are affected.

4.2 Safety performance

This section presents an initial outline for EPAS safety performance metrics. These shall reflect the EPAS strategic priorities in the area of safety and be based on the high-level safety objective set out in the NBR to 'establish and maintain a high uniform level of civil aviation safety in the Union'. EPAS safety performance goals, indicators and targets should also consider the 2020-2022 GASP goals and targets as relevant in the EASA system.

Following a suggestion made by the MSs' AB, it is proposed to adopt an 'aspirational goal' overarching the different EPAS indicators, as an alternative to the GASP aspirational goal of 'zero fatalities in commercial operations by 2030 and beyond', as follows:

'**achieve constant safety improvement with a growing aviation industry'**

This goal is deemed 'aspirational' as it represents an ambition of achieving an ever safer aviation system. It is intended to address all operational domains.

EPAS SPIs shall serve to monitor the impact of EPAS actions on the overall level of safety performance. New safety issues are identified and monitored via the European SRM process .

In accordance with Article 6 of the NBR, EPAS shall specify the level of safety performance in the Union, which the MSs, the Commission and EASA shall jointly aim to achieve. The level of safety performance shall be determined on the basis of the EPAS SPIs and where relevant, associated safety performance targets, as well as considering the safety-related indicators and targets defined in the ATM Performance Scheme.

Principles for establishing EPAS SPIs and targets

SPIs and targets shall monitor both safety **outcomes** (such as accidents, incidents and injuries) and the enablers, in terms of **systems and processes**[20] required to maintain effective safety management at authority and organisation levels.

Setting safety performance targets as part of EPAS is considered more relevant for process-based indicators, to drive positive system 'behaviours'. For safety-outcome-related metrics, which are derived from occurrence data, it is proposed to not consider setting safety performance targets, but to define 'baseline performance' and monitor the system against this baseline performance (proposed baseline indicators are included in Table 3).

Outcome-based indicators shall consider as main inputs:

— number of fatal accidents;

— number of fatalities; and

— number of non-fatal accidents and serious incidents.

This is aligned with the high-level ICAO safety metrics, thereby facilitating comparison of European performance with that of other regions or with global averages. The number of fatal accidents and fatalities provide the highest level of safety outcome monitoring, while the non-fatal accidents and serious incidents combined provide monitoring of higher-risk events. These can subsequently be reviewed to identify key risk areas that inform EASA's safety priorities. Looking to the future, when the European Risk Classification Scheme (ERCS) has been implemented across the MSs, an additional indicator that monitors high-risk occurrences may be considered. This could be in addition to or instead of monitoring non-fatal accidents and serious incidents. The EASA Safety Risk Portfolios (currently published in the ASR) include incident data sourced from the European Central Repository for accident and incident reports in aviation (ECR) under Regulation (EU) No 376/2014. As

[20] The efficiency of systems and processes established and implemented by EASA would continue to be monitored through the EASA SPD related indicators.

the implementation of Regulation (EU) No 376/2014 improves, we expect to be able to integrate more incident data into the monitoring framework.

Monitoring systems and processes

It is proposed that related SPIs be defined and monitored in three areas:

1. MSs' oversight capabilities

   This is related to 2020-2022 GASP goal 2 and EPAS strategic enabler 'Oversight'.

   Monitoring will be based on the EASA Standardisation rating, as an alternative to the ICAO USOAP Effective Implementation (EI) indicator. The Standardisation rating is used for the prioritisation of Standardisation inspections. It aims to emulate the expert's confidence in the CA's ability to discharge its safety oversight capabilities. The Standardisation rating considers elements related to size, nature and complexity of the State authorities and functions, the number and type of open Standardisation findings, as well as the State's reactivity in relation to findings closure, once the final report has been sent.

2. MSs' progress with SSP implementation

   This is related to GASP goal 3 and the EPAS strategic priority 'Systemic safety'.

   Related indicators will mainly be based on data available through ICAO iSTARS. Feedback provided by MSs will also be considered. EASA will in addition collect relevant documentation from States (SSP and SPAS). In the future, this monitoring area will consider results from the EASA Standardisation of NBR Articles 6 and 7.

   The objective is aligned with the latest 2020-2022 GASP draft requiring States to achieve an effective SSP, as appropriate to their aviation system complexity, by 2025.

3. Effective implementation of SMS in aviation organisations

   This would partially address 2020-2022 GASP goal 5. It addresses the EPAS strategic priority 'Systemic safety' and the requirements in the NBR.

   Monitoring the implementation of SMS in industry should focus on compliance with relevant requirements and effectiveness of SMS key processes. To develop a common set of indicators and targets on effective implementation of SMS, an agreed methodology for assessing SMS, as well as a method to score and aggregate related assessment results would first need to be developed and implemented. Such an assessment and scoring methodology is currently only available in the ATM/ANS domain, as part of the ATM Performance Scheme. It should also be considered that SMS requirements are not yet applicable in the initial and continuing airworthiness domains. Moreover, while the EASA Management System assessment tool is promoted through EPAS action MST.026, EASA has not yet received sufficient feedback on the use of the tool.

   For the above reasons, no detailed EPAS indicators and targets are proposed on SMS effectiveness (for domains other than ATM/ANS, since here this indicator is monitored in the context of the European ANS Performance Review). However, it is proposed to monitor the following:

   (a) the extent to which the EASA Management System assessment tool (or similar) is being used by MSs, and

   (b) the status of compliance with SMS requirements.

   Point (a) could be monitored on the basis of feedback received through EASA Standardisation. For point (b), EASA's monitoring could be based on oversight data provided by CAs, concerning the number and

type (level 1/level 2) of findings on the organisation's management system (e.g. findings raised within the scope of Part-ORO Subpart GEN Section 2 'Management system'). To collect this data, EASA will develop a dedicated survey, to be completed on an annual basis. The details of such annual reporting will be discussed with the MSs and the EC.

Safety performance in the above three areas will be discussed at the regular Safety Management TeB meetings. In the future, the EASA ASR will include related performance information.

Outcome-based indicators

Monitoring safety outcomes addresses 2020-2022 GASP goal 1 and EPAS strategic priority 'Operational safety':

Indicators related to key risk areas are identified through the European SRM process and described in the EASA Safety Risk Portfolios. EASA, in cooperation with the European NoAs, has developed a safety performance framework that identifies different tiers of SPIs.

— **Tier 1** transversally monitors all the domains and the overview of the performance in each domain. Tier 1 considers the number of fatal accidents and fatalities in the previous year compared with the average of the preceding decade. In addition to this, for Commercial Air Transport aeroplanes, detailed statistical indicators have been developed to identify the accident and serious incident rates over a four-year period. These will be updated periodically to monitor performance against the 2011-2014 baseline.

— **Tier 2** covers the priority key risk areas at domain level. Tier 2 provides the number (and where available the rate) of fatal accidents and the ERCS risk level for each domain in the ASR, divided by key risk areas.

These 'operational' safety indicators will continue to be monitored through the European SRM process. Likewise, reporting on those will continue to be done through the EASA ASR.

The tables below provide an overview of the figures associated with the current Tier 1 indicators that are proposed to be included in EPAS.

Table 1. Tier 1 indicators —cross-domain comparison of EASA MSs' aircraft fatal accidents and fatalities, 2007-2017

Aircraft domain	Fatal accidents 2017	Fatal accidents 2007-2016 mean	Fatalities 2017	Annual fatalities 2007-2016 mean	Annual fatalities 2007-2016 median
Aeroplanes					
CAT — airlines	0	0.9	0	66.4	4.0
NCC — business	0	0.5	0	0.6	0.0
SPO	3	7.3	4	18.1	16.5
NCO	34	50.1	62	92.2	91.0
Rotorcraft					
Offshore	0	0.4	0	3.6	0.0
Onshore	1	1.7	6	5.4	4.0
SPO	3	4.0	4	7.5	6.0
NCO	3	5.6	7	13.2	12.5
Balloons					
	0	1.2	0	2.1	1
Gliders					

Aircraft domain	Fatal accidents 2017	Fatal accidents 2007-2016 mean	Fatalities 2017	Annual fatalities 2007-2016 mean	Annual fatalities 2007-2016 median
	25	25.4	27	29.5	29.5

Table 2. Tier 1 indicators — cross-domain comparison of EASA MSs' infrastructure contribution to fatal accidents and fatalities, 2007-2017

Infrastructure	Fatal accidents 2017	Fatal accidents 2007-2016 — mean	Fatalities 2017	Annual fatalities 2007-2016 — mean	Annual fatalities 2007-2016 — median
ADR & GH	0	0.7	0	1.7	0.5
ATM/ANS	1	0.5	6	1.6	0

In Tables 1 and 2, both the mean (average) and the median number of fatalities are shown for the period 2007-2016. This is because for some aircraft domains the median number provides a better representation of the number of fatalities per year. This is typically related to the number of passengers on board aircraft involved in fatal accidents. Sailplanes usually only have one person on board and the number of fatal accidents and both the mean and median number of fatalities are very similar. By contrast, commercial air transport (CAT) airline fatal accidents may involve one or several hundred fatalities; therefore, the annual number of fatalities varies and the mean and median figures are quite different.

Table 3. Tier 1 Indicators for CAT aeroplanes, baseline figures 2011-2014

Proposed SPI	Per 10 000 movements	Per 10 000 flight hours
EASA-MS accident rate		
Accident rate over a 4-year period	0.044	0.023
Accident rate in 2011	0.044	0.024
Accident rate in 2012	0.048	0.026
Accident rate in 2013	0.034	0.018
Accident rate in 2014	0.051	0.026
EASA-MS fatal accident rate		
Fatal accident rate over a 4-year period	0.001	0.0004
Accident rate in 2011	0.001	0.001
Accident rate in 2012	0.000	0.000
Accident rate in 2013	0.000	0.000
Accident rate in 2014	0.002	0.001
Accident rate by size of AOC holder when allocated to movement band		
Band A: Less than 7 100 movements	0.17	-
Band B: 7,100 — 35 099 movements	0.18	-
Band C: 35,100 — 101 999 movements	0.06	-
Band D: 102 000 — 199 999 movements	0.04	-
Band E: More than 199 999 movements	0.03	-
Accident rate by size of AOC holder when allocated to flight hour band		

Proposed SPI	**Per 10 000 movements**	**Per 10 000 flight hours**
Band A: Less than 14 000 flight hours	-	0.18
Band B: 14,000 — 55 999 flight hours	-	0.09
Band C: 56 000 — 155 999 flight hours	-	0.04
Band D: 156 000 — 399 999 flight hours	-	0.02
Band E: More than 399 999 flight hours	-	0.02
Accident rate by type of aviation activity (CAT)		
Passenger transport (4-year period)	0.04	0.02
Cargo transport (4-year period)	0.13	0.05

Table 4. List of proposed serious incident SPIs

Proposed SPI	Per 10 000 movements	Per 10 000 flight hours
EASA-MS serious incident rate		
Serious incident rate over a 4-year period	0.125	0.067
Serious incident rate in 2011	0.155	0.085
Serious incident rate in 2012	0.131	0.071
Serious incident rate in 2013	0.112	0.059
Serious incident rate in 2014	0.090	0.047
Serious incident rate by size of AOC holder when allocated to movement band		
Band A: Less than 7 100 movements	0.43	-
Band B: 7 100-35 099 movements	0.22	-
Band C: 35 100-101 999 movements	0.19	-
Band D: 102 000-99 999 movements	0.13	-
Band E: More than 199 999 movements	0.12	-
Serious incident rate by size of AOC holder when allocated to flight hour band		
Band A: Less than 14 000 flight hours	-	0.32
Band B: 14 000-55 999 flight hours	-	0.13
Band C: 56 000-155 999 flight hours	-	0.10
Band D: 156 000-399 999 flight hours	-	0.08
Band E: More than 399 999 flight hours	-	0.06
Serious incident rate by type of aviation activity (CAT)		
Passenger transport (4 year period)	0.13	0.07
Cargo transport (4 year period)	0.32	0.13

Tier 2+ monitoring of safety issues takes place within the CAGs and annually during the revision of the safety risk portfolios.

4.3 Environmental performance

The efficiency of actions included in EPAS in relation to environmental protection will continue to be monitored as part of the EAER[21].

The report is the result of a close collaboration between the EC, EASA, the European Environment Agency (EEA) and Eurocontrol. This EAER provides a valuable source of objective and accurate information on the environmental performance of the aviation sector, and sets the scene for Europe's ambition to make the sector more sustainable. It also includes performance metrics pertaining to the SES ATM Performance Scheme as relevant to environmental protection.

Following its initial issue in 2016, EASA will be responsible to update the EAER every 3 years, in line with the growing role that EASA plays in the field of environment.

[21] https://www.easa.europa.eu/eaer/downloads

Volume II

5 Safety

The actions in this chapter are driven principally by the need to maintain or increase the current level of safety in the aviation sector.

5.1 Systemic enablers

This area addresses system-wide problems that affect aviation as a whole. In most scenarios, these problems become evident by triggering factors and play a significant role in the final outcome of a safety event. They often relate to deficiencies in organisational processes and procedures.

5.1.1 Safety management

Issue/rationale

Safety management is a strategic priority. Despite the fact that last years have clearly brought continued improvements in safety across every operational domain, recent accidents underline the complex nature of aviation safety and the significance of addressing human factor aspects. Authorities and aviation organisations should anticipate more and more new threats and associated challenges by developing SRM principles. These principles will be strengthened through SMS implementation supported by ICAO Annex 19 and Regulation (EU) No 376/2014 (reporting reinforcement).

What we want to achieve

Regulatory framework requiring safety management is in place across all domains of aviation, with proportionate requirements in the area of General Aviation.

Improve the level of safety through effective implementation of safety management within authorities and organisations.

How we monitor improvement

Organisations and authorities are able to demonstrate compliance and effective implementation. For ATM/ANS, this will be monitored as part of the ATM Performance Scheme. For the other domains (air operations, aircrew and aerodromes), it is proposed to start with collecting data on the status of compliance with organisation and authority requirements as relevant to Safety Management (see Section 4.2).

How we want to achieve it: actions

Rulemaking

RMT.0251 **Embodiment of safety management system (SMS) requirements into Commission Regulations (EU) Nos 1321/2014[22] and 748/2012[23]**

With reference to ICAO Annex 19, the objective is to set up a framework for safety management in the initial and continuing airworthiness domains.

This RMT is processed in two phases:

1. Changes to Part-M linked to OPS (CAMOs) - Opinion No 06/2016 issued in May 2016
2. Changes to Part-145 and Part 21

Owner	Affected stakeholders
EASA FS.2	CAMOs, AMOs (Part-145), POA holders, DOA holders, ETSOA holders and CAs

PIA	Proc	3rdC	SubT	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	1	MDM.055 19/7/2011	2013-19 10/10/2013	06/2016 11/5/2016	2019 Q3	2019 Q3
			2		2019 Q1	2020 Q1	2021 Q3	2021 Q3

RMT.0262 **Embodiment of level of involvement (LOI) requirements into Part 21**

Introduction in Part 21 of a risk-based approach for the determination of the LOI of EASA in product certification. This entails introduction of:

— systematic risk management (hazard identification, risk assessment and mitigation);
— performance-based oversight allowing to focus on areas of greater risk;
— safety awareness and promotion among all staff involved; and
— improved effectiveness and efficiency of Part 21 IRs achieved by their streamlining and improved consistency.

In May 2016, EASA issued Opinion No 07/2016 proposing the amendments to Part 21. Furthermore, at the end of 2017 EASA issued the NPA consulting the draft AMC & GM relevant for the application of the proposed amendments. A further NPA, consulting some additional draft AMC & GM will be published upon adoption of the IR. Both NPAs will result in a final decision adopting the AMC & GM to the amended Part 21.

Owner	Affected stakeholders
EASA CT.7	DAHs[24]

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST		MDM.060 27/8/2013	2015-03 2/3/2015	07/2016 23/5/2016	2019 Q2	2019 Q2
				2017-20 14/12/2017	n/a	n/a	n/a
				2019 Q1	n/a	n/a	2019 Q2

[22] Commission Regulation (EU) No 1321/2014 of 26 November 2014 on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organisations and personnel involved in these tasks (OJ L 362, 17.12.2014, p. 1).

[23] Commission Regulation (EU) No 748/2012 of 3 August 2012 laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations (OJ L 224, 21.8.2012, p. 1).

[24] Depending on the case, the design approval holder (DAH) will be the holder of a type-certificate, a restricted type-certificate, a supplemental type-certificate, a European Technical Standard Order (ETSO) authorisation, a major repair design approval, a major change design approval or any other relevant approval or authorisation for products, parts and appliances deemed to have been issued under Commission Regulation (EU) No 748/2012.

RMT.0469 **Assessment of changes to functional systems by service providers in ATM/ANS and the oversight of these changes by CAs**

Development of the necessary AMC & GM for the service providers and the CAs.

Owner	Affected stakeholders
EASA FS.4.1	ANSPs, CAs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0469 and RMT.0470 19/6/2012	2014-13 24/6/2014	03/2014 16/12/2014	1/3/2017	8/3/2017
				2017-10 28/6/2017	n/a	n/a	2019 Q4

RMT.0681 **Alignment of implementing rules and AMC & GM with Regulation (EU) No 376/2014**

Alignment of IRs and AMC & GM with Regulation (EU) No 376/2014.

This task is de-prioritised in accordance with criteria described in Chapter 3.

EASA explores different options in order to include the resulting regulatory changes as part of existing RMTs. To provide feedback to stakeholders on comments made on the NPA, it is planned to publish the full CRD and to extract some of the GM generated with RMT.0681 and issue it as Safety Promotion material.

Owner	Affected stakeholders
EASA FS.5	Air operators, pilots, MOs, ATOs, manufacturers[25], CAMOs, ADR operators, ATM/ANS providers and ATCO TOs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0681 30/9/2015	2016-19 19/12/2016	tbd	tbd	tbd

RMT.0706 **Update of authority and organisation requirements**

Address relevant elements of ICAO Annex 19 considering the latest revision status of the document and ensure appropriate horizontal harmonisation of the requirements across different domains taking on board lessons learned.

This task is de-prioritised in accordance with criteria described in Chapter 3.

Owner	Affected stakeholders
EASA FS	CAs, NSAs, air operators, pilots, MOs, ATOs, POA holders, CAMOs, ADR operators, ATM/ANS providers, and ATCO TOs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A2	ST	-	tbd	tbd	tbd	tbd	tbd

[25] The term 'manufacturer' includes, depending on the case: production approval holder (POAH) and production organisation manufacturing without POA.

Safety Promotion

MST.001 **Member States to give priority to the work on SSPs**

In the implementation and maintenance of the SSP, Member States shall in particular:

- ensure effective implementation of the authority requirements and address deficiencies in oversight capabilities, as a prerequisite for effective SSP implementation,
- ensure effective coordination between State authorities having a role in safety management,
- ensure that inspectors have the right competencies to support the evolution towards risk- and performance-based oversight,
- ensure that policies and procedures are in place for risk- and performance-based oversight, including a description of how an SMS is accepted and regularly monitored,
- establish policies and procedures for safety data collection, analysis, exchange and protection, in accordance with Regulation (EU) No 376/2014,
- establish a process to determine SPIs at State level addressing outcomes and processes,
- ensure that an approved SSP document is made available and shared with other Member States and EASA,
- ensure that the SSP is regularly reviewed and that the SSP effectiveness is regularly assessed.

Owner	Activity sector	Deliverable	Date
MS	All	SSP document made available	2019
		SSP effectively implemented	2025

MST.002 **Promotion of SMS**

Encourage implementation of safety promotion material developed by the Safety Management International Collaboration Group (SMICG) and other relevant sources.

Owner	Activity sector	Deliverable	Date
MS	All, HF	Best practice	Continuous

MST.003 **Member States should maintain a regular dialogue with their national aircraft operators on flight data monitoring (FDM) programmes**

States should maintain a regular dialogue with their operators on FDM programmes, with the objectives of:

- promoting the operational safety benefits of FDM and the exchange of experience between subject matter experts,
- encouraging operators to make use of good-practice documents produced by EOFDM and similar safety initiatives.

The document titled 'Guidance for National Aviation Authorities on setting up a national flight data monitoring forum' (produced by EAFDM) is offering guidance for this purpose

Owner	Activity sector	Deliverable	Date
MS	CAT	Report on activities performed to promote FDM	Continuous

MST.026 **SMS assessment**

Without prejudice to any obligations stemming from the SES ATM Performance Scheme, MSs should make use of the EASA management system assessment tool[26] to support risk- and performance-based oversight. MSs should provide feedback to EASA on how the tool is used, for the purpose of standardisation and continual improvement of the assessment tool.
MSs should regularly inform EASA about the status of compliance with SMS requirements and SMS performance of their industry.

Owner	Activity sector	Deliverable	Date
MS	Air Operations, Aircrew, Medical, Aerodromes	Feedback on the use of the tool. Feedback on the status of SMS compliance and performance	Continuous with annual reporting

MST.028 **Member States to establish and maintain a State Plan for Aviation Safety**

Member States shall ensure that a SPAS is maintained and regularly reviewed.

Member States shall identify in SPAS the main safety risks affecting their national civil aviation safety system and shall set out the necessary actions to mitigate those risks.

In doing so, Member States shall consider the pan-European safety risk areas identified in EPAS for the various aviation domains as part of their SRM process and, when necessary, identify suitable mitigation actions within their SPAS. In addition to the actions, SPAS shall also consider how to measure their effectiveness. MSs shall justify why action is not taken for a certain risk area identified in EPAS.

The pan-European safety risk areas in the current EPAS edition are as follows:

- For CAT by aeroplane: aircraft upset in flight, runway safety, airborne conflict, ground safety, terrain collision, and aircraft environment
- For rotorcraft operations: helicopter upset in flight and terrain and obstacle conflict
- For General Aviation: staying in control, coping with weather, preventing mid-air collisions and managing the flight

SPAS shall:

- describe how the plan is developed and endorsed, including collaboration with different entities within the State, with industry and other stakeholders (unless this is described in the SSP document),
- include safety objectives, goals, indicators and targets (unless these are included in the SSP document),
- reflect the EPAS actions as applicable to the State,
- identify the main safety risks at national level in addition to the ones identified in EPAS.

NB: This MST action now includes MST actions 004, 005, 006, 007, 010, 014, 016 and 018 from EPAS 2018-2022.
MST.007 corresponds to SAF11 (Prevention of RWY Excursions) in the ATM MP's (Level 3 Ed 2018).

Owner	Activity sector	Deliverable	Date
MS	ALL	SPAS established	2020

[26] https://www.easa.europa.eu/document-library/general-publications/management-system-assessment-tool

SPT.057 **SMS international cooperation**

Promote the common understanding of safety management and human factor principles and requirements in different countries, share lessons learned and encourage progress and harmonisation, through active participation in the SMICG.

Owner	Activity sector	Deliverable	Date
EASA FS.2	All	Guidance/training material/best practice	Continuous

SPT.076 **FDM precursors of main operational safety risks**

EASA should, in partnership with the industry, complete the good practice documentation which supports the inclusion of main operational safety risks such as runway excursion (RE), loss of control in-flight (LOC-I), controlled flight into terrain (CFIT) and MAC into operators' FDM programmes..

Owner	Activity sector	Deliverable	Date
EASA SM.1 + EOFDM	CAT	Good-practice document	2019

SPT.077 **Good practices for the integration of operator's FDM data with other safety data sources**

EASA should, in partnership with the industry, establish good practices that help an operator in integrating its FDM data with other safety data sources.

Owner	Activity sector	Deliverable	Date
EASA SM.1 + EOFDM	CAT	Good-practice document	2019

5.1.2 Human factors and competence of personnel

Issue/rationale

Human factors and the impact on human performance, as well as competence of personnel are a key strategic enabler. As new technologies and/or operating concepts emerge on the market and the complexity of the system continues increasing, it is of key importance to have the right competencies and adapt training methods to cope with new challenges. It is equally important for aviation personnel to take advantage of the opportunities presented by new technologies to enhance safety.

The safety actions identified currently — related to aviation personnel — are aimed at introducing competency-based training in all licences and ratings, updating fatigue risk management (FRM) requirements and facilitating the availability of appropriate personnel in CAs. These actions will contribute to mitigating safety issues in all domains, such as: personal readiness, flight crew perception or crew resource management (CRM) and communication, which play a role in improving safety across all aviation domains.

What we want to achieve

Ensure continuous improvement of all aviation personnel competence.

How we monitor improvement

Measurable improvement in aviation personnel competence at all levels (flight crews, ATCOs and CAs).

How we want to achieve it: actions

Rulemaking

RMT.0106 **Certification specifications and guidance material for maintenance certifying staff type rating training**

The main objective is to improve the level of safety by requiring the applicant for a type certificate (TC) or restricted TC for an aircraft to identify the minimum syllabus of maintenance certifying staff type rating training, including the determination of type rating.
This minimum syllabus, together with the requirements contained in Appendix III to Annex III (Part-66) to Commission Regulation (EU) No 1321/2014, will form the basis for the development and approval of Part-66 type rating training courses.

Owner	Affected stakeholders
EASA FS.1	DAHs, maintenance personnel, approved maintenance training organisations (Part-147), and CAs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0106 28/7/2014	2018-11 18/9/2018	n/a	n/a	2019 Q4

RMT.0188 **Update of EASA FCL implementing rules**

A complete first review of Part-FCL addressing a number of issues to be clarified or amended as identified by industry and MS. It also establishes a flight examiner manual (FEM) and a first draft of the learning objectives (LOs). Some of these corrections and clarifications also pertain to alleviations for the GA community.
See Opinion No 05/2017.

Owner	Affected stakeholders
EASA FS.3	Flight examiners, instructors, pilots, ATOs and DTOs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	FCL.002 2107/2011	2014-29 17/12/2014	05/2017 29/6/2017	2019 Q3	2019 Q3

RMT.0194 **Modernise the European pilot training system and improve the supply of competent flight instructors.**

The task aims, whilst making use of performance-based rulemaking criteria, to:

1. modernise and simplify the European pilot training system;
2. consider the recommendations from the ex post evaluation of Part-FCL commenced in 2018 under EVT.6;
3. consider the concept paper on instructors and examiners developed under the former RMT.0596;
4. introduce/transpose the latest ICAO Annex 1 and associated ICAO documents on the competency-based training and assessment (CBTA) concept for the appropriate licences and ratings; and
5. extend the principles of threat and error management (TEM) to all licences and ratings, as applicable.

EASA may divide the task in 2 or more phases to give priority to improving the regulatory framework to facilitate an adequate supply of instructors.

This task now incorporates the content of RMT.0596.

Owner	Affected stakeholders
EASA FS.3	Pilots, flight instructors, flight examiners, ATOs, DTOs, air operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	2019 Q3	2021 Q3	2023 Q1	2025 Q1	2025 Q1

RMT.0196 **Improve flight simulation training devices (FSTDs) fidelity**

An ICAO harmonisation issue, as the main purpose is to include in the European provisions elements from ICAO Doc 9625 for the use of FSTDs in flight training. The task will also address three SRs and aims at including results and findings from the loss of control avoidance and recovery training (LOCART) and RMT.0581 working group results. Harmonisation with the FAA should be considered.

Subtask 1:
The main objective of Work Package 1 (WP 1) is to increase the fidelity of the provisions to support the approach-to-stall training, as well as of the new upset prevention and recovery training (UPRT) requirements as proposed by Opinion No 06/2017 (RMT.0581).

Subtask 2:
The main objective for Work Package (WP2) is to review the technical requirements for training devices to reflect their actual capability and technology advancement.

Subtask 3:
The main objective for Work Package (WP3) is to address any relevant and appropriate emerging issues relevant to the CS-FSTDs including the feasibility for developing CS-FSTD requirements for power-lift/tilt rotor aircraft.

Owner	Affected stakeholders
EASA FS.3	Air operators, ATOs, DTOs, pilots, instructors, and flight examiners

PIA	Proc	3rdC	SubT	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	1	RMT.0196 15/7/2016	2017-13 25/7/2017	n/a	n/a	3/5/2018
			2		2019 Q1	n/a	n/a	2020 Q2
			3		2021 Q2	n/a	n/a	2022 Q4

RMT.0486 **Align with ICAO SARPs on ATCO fatigue management provisions**

Align with ICAO SARPs on the subject provisions.
This task is de-prioritised in accordance with criteria described in Chapter 3.

Owner	Affected stakeholders
EASA FS.4.2	ANSPs and ATCOs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-					

RMT.0544 **Review Part-147**

Amend Part-147 in line with the conclusions of the evaluation report issued following EVT.002[27].

Owner	Affected stakeholders
EASA FS.1	AMTOs and CAs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
n/a	ST	-	2019 Q1	2020 Q3	2021 Q3	2023 Q3	2023 Q3

[27] https://www.easa.europa.eu/sites/default/files/dfu/18D50946_Evaluation%20Report%20Part-66_147%20%28to%20AB%29.pdf

RMT.0589 **Rescue and firefighting services (RFFS) at aerodromes**

The objective of this RMT is to ensure a high and uniform level of safety by establishing minimum medical standards for rescue and firefighting personnel required to act in aviation emergencies. It will also ensure that the level of protection for rescue and firefighting at ADRs serving all-cargo or mail flights is proportionate to this type of traffic and their particular requirements. Finally, it will as well ensure a clearer implementation of the remission factor in general.

The RMT will lead to changes at AMC & GM level only. It has been split in two sub-tasks. :
(1) 1st sub-task: Remission factor, cargo flights, etc. The first sub-task is completed. Decision 2016/009/R published on 23/5/2016.
(2) 2nd sub-task: RFFS personnel physical and medical fitness standards

Owner	Affected stakeholders
EASA FS.4.3	CAs, ADR operators

PIA	Proc	3rdC	SubT.	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	1	RMT.0589 10/4/2014	2015-09 9/7/2015	n/a	n/a	2016/009/R 23/05/2016
			2		2018 Q4	n/a	n/a	2019 Q4

RMT.0595 **Technical review and regular update of learning objectives and syllabi for commercial licences (IR)**

Technical review of theoretical knowledge syllabi, learning objectives, and examination procedures for the air transport pilot licence (ATPL), MPL, commercial pilot licence (CPL), and instrument rating (IR).

Owner	Affected stakeholders
EASA FS.3/ECQB Team	CAs, ATOs, student pilots and ECQB

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0595 11/3/2015	2016-03 9/6/2016	n/a	n/a	8/2/2018
				2021 Q1	n/a	n/a	2022 Q1

RMT.0599 **Update of ORO.FC (evidence-based training)**

A complete review of the provisions contained in ORO.FC. In a first phase, it will include the introduction of evidence-based training (EBT) and competency-based training and assessment (CBTA) in the field of recurrent training and other training-related implementation issues.

The second phase will include the extension of EBT to other parts of the operator's training (e.g. conversion course, type rating) allowing a single philosophy of training to the operator, and a third phase that the will extend EBT to other aircrafts types (e.g. helicopters, business jets) allowing a single philosophy of training across the industry. Also, it will include other implementation issues on the training-related rules brought to the attention of EASA.

Owner	Affected stakeholders
EASA FS.3	Pilots, flight instructors, flight examiners, ATOs and air operators

PIA	Proc	3rdC	SubT.	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	1	RMT.0599 5/2/2016	2018-07 27/7/2018	2019 Q2	2021 Q2	2021 Q2
			2		2021 Q3	2022 Q3	2024 Q3	2024 Q3
			3		2024 Q3	2025 Q3	2027 Q3	2027 Q3

RMT.0700 **Aircrew medical fitness — Implementation of the recommendations made by the EASA-led Germanwings Task Force on the accident of the Germanwings Flight 9525**

Preventive measures stemming from the Task Force:
(1) carry out a psychological assessment of the flight crew before commencing line flying;
(2) enable, facilitate and ensure access to a flight crew support programme; and
(3) perform systematic drug and alcohol (D&A) testing of flight and cabin crew upon employment.
In August 2016, EASA issued Opinion No 09/2016 updating Part-MED.
In December 2016, EASA issued Opinion No 14/2016 addressing the safety issues identified by the EASA-led Germanwings Task Force on the accident of the Germanwings Flight 9525.

*The AB consultation replaced the NPA.

NOTE: Commission Regulation (EU) 2018/1042 will apply as from 14 August 2020.

Owner			Affected stakeholders				
EASA FS.2 / FS.3			Pilots, AMEs, AeMCs, CAs				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
A-	DP	-	RMT.0700 20/4/2016	n/a*	09/2016 11/8/2016 14/2016 9/12/2016	R(EU) 2018/1042 23/7/2018	2018 Q4 n/a

Research

RES.006 **Effectiveness of flight time limitations (FTL)**

The objective is to develop and demonstrate the due process for the assessment of the effectiveness of FTL and FRM provisions as set in Article 9a of Regulation (EU) No 965/2012[28]. Particular emphasis will be put on the establishment and qualification of the appropriate metrics with a view to ascertaining the necessity for their update towards improving flight safety by better mitigating the possibly associated risks.

The Agency shall conduct a continuous review of the effectiveness of the provisions concerning flight and duty time limitations and rest requirements contained in Annexes II and III. No later than 18 February 2019 the Agency shall produce a first report on the results of this review.
Such review shall involve scientific expertise and shall be based on operational data gathered, with the assistance of MS, on a long-term basis after the date of application of this Regulation.

Owner	Activity sector	Deliverable	Date
EC (H2020)	CAT, HF	Report	2019 Q4

[28] Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1).

5.1.3 Aircraft tracking, rescue operations and accident investigation

Issue/rationale

Safety investigation authorities have frequently raised the issue of lack of data to support investigations of light aircraft accidents. This is also related to the fact that light aircraft are not required to carry a flight recorder. As regards large aircraft, the advent of new technologies, as well as findings during safety investigations highlight the need to update the installation specifications for flight recorders.

The safety actions in this area are aimed at introducing normal tracking of large aircraft, improving the availability and quality of data recorded by flight recorders, assessing the need for in-flight recording for light aircraft and the need to introduce data link recording for in-service large aircraft.

What we want to achieve

Increase safety by facilitating the recovery of information by safety investigation authorities and thus helping to avoid future accidents.

How we monitor improvement

Number of investigated accidents or serious incidents in which flight data was not recovered.

How we want to achieve it: actions

Rulemaking

RMT.0249 **Recorders installation and maintenance thereof — certification aspects**

The general objective of this RMT is to improve the availability and quality of data recorded by flight recorders in order to better support safety investigation authorities in the investigation of accidents and incidents. More specifically, this RMT is aimed at modernising and enhancing the specifications for flight recorder installation on board large aeroplanes and large rotorcraft.

Phase 1 of the RMT resulted in the publication of NPA 2018-03. Following the public consultation of said NPA, EASA will develop an opinion and a decision amending CS-25 and CS-29. Topics addressed in phase 1 include flight data recorder (FDR)/cockpit voice recorder (CVR) power supply, means to automatically stop the recording after an accident, combination recorders, etc.

In phase 2 of this RMT, EASA will prepare a second NPA (planned for Q3/2019), which will lead to a decision amending CS-25 and CS-29. Topics addressed in phase 2 will include data link recording, serviceability of flight recorders, quality of recording of CVR, performance specifications for flight recorders and deployable recorders.

Both phases will affect CS 25 and CS 29, but phase 1 will also include an opinion with a proposal to amend Part-CAT.

Owner	Affected stakeholders
EASA CT.7	Operators (of aircraft required to be equipped with flight recorders), POA holders and DOA holders

PIA	Proc	3rdC	SubT.	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	1	RMT.0249 (MDM.051) 18/9/2014	2018-03 27/3/2018	2019 Q1	2021 Q1	2021 Q1
			2		2019 Q3	n/a	n/a	2020 Q3

RMT.0271 **In-flight recording for light aircraft**

Assess the need for in-flight recording and make proportionate suggestions for categories of aircraft and types of operation covered by the air operations rules for which there is no flight recorder carriage requirement.

Owner	Affected stakeholders
EASA FS.2	Operators (of aircraft not yet required to have flight recorders)

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	25/7/2014	2017-03 3/4/2017	2019 Q1	2021 Q3	2021 Q3

RMT.0294 **Data link recording retrofit for aircraft used in CAT**

Assess the need to introduce data link recording for in-service aircraft in line with ICAO Annex 6 Parts I and III.

Owner	Affected stakeholders
EASA FS.2	Operators (of aircraft required to be equipped with flight recorders), POA holders and DOA holders

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	2020 Q1	2021 Q1	2022 Q1	2023 Q1	2023 Q1

RMT.0400 **Amendment of requirements for flight recorders and underwater locating devices**

All IRs were adopted with Commission Regulation (EU) 2015/2338; however, the AMC & GM for CAT.GEN.MPA.205 (Aircraft tracking — aeroplanes) and CAT.GEN.MPA.210 (Location of an aircraft in distress) in the rules for air operations have not yet been issued. In addition, it has been identified that amendments to certification specifications may be necessary to facilitate the implementation of CAT.GEN.MPA.210.

SubT 1: ED Decision 2015/021/R: this Decision modified some of the AMC and GM related to FDR and CVR serviceability (refer to CAT.GEN.MPA.195(b)). It also updated the performance specifications for two of the FDR parameters (refer to CAT.IDE.A.190), and it clarified the scope of the performance specifications applicable to the CVR (refer to CAT.IDE.A.185 and CAT.IDE.H.185)

SubT 2: ED Decision 2015/030/R: this Decision completed the AMC and GM related to the serviceability of the CVR (refer to ORO.MLR.100 and CAT.GEN.MPA.195(b)), the preservation of the CVR recording after an accident or a serious incident (refer to CAT.GEN.MPA.195(a)), the performance and installation of the long-range underwater locating device (see CAT.IDE.A.285(f)). It also clarified the applicability of the data link recording requirements (refer to CAT.IDE.A.195 and CAT.IDE.H.195)

SubT 3: ED Decision 2016/012/R: this Decision updated the AMC and GM related to the protection of the CVR in normal operation (see CAT.GEN.MPA.195(f)). It also introduced operational requirements for FDRs installed on aeroplanes and helicopters first issued with an individual CofA on or after 1 January 2023 (see CAT.IDE.A.190 and CAT.IDE.H.190). Finally, this Decision clarified the time intervals between two inspections of the FDR and CVR recordings (refer to CAT.GEN.MPA.195(b))

SubT 4: ED Decision 2017/023/R: this Decision provided AMC and GM for the implementing rule on aircraft tracking (CAT.GEN.MPA.205)

SubT 5: This Decision will provide the Certification Specifications, AMC and GM for the implementing rule on location of an aircraft in distress (CAT.GEN.MPA.210). The scope of this Decision encompasses air operations, initial airworthiness and air traffic management.

Owner	Affected stakeholders
EASA FS.2+CT.4	Aircraft operators and POA holders

PIA	Proc	3rdC	SubT	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	1	OPS.090 26/9/2012	2013-26 20/12/2013	01/2014 06/05/2014	R(EU) 2015/2338 11/12/2015	2015/021/R 12/10/2015
			2	n/a	n/a	n/a	n/a	2015/030/R 17/12/2015
			3	n/a	n/a	n/a	n/a	2016/012/R 12/9/2016
			4	n/a	n/a	n/a	n/a	2017/023/R 14/12/2017
			5		2019 Q1	n/a	n/a	2019/Q4

Research

RES.013 **Quick recovery of flight data recordings**

Assess means to recover flight recorder data quickly after an accident for the purpose of faster corrective actions, their limitations as well as the related challenges for standardisation and deployment.

Owner	Activity sector	Deliverable	Date
EASA SM.1	CAT	Report	2020

5.1.4 Impact of security on safety

Issue/rationale

The safety actions in this area are aimed at mitigating the security-related safety risks.

The safety actions in this area also include the mitigation of the risks posed by flying over zones where an armed conflict exists.

Managing the impact of security on safety is a strategic priority.

What we want to achieve

Increase safety by managing the impact of security on safety and mitigating related safety risks.

How we monitor improvement

Continuous assessment and mitigation of security threats

How we want to achieve it: actions

Rulemaking

RMT.0648 **Aircraft cybersecurity**

The specific objective of this task is to mitigate the safety effects stemming from cybersecurity risks due to acts of unlawful interference with the aircraft on-board electronic networks and systems. To achieve this objective, it is proposed to introduce in CS-25 new cybersecurity provisions taking into account the existing special condition and the recommendations of the ASISP ARAC group. The need to include similar provisions in CS-29, CS-27, CS-23, CS-E, CS-ETSO and CS-P will also be considered.

Owner	Affected stakeholders
EASA CT.7	Applicants for TC/STC for large aeroplanes or large rotorcraft

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	✓	RMT.0648 17/5/2016	2019 Q1	n/a	n/a	2019 Q3

RMT.0720 **Cybersecurity risks**

The specific objective of this task is to create a regulatory system which efficiently contributes to the protection of the aviation system from cyberattacks and their consequences. To achieve this objective, it is proposed to introduce a regulation covering all the aviation domains (design, production, maintenance, operations, aircrew, ATM/ANS, ADR), which include high-level, performance-based requirements, and which is supported by AMC & GM and industry standards.

Owner	Affected stakeholders
EASA FS.4	POA holders, AOC holders, AMOs (Part-145), CAMOs, ATOs, ATCOs, ATM/ANS providers, ADR operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	✓	2018 Q4	2019 Q2	2020 Q2	2022 Q4	2022 Q4

Safety Promotion

SPT.071 **Strategy for cybersecurity in aviation**

Citizens travelling by air are more and more exposed to cybersecurity threats. The new generation of aircraft have their systems connected to the ground in real time. Air traffic management technologies rely on internet and wireless connections between the various ground centres and the aircraft. The multiplication of network connections increases the vulnerability of the whole system.
In order to address those concerns, a strategy for cybersecurity in aviation will be developed jointly by the EC and EASA in close coordination with the European Strategic Coordination Platform (ESCP), which is composed of representatives from the EC, relevant European Agencies and organisations, MSs and industry associations as well as other worldwide regulatory partners and military organisations.

This strategy will include, among others, actions in the following areas:
— Information sharing
— Research and studies
— Event investigation and response
— Knowledge and competence building
— International cooperation and harmonisation
— Regulatory activities and development of industry standards

This strategy for cybersecurity in aviation, together with the wider cybersecurity strategy being implemented in the EU for the protection of EU citizens against cybercrime, will pave the way for a secure and safe air transport system.

Owner	Activity sector	Deliverable	Date
EASA, EC, MS	ALL	Strategy Paper	2019

SPT.078 **Disseminate information on conflict zones**

In the aftermath of the B777 MH17 accident, an EU high-level task force is working to define further actions to be taken at European level in order to provide common information on risks arising from conflict zones.

Owner	Activity sector	Deliverable	Date
EASA SM.1	ALL	Information to MSs	Continuous

SPT.100 **Safety promotion on disruptive passengers**

Develop safety promotion material to support operators with the reduction of the risks associated with disruptive/unruly passengers.

Owner	Activity sector	Deliverable	Date
EASA SM.1	CAT	Safety Promotion material	2019

Research

RES.012 **Cybersecurity: common aeronautical vulnerabilities database**

Develop a vulnerabilities database in order to collect, maintain and disseminate information about discovered vulnerabilities targeting major transport information systems. The project would include the identification of the type of information that this database would contain, how this database could be populated and how we can take advantage of the database in order to obtain an accurate landscape of cybersecurity risks. It should also include a 'prototype phase' with some initial population.

Owner	Activity Sector	Deliverable	Date
EASA SM.1	ALL	Database	2021

5.1.5 Oversight and standardisation

The safety actions in this area are aimed at addressing issues emerging from standardisation activities, with focus on the safety oversight responsibilities of the MSs. The conclusions of the EASA 2017 SAR are also taken into account.

Issue/rationale

Authority requirements, introduced in the rules developed under the first and second extension of the EASA scope, define what MSs are expected to implement when performing oversight of the organisations under their responsibility. In particular, they introduced the concept of risk-based oversight with the objective of addressing safety issues with a consideration to efficiency.

This section includes actions focusing on supporting the implementation of these authority requirements by updating inspector qualifications, enabling the implementation of risk-based oversight, supporting and fostering the implementation of cooperative oversight through the sharing of best practices and guidance, dedicated workshops, etc.

The increased complexity of the aviation industry and the number of interfaces between organisations call for improved cooperation between them, their contracted services and regulators. To facilitate the implementation of cooperative oversight, EASA worked with the CAs of four MSs on a trial project and published the outcome in February 2017[29]. However, standardisation activities show that cooperative oversight is not yet implemented at a satisfactory level and that CAs, with the exception of a few cases, have not sufficiently invested to address these elements.

What we want to achieve

A robust oversight system across Europe, where each CA is able to properly discharge its oversight responsibilities, with particular care to the exchange of information and cooperation with other CAs, to the implementation of management systems in all organisations, as well as to ensuring the availability of adequate personnel in CAs.

How we monitor improvement

Significant increase in the number of EASA MSs implementing risk-based oversight as well as increase in the number of EASA MSs making use of the cooperative oversight provisions for organisations/persons certified by the CA of another MS.

Section 4.2 proposes to monitor MSs' oversight capabilities and the status of compliance with SMS requirements in aviation organisations respectively.

How we want to achieve it: actions

EASA has identified the following areas for focused attention, where a joint effort from the MSs and EASA could bring the expected improvements.

[29] Cooperative Oversight Trial June 2015-May2016; cf. https://www.easa.europa.eu/document-library/general-publications/cooperative-oversight-trial

Rulemaking

RMT.0516 Update of the rules on air operations (Air OPS Regulation — all Annexes & related AMC & GM)

- Improve the authority and organisational requirements of the Air OPS Regulation taking into account identified implementation issues;
- Better identify inspector qualifications;
- Take into account new business models, as appropriate;
- Take into account the development of any lessons learned from the implementation of SMS;
- Ensure compliance with the ICAO Standards And Recommended Practices (SARPs);
- Address identified safety issues such as pax seating and briefing;
- GA Road Map issues.

Owner	Affected stakeholders
EASA FS.2	All operators and CAs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	RMT.0516 & RMT.0517 16/9/2013	2015-05 27/11/2015	04/2017 29/6/2017	2019 Q2	2019 Q2

Focused attention topics

FOT.003 Unavailability of adequate personnel in competent authorities

MSs to ensure that adequate personnel is available to discharge their safety oversight responsibilities; EASA Standardisation to monitor the availability of staff in CAs.

Owner	Activity sector	Deliverable	Date
EASA FS and MS	ALL	SAR	Annually

FOT.007 Cooperative oversight in all sectors

EASA will ensure that the EASA standardisation inspections monitor whether the applicable authority requirements are adhered to in all sectors. The objective is to ensure that each organisation's activities are duly assessed, known to the relevant authorities and that those activities are adequately overseen, either with or without an agreed transfer of oversight tasks.

In parallel, EASA will continue to support CAs in the practical implementation of cooperative oversight, e.g. benefiting from the outcome of the trial projects conducted between UK, NO, FR, CZ, as well as with exchanges of best practices and guidance.

Owner	Activity sector	Deliverable	Date
EASA FS, MS	ALL	Feedback from standardisation	2019

FOT.008 Organisations management system in all sectors

EASA will ensure that the EASA standardisation inspections pay due attention to the ability of CAs to assess and oversee the organisations' management system in all sectors.
This will focus in particular on safety culture, the governance structure of the organisation, the interaction between the risk identification/assessment process and the organisation's monitoring process, the use of inspection findings and safety information such as occurrences, incidents, and accidents. This should lead CAs to adapt and improve their oversight system.

Owner	Activity sector	Deliverable	Date
EASA FS, MS	ALL	Feedback from standardisation	2019

5.2 CAT by aeroplane

During 2017 there were no fatal accidents involving European AOC holders performing CAT passenger/cargo operations with aeroplanes having a maximum take-off weight above 5 700 kg (hereafter referred to as 'CAT aeroplane operations'). In this category, there were 15 non-fatal accidents; however, the number of non-fatal accidents was lower than the average of the previous 10-year period.

In 2017 the number of serious incidents in this category increased in comparison to the average of the previous 10-year period, with 99 serious incidents recorded in 2017 in comparison to the 10-year period average of 79,2.

This operational domain remains the greatest focus of the EASA safety activities. The CAGs and ABs will help EASA to learn more about the safety challenges faced by airlines and manufacturers.

5.2.1 Aircraft upset in flight (LOC-I)

Issue/rationale

Loss of control usually occurs because the aircraft enters a flight regime which is outside its normal envelope, usually, but not always, at a high rate, thereby introducing an element of surprise for the flight crew involved. Prevention of loss of control is a strategic priority.

Aircraft upset or loss of control is the most common accident outcome for fatal accidents in CAT aeroplane operations. It includes uncontrolled collisions with terrain, but also occurrences where the aircraft deviated from the intended flight path or aircraft flight parameters, regardless of whether the flight crew realised the deviation and whether it was possible to recover or not. It also includes the triggering of stall warning and envelope protections.

What we want to achieve

Increase safety by continuously assessing and improving risk controls to mitigate the risk of loss of control.

How we monitor improvement

Continuous monitoring of safety issues identified in the CAT Safety Risk Portfolio for CAT airline and NCC business aeroplane operations (ref: ASR 2018, Section 2.1).

How we want to achieve it: actions

Rulemaking

RMT.0397 Unintended or inappropriate rudder usage — rudder reversals

— To propose an amendment of CS-25 to protect the aeroplane against the risk of unintended or inappropriate rudder usage. This may be achieved either by taking actions to mitigate erroneous rudder inputs from pilots to ensure safe flight, or by proposing actions that will ensure pilots will not make the erroneous rudder input.

— To determine if retroactive specifications are suitable for already certified large aeroplanes. In case of a positive answer, to propose Part-26/CS-26 standards, eventually including applicability criteria. Those standards may differ from the ones proposed for CS-25 amendment.

Owner			Affected stakeholders				
EASA CT.7			DAHs				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B-	ST	-	RMR.0397 30/5/2017	2017-18 27/11/2017	n/a	n/a	2018 Q4

RMT.0581 **Loss of control prevention and recovery training**

Review of the provisions for initial and recurrent training in order to address UPRT. The review will also address the implementation of the ICAO documents and several SRs. Other aspects to be covered are manual aircraft handling of approach to stall and stall recovery (including at high altitude), the training of aircraft configuration laws, the recurrent training on flight mechanics, and training scenarios (including the effect of surprise).
This RMT is split into multiple deliverables. See the related ToR on the EASA website.
Note: Recurrent and conversion training provisions related to UPRT were already published in May 2015. They have been applicable as of May 2016.

Owner	Affected stakeholders
EASA FS.3	Pilots, instructors, flight examiners, ATOs, and Air Operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	RMT.0581 and RMT.0582 20/8/2013	2015-13 1/9/2015	n/a	n/a	4/5/2015
					06/2017 29/6/2017	2019 Q2	2019 Q2

Safety Promotion

SPT.012 **Promote the new European provisions on pilot training**

The objective is to complement the new regulatory package on UPRT and EBT with relevant safety promotion material.

Owner	Activity sector	Deliverable	Date
EASA FS.3	ALL, HF	Safety Promotion	2019

Research

RES.010 **Ice crystal detection**

Ice crystal icing phenomenon is still posing a severe threat to high-altitude flying, in particular to new engine designs. Pilots have little or no means to detect and/or avoid it, especially at night. A research is proposed in order to better detect the presence of ice crystal icing and to develop an equipment suitable to detect such a phenomenon.

Owner	Activity Sector	Deliverable	Date
EASA SM.1	CAT	Report	2022

RES.017 **Icing hazard linked to supercooled large droplet (SLD)**

Characterisation of phenomena (SLD icing) and analysis of impact/mitigation for safety in order to develop relevant airworthiness standards and means of compliance.

Owner	Activity Sector	Deliverable	Date
EASA SM.1	CAT	Report	2022

5.2.2 Runway safety

Issue/rationale

This section deals with runway excursions, runway incursions and runway collisions, and is of a strategic priority.

Runway excursion covers materialised runway excursions, both at high and low speed, and occurrences where the flight crew had difficulties maintaining the directional control of the aircraft or of the braking action during landing, where the landing occurred long, fast, off-centred or hard, or where the aircraft had technical problems with the landing gear (not locked, not extended or collapsed) during landing. Runway excursions account for 81 high-risk occurrences recorded in the period 2013-2017 in CAT aeroplane and NCC (business) operations.

Runway incursion refers to the incorrect presence of an aircraft, vehicle or person on an active runway or in its areas of protection. Their accident outcome, runway collisions, account for 28 high-risk occurrences recorded in the period 2013-2017. Despite the relatively low number, the risk of the reported occurrences was demonstrated to be very real.

What we want to achieve

Increase safety by continuously assessing and improving risk controls to mitigate the risk of REs and RIs.

How we monitor improvement

Continuous monitoring of safety issues identified in the ADR and ground handling and the ATM/ANS Safety Risk Portfolios (see ASR 2018 Sections 6.2 and 7.2 respectively).

How we want to achieve it: actions

Rulemaking

RMT.0296 **Review of aeroplane performance requirements for operations**

— Develop regulatory material to provide improved clarity, technical accuracy, flexibility or a combination of these benefits for the EU operational requirements on aeroplane performance in air operations with the aim of reducing the number of accidents and serious incidents where aeroplane performance is a causal factor; and
— Contribute to the harmonisation of the FAA and EU operational requirements on aeroplane performance in CAT operations.

Owner			Affected stakeholders				
EASA FS.2			Aeroplane Operators, POA holders, CAs				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
A-	ST	-	RMT.0296 (OPS.008(A)) 9/6/2015	2016-11 30/9/2016	2019 Q1	2021 Q1	2021 Q1

RMT.0570 **Reduction of runway excursions**

The objective of this task is to increase the level of safety by reducing the number of REs through mandating existing technologies on aeroplane that allow to measure remaining runway left and thus support pilot-decision-making.

Due to the nature of the comments received on NPA 2013-09, EASA has decided to publish a new NPA on the reduction of REs. The proposal of the new NPA puts more emphasis on safety objectives against the risk of REs, while providing more flexibility in terms of design solutions. The means to achieve these objectives will be provided in a technical standard developed jointly by industry and CAs with the support of an international standardisation body (EUROCAE).

Owner			Affected stakeholders				
EASA CT.7			Air Operators, POA holders, applicants for TC/STC				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
A-	ST	-	RMT.0570 9/10/2012	2013-09 10/5/2013	n/a	n/a	n/a
				2018-12 15/10/2018	2019 Q3	2021 Q2	2021 Q2

RMT.0703 **Runway safety**

EAPPRI and EAPPRE contain several recommendations to CAs, ADR operators and EASA in order to mitigate the risks.

In the ADR domain, EASA had included in Regulation (EU) No 139/2014[30] and in the relevant AMC & GM and CS many of these recommendations; however, there are some of them that have not been addressed.

This RMT now includes RMT.0704 'Runway surface condition assessment and reporting'.

Owner			Affected stakeholders				
EASA FS.4.3			ADR operators, AOC holders, GA, ANSPs and CAs				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
A1 to 2.5	ST	-	RMT.0703 14/9/2017	2018 Q4	2019 Q2	2020 Q2	2020 Q2

RMT.0722 **Provision of aeronautical data by the ADR operator**

Revision and update of Regulation (EU) No 139/2014 and of the related AMC and GM in order to include the provisions of Chapter 2 of ICAO Annex 14 and the provisions of ICAO Annex 15 in regard to the provision of aeronautical data by the ADR operator.

This task is de-prioritised in accordance with criteria described in Chapter 3.

Owner			Affected stakeholders				
EASA FS.4.3			ADR operators				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
A2	ST	-					

Safety Promotion

MST.029 **Implementation of SESAR runway safety solutions**

MSs 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[31].

These SESAR solutions designed to improve runway safety should be implemented as far as it is feasible. See SESAR Solutions Catalogue: https://www.sesarju.eu/sites/default/files/solutions/SESAR_Solutions_Catalogue_Ed2_2017.pdf

This EPAS action is aligned with the ATM MP's (Level 3 Ed 2018) action ATC02.9 Enhanced STCA in TMAs.

Owner	Activity sector	Deliverable	Date
ADR operators/ANSPs/MS	CAT/GA, HF	SPAS	2020

5.2.3 Airborne conflict (Mid-air collisions)

Issue/rationale

Airborne conflict refers to both actual collisions as well as near-misses in the air. It includes direct precursors such as separation minima infringements, genuine traffic collision avoidance system (TCAS) resolution advisories or airspace infringements. Although there have been no CAT aeroplane airborne collision accidents in recent years within the EASA MSs, this key risk area has been raised by a number of MSs through the NoAs and also by some airlines, specifically in the context of the collision risk posed by aircraft without transponders in uncontrolled airspace. This is

[30] Commission Regulation (EU) No 139/2014 of 12 February 2014 laying down requirements and administrative procedures related to aerodromes pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 44, 14.2.2014, p. 1)

[31] See link https://www.atmmasterplan.eu/exec/operational-changes

one specific safety issue that is a main priority in this key risk area. The risk scoring of accidents and serious incidents warrants the inclusion of airborne conflict as a key risk area in this domain.

What we want to achieve

Continuously assess and improve risk controls to mitigate the risk of mid-air collisions.

How we monitor improvement

Increase safety by continuously monitoring safety issues identified in the CAT Safety Risk Portfolio for CAT Airline and NCC business aeroplane operations (see ASR 2018, Section 2.1).

How we want to achieve it: actions

Rulemaking

RMT.0376 **Anti-collision systems on aircraft other than aeroplanes in excess of 5 700 kg or 19 pax**

Set up the framework for reducing the risk of MACs. This task will include a thorough impact assessment aimed at evaluating the cost-benefit of anti-collision systems carriage.

This task is rescheduled in accordance with the criteria described in Chapter 3.

Owner	Affected stakeholders
EASA FS.4.2	AOC holders, GA

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	2019 Q1	2021 Q3	2022 Q3	2024 Q3	2024 Q3

Safety Promotion

MST.024 **Loss of separation between civil and military aircraft**

Several EU MSs have reported an increase in losses of separation involving civil and military aircraft and more particularly an increase in non-cooperative military traffic over the high seas. Taking into account this situation, and the possible hazard to civil aviation safety, the EC mandated EASA to perform a technical analysis of the reported occurrences. The technical analysis issued a number of recommendations for the MS:

— endorse and fully apply Circular 330;
— closely coordinate to develop, harmonise and publish operational requirements and instructions for state aircraft to ensure that 'due regard' for civil aircraft is always maintained;
— develop and harmonise civil/military coordination procedures for ATM at EU level;
— report relevant occurrences to EASA; and
— facilitate/make primary surveillance radar data available in military units to civil ATC units. The objective of this action is to ensure that MSs follow up on the recommendations and provide feedback on the implementation.

EASA will have a supporting role and provide feedback on the occurrences reported.

Owner	Activity sector	Deliverable	Date
MS, EASA FS.4	CAT	Report	2020

MST.030 **Implementation of SESAR solutions aiming to reduce the risk of mid-air collision en-route and TMA**

MS should evaluate together with ANSPs delegated to provide services in their airspace the needs for implementing SESAR solutions such as those related to enhanced Short Term Conflict Alerts (STCA)/enhanced safety nets[32]. These SESAR solutions designed to improve safety should be implemented as far as it is feasible.

See SESAR Solutions Catalogue:
https://www.sesarju.eu/sites/default/files/solutions/SESAR_Solutions_Catalogue_Ed2_2017.pdf

Owner	Activity sector	Deliverable	Date
ANSPs/MS	CAT/GA, HF	SPAS established	2020

5.2.4 Design, production and maintenance improvements

Issue/rationale

Design, production and maintenance improvements may limit the probability and/or severity of technical failures. Many fatal accidents involve some sort of technical failure, in many cases not properly managed during flight, thus making it a precursor of other types of accident. This does not necessarily mean that the technical failure was the direct cause of the accident, but that a system component failure was identified in the sequence of events in a number of serious incidents and accidents in CAT aeroplanes over the past years. Also, the handling of technical failures ranks 7th in the list of safety issues identified in the CAT Airline and NCC Business aeroplane operations Safety Risk Portfolio (based on the aggregated ERCS score of those occurrences where this safety issue was present). Handling of technical failures in this context means the ineffective handling of a non-catastrophic technical failure by the flight crew.This could be an engine failure, an avionics system failure or some other recoverable technical failure. The cause of the accident is usually the result of a combination of circumstances and events that can only be understood after reading the investigation report. Specific analysis work is ongoing to identify the systemic safety issues that may be present in the domains of design, production and maintenance . Non-accident data will be used for the analysis.

What we want to achieve

Increase safety by continuously assessing and improving risk controls related to design, production and maintenance.

How we monitor improvement

Continuous monitoring of safety issues identified in the CAT Safety Risk Portfolio for CAT Airline and NCC Business aeroplane operations (see ASR 2018, Section 2.1).

How we want to achieve it: actions

[32] More details about the related research projects can be found in https://www.atmmasterplan.eu/data/sesar_solutions

Rulemaking

RMT.0049 **Specific risk and standardised criteria for conducting aeroplane-level safety assessments of critical systems**

To define a standardised criterion for conducting aeroplane-level safety assessment of specific risks that encompasses all critical aeroplane systems on large aeroplanes (i.e. in particular update AMC to CS 25.1309), based on the results of the Aviation Rulemaking Advisory Committee (ARAC) Airplane-level Safety Analysis Working Group (ASAWG).

In addition, to amend AMC 25.1309 taking into account the latest updates of industry documents, such as ED79A/ARP4754A.

To update CS 25.671 on safety assessment of flight control systems, based on the results of the ARAC Flight Controls Harmonisation Working Group (FCHWG).

For both objectives, harmonisation with the FAA, the TCCA and Agência Nacional de Aviação Civil (ANAC) will be ensured as much as possible.

Owner	Affected stakeholders
EASA CT.7	DAHs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	25.029 (RMT.0049) Issue 2 18/3/2013	2014-02 27/1/2014	n/a	n/a	2019 Q2

RMT.0276 **Technical records**

Clarification of criteria for preventing incomplete records. Incomplete records may lead to a wrong assessment of the airworthiness status of the product with a consequent safety risk, development of back-to-birth concept, components traceability, and use of radio frequency identification devices (RFIDs).

Owner	Affected stakeholders
EASA FS.1	Air operators, CAMOs and AMOs (Part-145 and Part-M Subpart-F)

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0276 28/11/2011	2014-04 7/2/2014	13/2016 17/11/2016	2019 Q3	2019 Q3

RMT.0069 **Seat crashworthiness improvement on large aeroplanes — Dynamic testing 16g**

The objective is to improve the protection of occupants on board large aeroplanes operated for commercial air transportation of passengers, when they are involved in a survivable impact accident.

This improvement would be reached by introducing on large aeroplanes used for CAT that were type certified without the JAR-25 change 13 standard improvements, passenger and cabin crew seats meeting the improved standard for dynamic testing and occupant protection, already used for type certification of new large aeroplanes.

Owner	Affected stakeholders
EASA CT.7	CAT operators and POA holders

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	26.002 Issue 1 17/9/2010	2013-20 10/10/2013	02/2016 20/5/2016	2019 Q2	2019 Q1

RMT.0217 **CAMOs' and Part-145 organisations' responsibilities**

Establishment of the principles to mitigate the risks linked to a faulty assessment and coordination of the responsibilities of CAMOs and Part-145 organisations, especially in complex, multi-tier and subcontracted maintenance.

This task is de-prioritised in accordance with criteria described in Chapter 3.

Owner	Affected stakeholders
EASA FS.1	Air operators and CAMOs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0217 12/3/2013	2014-27 2/12/2014			

RMT.0097 **Functions of B1 and B2 support staff and responsibilities**

Introduce principles for increased robustness of the maintenance certification process eliminating potential 'safety gaps' by clarifying the roles and responsibilities of certifying staff, support staff and 'sign-off' staff, both in line and base maintenance.

This task is de-prioritised in accordance with criteria described in Chapter 3.

Owner	Affected stakeholders
EASA FS.1	Part-145 MOs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0097 2/11/2011	2014-11 13/5/2014			

RMT.0225 **Development of an ageing aircraft structure plan**

Develop the technical elements for an ageing aircraft structure plan:

— Review and update the supplemental structural inspection programme (SSIP) for effectiveness;
— Review existing corrosion prevention programmes and develop a baseline corrosion prevention/control programme to maintain corrosion to an acceptable level;
— Review all structurally-related service actions/bulletins and determine which require mandatory terminating action or enforcement of special repetitive inspections;
— Develop guidelines to assess the damage tolerance of existing structural repairs, which may have been designed without using damage tolerance criteria. Damage tolerance methodology needs to be applied to future repairs; and
— Evaluate individual aeroplanes design regarding the susceptibility to widespread fatigue damage (WFD) and develop a programme for corrective action.

The rulemaking framework for such issues is complex as it is necessary to address the following items:

— Amendment to CS to improve the standards for ageing aircraft issues. This will address the case of future TC and future amendments to TC/future STC in accordance with the changed product rule; and
— Requirements on existing DAHs to review their existing designs to demonstrate compliance with the amended CS. Requirements on operators to introduce modifications in individual aircraft and maintenance programmes resulting from the design review.

Owner	Affected stakeholders
EASA CT.7	DAHs and Air Operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	✓	RMT.0225 (MDM.028) 8/5/2007	2013-07 23/4/2013	12/2016 10/10/2016	2020 Q1	2020 Q1

RMT.0393 **Maintenance check flights (MCFs)**

Establish operational requirements and crew competence criteria for the performance of MCFs to reduce the probability of incidents and accidents of this type of flights. This will apply not only for AOC holders, but also for any operator performing these flights.

Owner	Affected stakeholders
EASA FS.1	Operators, CAMOs, and AMOs (Part-145 and Part-M Subpart-F)

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	MDM.097 (a) & (b) 4/4/2011	2012-08 30/7/2012	01/2017 8/3/2017	2019 Q3	2019 Q3

RMT.0453 **Ditching parameters without engine power**

Amend CS-25 to require that ditching parameters can be attained by pilots without the use of exceptional skills, including without engine power.

This task is de-prioritised in accordance with the NBR roadmap.

Owner	Affected stakeholders
EASA CT.7	DAHs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	2021 Q1	2022 Q2	n/a	n/a	2023 Q1

RMT.0521 **Airworthiness review process**

Performance of a full review of the airworthiness review process to introduce an improved framework to mitigate the risks linked to a faulty airworthiness review with potential safety consequences where the actual airworthiness status of the aircraft is below the standard.

This task is de-prioritised in accordance with criteria described in Chapter 3.

Owner	Affected stakeholders
EASA FS.1	Air operators, CAMOs and CAs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0521/2 7/5/2013	2015-17 5/11/2015			

RMT.0586 **Tyre pressure monitoring system**

— The specific objective is to propose a regulatory change to ensure that large aeroplanes tyres inflation pressures remains within the pressure specifications defined by the aircraft manufacturer.
— The rulemaking proposal should consider better enforcing the operator's responsibility to ensure regular tyre pressure checks, and also the aircraft manufacturer's obligation to define the tyre pressure check procedures and intervals in the instructions for continued airworthiness (ICA); as different practices exist in terms of content and presentation of the information in the aircraft maintenance manual (AMM), it could be proposed to better standardise this ICA item among manufacturers and aircraft.
— Since a tyre pressure check legal obligation would not always guarantee that the tyres are correctly inflated (e.g. air leakage in the tyre/wheel assembly, maintenance error or negligence, failure/inaccuracy of the inflation equipment, operator not correctly performing the regular checks, etc.), the rulemaking proposal should also include the installation of a tyre pressure monitoring system which will alert the pilots when a tyre pressure is abnormal or out of tolerance.

This task is de-prioritised in accordance with criteria described in Chapter 3.

Owner	Affected stakeholders
EASA CT.7	Aeroplane Operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0586 30/5/2017				

RMT.0588 **Aircraft continuing airworthiness monitoring — Review of key risk elements**

Considering the implementation experience (including Standardisation feedback), the objective is to review the current principles specified in AMC3 M.B.303(b) 'Aircraft continuing airworthiness monitoring', and the related GM1 M.B.303(b) and Appendix III to GM1 M.B.303(b). In particular, to assess:

— if the requirements adequately address the processing of key risk elements (KREs) requiring annual reviews to ensure that all regulatory references remain up to date; and
— the appropriateness of each KRE, determine the need for additional KREs, review the adequacy and pertinence of typical inspection items included.

Owner			Affected stakeholders				
EASA FS.1			CAs				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B-	ST	-	2020 Q1	2021 Q1	n/a	n/a	2022 Q1

RMT.0671 **Engine bird ingestion**

A US ARAC group has been tasked to work on several improvements to the bird ingestion requirements.

Owner			Affected stakeholders				
EASA CT.7			Manufacturers				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B-	ST	✓	RMT.0671 30/5/2017	2017-16 2/10/2017	n/a	n/a	2018 Q4

RMT.0686 **HP rotor integrity and loss-of-load (due to shaft failure)**

The task will review and amend CS-E 840 and CS-E 850 to address certification issues for new designs. There will be a US industry-led group which will be formed, to discuss the pre-rulemaking on this issue. European industry has raised this item and they would support EASA rulemaking on this issue preferring EASA to take the lead.

This task is de-prioritised in accordance with the NBR roadmap.

Owner			Affected stakeholders				
EASA CT.7			DAHs				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B-	ST	✓	2021 Q1	2022 Q1	n/a	n/a	2023 Q1

Safety Promotion

SPT.104 **Develop new safety promotion material on high-profile maintenance safety issues**

Develop new safety promotion material on high-profile safety issues in the maintenance domain. Such high-profile safety issues are to be determined from important risks identified from the SRM process, accidents/serious incidents and inputs from EASA stakeholders.

Owner	Activity sector	Deliverable	Date
EASA SM.1	ALL	Leaflets, videos, web-pages and/or applications	Continuous

Research

RES.014 **Air data enhanced fault detection & diagnosis**

Develop new fault detection & diagnosis (FDD) and fault tolerant control (FTC) methods of the following types:
- Model-based analytical redundancy (e.g. virtual sensors),
- Data-based (i.e. model free-methods), or
- a combination of both types.

Owner	Activity Sector	Deliverable	Date
EASA SM.1	CAT	Report	2022

5.2.5 Ground safety

Issue/rationale

This risk area includes all ground handling and apron management-related issues (aircraft loading, de-icing, refuelling, ground damage, etc.) as well as collision of the aircraft with other aircraft, obstacles or vehicles while the aircraft is moving on the ground, either under its own power or being towed. It does not include collisions on the runway. While it was not the accident outcome for any fatal accidents in the past years, the risk score warrants its inclusion as a key risk area in this domain.

What we want to achieve

Increase safety by continuously assessing and improving risk controls to mitigate the risks in the area of ground safety.

How we monitor improvement

Continuous monitoring of safety issues identified in the CAT Safety Risk Portfolio for CAT Airline and NCC Business aeroplane operations (ref: ASR 2018 Section 2.1)

How we want to achieve it: actions

Rulemaking

RMT.0116 **Real weight and balance of an aircraft**

The objective of this task is to propose an amendment of CS for large aeroplanes (CS-25) to require the aeroplane being equipped with a weight and centre of gravity measuring system. Based on safety and cost-effectiveness consideration, the following might be proposed:
— A retroactive requirement for such system to be installed on already type-certified large aeroplanes (using a Part-26/CS-26 rule).
— CS-23 amendment for commuters aeroplanes.

The rulemaking should consider the minimum operational performance specification (MOPS) which will be produced by the European Organisation for Civil Aviation Equipment (EUROCAE) WG-88.

This task is de-prioritised in accordance with criteria described in Chapter 3.

Owner	Affected stakeholders
EASA CT.7	DAHs and large and commuter aeroplane operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-					

RMT.0118 **Analysis of on-ground wings contamination effect on take-off performance degradation**

The objective of this task is to propose:

— an amendment of CS-23 and CS-25 to require applicants performing an assessment of the effect of aircraft aerodynamic surfaces on-ground contamination on take-off performance and on aircraft manoeuvrability and controllability; and

— a retroactive rule Part-26/CS-26 applicable to large aeroplane TC holders; this rule would require a similar analysis and means of protection as the ones proposed for amending CS-23 and CS-25. The retroactive rule may be limited in terms of applicability to a category of aircraft which would be the most vulnerable.

EASA will publish its NPA on this RMT in Q1/2020. Following the NPA's public consultation, EASA will publish a decision issuing CS-23 and CS-25, as well as an opinion proposing amendments to Part-26. Upon adoption of the Part-26 amendment, EASA will issue the related CS-26.

Owner	Affected stakeholders
EASA CT.7	POA holders, Air operators, DOA holders

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A	ST	-	RMT.0118 21/3/2017	2020 Q1	n/a	n/a	2021 Q1
					2021 Q1	2023 Q1	2023 Q1

RMT.0728 **Development of requirements for ground handling**

Develop IR/AMC & GM to ensure compliance with the essential requirements contained in Annex VII to the NBR. This will consider operational requirements, organisational requirements and authority requirements, as deemed necessary. Detailed objectives and actions will be defined by a GH Roadmap that will be subject to a focused consultation in Q1/2019.

Owner	Affected stakeholders
EASA FS.2	CAs, ground handling service providers, aerodrome operators, air operators and ground handling staff

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
-	Art 16	-	2019 Q2		2021		

Safety Promotion

SPT.102 **Develop new safety promotion material on high-profile aerodrome and ground handling safety issues**

Develop new safety promotion material on high-profile safety issues for aerodromes and ground handling. Such high-profile safety issues are to be determined from important risks identified from the SRM process, accidents/serious incidents, inputs from EASA stakeholders and ground handling safety topics that have been defined by the ground handling roadmap, including ground handling safety topics stemming from the NBR.

Owner	Activity sector	Deliverable	Date
EASA SM.1	CAT	Leaflets, videos, web-pages and/or applications	Continuous

5.2.6 Terrain collision

Issue/rationale

This risk area includes the controlled collision with terrain together with undershoot or overshoot of the runway during approach and landing phases. It comprises those situations where the aircraft collides or nearly collides with terrain while the flight crew has control of the aircraft. It also includes occurrences which are the direct precursors of a fatal outcome, such as descending below weather minima, undue clearance below radar minima, etc.

What we want to achieve

Increase safety by continuously assessing and improving risk controls to mitigate the risk of CFIT.

How we monitor improvement

Continuous monitoring of safety issues identified in the CAT Safety Risk Portfolio for CAT Airline and NCC Business aeroplane operations (ref: ASR 2018, Section 2.1).

How we want to achieve it: actions

Following completion of the actions included under this section in EPAS 2018-2022, no further actions are included in this EPAS edition. The section is maintained as a placeholder for future actions.

5.2.7 Aircraft environment

Issue/rationale

Uncontrolled fire on-board an aircraft, especially when in flight, represents one of the most severe hazards in aviation. Post-crash fire is also addressed in this section.

In-flight fire 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 and will certainly raise concern and invite a response. Even when they do not give rise to a safety impact, they can give rise to concerns and need to be addressed.

While there were no fatal accidents involving EASA MS operators in the last years involving fires, there have been occurrences in other parts of the world that make it an area of concern within EPAS.

What we want to achieve

Increase safety by continuously assessing and improving risk controls to mitigate the risk of fire, smoke and fumes.

How we monitor improvement

Continuous monitoring of safety issues identified in the CAT Safety Risk Portfolio for CAT Airline and NCC Business aeroplane operations (ref: ASR 2018 Section 2.3).

How we want to achieve it: actions

Rulemaking

RMT.0070 **Additional airworthiness specifications for operations: fire hazard in Class D cargo compartments**

The objective of this RMT is to improve the protection of occupants on-board large aeroplanes operated in CAT, by removing the risk of uncontrollable fire in Class D compartments.

Owner	Affected stakeholders
EASA CT.7	Air operators and POA holders

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0070 17/9/2010	2019 Q1	2019 Q3	2021 Q2	2021 Q2

RMT.0071 **Additional airworthiness specifications for operations: thermal/acoustic insulation material**

The general objective of this RMT is to reduce the safety risks due to flame penetration and propagation in the fuselage by introducing retroactive specifications based on CS 25.856(a) and (b), applicable to already type-certified large aeroplanes.

Owner	Affected stakeholders
EASA CT.7	Air operators and POA holders

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0071 18/9/2014	2015-15 1/10/2015	04/2016 23/5/2016	2019 Q2	2019 Q2

Research

RES.003 **Research study on cabin and cockpit air quality**

Investigation of the quality level of the air inside the cabin and cockpit of large transport aeroplanes and its health implication. The work aims at demonstrating, on the basis of a sound scientific process, whether potential health implications may result from the quality of the air on board commercially operated large transport aeroplanes.

Owner	Activity sector	Deliverable	Date
EC (H2020)	CAT	Study report	2019

RES.004 **Transport of lithium batteries by air**

Assess mitigating measures for the transport of lithium metal and lithium ion batteries as cargo on board an aircraft and develop a risk assessment tool and guidance for operators.
This would include, at least:

— Review of the state of the art and identification of potential risks
— Identification and assessment of packaging solutions/standards
— Identification and assessment of additional measures that may mitigate the risks of thermal runaway and propagation of the fire
— Characterisation and evaluation of firefighting measures and suppression systems
— Development of a risk assessment method to enable operators to establish and evaluate safe conditions for air transport
— Conclusions, recommendations and provision of technical assistance to the contracting authority.

This must take into consideration the specific operational conditions of air transport (vibrations, changes of temperature, pressure, etc.) that might impact the stability of lithium battery.

Owner	Activity sector	Deliverable	Date
EASA FS.2	CAT	Report	2019

RES.016 **Fire risks with large portable electronic devices (PEDs) in checked luggage**

Characterise fire risk (propagation, detection, suppression) for large PEDs transported in aircraft cargo compartment (checked luggage).

Owner	Activity sector	Deliverable	Date
EASA CT.7	CAT	Report	2019

5.2.8 Miscellaneous

Issue/rationale

This section gathers the actions too broad to be classified in only one category because they impact multiple aviation domains while involving different types of actions. The need for having such a category was driven by the constant development of EPAS towards new safety areas.

What we want to achieve

To increase safety with a combination of actions that addresses more than one issue.

How we monitor improvement

The EASA ABs will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Safety Promotion

SPT.101 **Develop new safety promotion material on high-profile commercial flight operations safety issues**

Develop new safety promotion material on high-profile safety issues for commercial flight operations. Such high-profile safety issues are to be determined from important risks identified from the SRM process, accidents/serious incidents and inputs from EASA stakeholders.

Owner	Activity sector	Deliverable	Date
EASA SM.1	CAT	Leaflets, videos, web-pages and/or applications	Continuous

SPT.103 **Develop new safety promotion material on high-profile ATM safety issues**

Develop new safety promotion material on high-profile safety issues for ATM. Such high-profile safety issues are to be determined from important risks identified from the SRM process, accidents/serious incidents and inputs from EASA stakeholders.

Owner	Activity sector	Deliverable	Date
EASA SM.1	CAT	Leaflets, videos, web-pages and/or applications	Continuous

5.3 Rotorcraft operations

Issue/rationale

This area includes four types of operations:

— offshore operations (part of CAT);

— other CAT operations by holders of an EASA MS AOC;

— pecialised operations (Part SPO)/aerial work operations; and

— non-commercial operations (certified helicopters registered in an EASA MS or for which an EASA MS is State of Operator).

In the CAT offshore helicopter domain, there were no accidents (either fatal or non-fatal) in 2017. Instead, there were 2 serious incidents, which is above the 10-year average for serious incidents. Prior to 2017, there were 2 fatal accidents (one in 2013 and another one in 2016).

In other CAT helicopter operations, there were 1 fatal accident, 4 non-fatal accidents and 6 serious incidents in 2017, leading to 6 fatalities and 3 serious injuries. The fatal accident involved a collision with mountains during HEMS operations.

In Part SPO/aerial work operations, there were 3 fatal accidents, 12 non-fatal accidents and 5 serious incidents in 2017, leading to 4 fatalities and 5 serious injuries. The number of serious incidents was considerably higher than the average of the preceding 10-year period.

In non-commercial operations, there were 3 fatal accidents, 22 non-fatal accidents and 8 serious incidents in 2017, leading to 7 fatalities and 11 serious injuries. The number of fatal accidents decreased in 2017 compared to 2016 and the 10-year average. There were also fewer non-fatal accidents and serious incidents in 2017 compared to 2016 and to the 10-year average.

The EU SRM process has identified opportunities to improve risk controls in the following areas so that accident numbers will not increase. Through the Offshore Helicopter CAG, there has been specific work in this area of helicopter operations that has identified both some additional work to existing actions as well as a small number of specific actions within this domain.

These are identified within each action. The strategic priorities for helicopter operations are:

— helicopter upset in flight (loss of control)

This is key risk area with the highest priority in offshore and CAT helicopter operations. Loss of control for offshore helicopter operations generally falls into two scenarios, technical failure that renders the aircraft uncontrollable or human factors. In addition, it is the second most common accident outcome for aerial work operations. The following actions contribute to mitigating risks in this area: RMT.0127, RMT.0709 and RMT.0711.

— terrain and obstacle conflict

This is the second priority key risk area for offshore helicopter operations, although equipment is now fitted to helicopters in this domain that will significantly mitigate the risk of this outcome. Obstacle collisions is the second most common accident outcome in the CAT helicopters domain. This highlights the challenges of HEMS operations and their limited selection and planning for landing sites. Terrain and obstacle conflict is the most common outcome for aerial work operations. The following action contributes to mitigating risks in this area: RMT.0708.

In addition, from an airspace perspective, it is important to ensure that the airspace and routes design facilitate safe operations of helicopters which typically fly at low levels. Within SESAR 1, there have been solutions aiming to improve safety and efficiency of helicopter operations such as those supporting the establishment of low-level IFR routes[33].

What we want to achieve

Increase safety by continuously assessing and improving risk controls in the above areas.

How we monitor improvement

Continuous monitoring of safety issues identified in the specific safety risk portfolios established for offshore helicopter operations, for other CAT helicopter operations, for specialised helicopter operations and for non-commercial helicopter operations (ref: ASR 2018, Sections 3.1.2, 3.2.2, 3.3.2 and 3.4.2 respectively).

How we want to achieve it: actions

Rulemaking

RMT.0120 Helicopter ditching and water impact occupant survivability

This task aims at enhancing post-ditching and water impact standards for rotorcraft that could significantly enhance occupant escape and survivability. It will, in part, consider the recommendations arising from early work performed by the Joint Aviation Authorities (JAA) Water Impact, Ditching Design and Crashworthiness Working Group (WIDDCWG) and the Helicopter Offshore Safety and Survival Working Group (HOSSWG).
EASA plans to issue CS-27/29 in 2018. In a second phase, EASA will consider whether the safety issue also necessitates amendment of Part-26/CS-26.

Owner			Affected stakeholders				
EASA CT.7			DAHs and helicopter operators				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B-	ST	-	RMT.0120 24/10/2012	2016-01 23/3/2016 2020 Q1	n/a 2021 Q1	n/a 2023 Q3	2018/007/R 25/06/2018 2023 Q3

[33] See SESAR solution # 113 from the SESAR Solution Catalogue: https://www.sesarju.eu/sites/default/files/solutions/SESAR_Solutions_Catalogue.pdf

RMT.0127 **Pilot compartment view**

This proposal addresses a safety issue related to rotorcraft windshield misting and subsequent restriction of pilot vision. The existing rules are unclear as to what is required and how compliance can be demonstrated.
The specific objective is to mitigate the risks linked to restricted pilot vision, particularly during critical phases of flight (take-off, landing, low hover), by requiring a means to remove or prevent the misting of internal portions of transparencies in rotorcraft, thus ensuring safe operations in all likely flight and operating conditions.
In addition, the RMT's scope is proposed to be extended to address the rules governing pilot vision in snow conditions, which are unclear, particularly in relation to piston-engine rotorcraft.

Owner	Affected stakeholders
EASA CT.7	DOA holders, POA holders and helicopter operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	2019 Q3	2020 Q1	n/a	n/a	2020 Q4

RMT.0708 **Controlled flight into terrain prevention with helicopter terrain avoidance warning systems (HTAWS)**
Mandating HTAWS is expected to prevent between 8.5 and 11.5 CFIT accidents with fatalities or severe injuries within 10 years (medium safety improvement). This RMT will consider mandating the installation of HTAWS on board the helicopter for certain operations. The RMT should only mandate HTAWS to be retrofitted to the current fleet if HTAWS standards are improved. An appropriate impact assessment for retrofit will need to be further developed. Based on the preliminary cost-effectiveness analysis, HTAWS for the following operations are not to be considered: NCO, SPO, and CAT with small helicopters in visual flight rules (VFR) operations (night and day). For offshore helicopter operations, this also includes the involvement of the EASA Certification Directorate working with stakeholders on the evaluation of updated HTAWS standards.

Owner	Affected stakeholders
EASA FS.2	Helicopter operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B0.5 to 1.5	ST	-	2019 Q1	2019 Q4	2021 Q2	2023 Q2	2023 Q2

RMT.0709 **Prevention of catastrophic accidents due to rotorcraft hoist issues**
Improvements in the certification specifications and standards relating to the certification of rotorcraft hoists is expected to significantly reduce the risk of catastrophic accidents due to rotorcraft hoists. The current certification specifications relating to the certification of rotorcraft hoists are not being appropriately applied. In addition, some failure modes are not consistently taken into consideration and this is reflected in service experience. A high number of safety occurrences have been reported that are attributed to rotorcraft hoists. The ETSO that is being developed is hoped to address some existing design shortfalls. Retrospective application of any additional certification specifications may be considered. Moreover, cargo hook aspects will also be considered along with the safety affects to people on the ground during non-human external cargo operations.

Owner	Affected stakeholders
EASA CT.7	DOA holders, POA holders and helicopter operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B1.5	ST	-	2019 Q3	2020 Q2	n/a	n/a	2021 Q1

RMT.0710 **Improvement in the survivability of rotorcraft occupants in the event of a crash**

The likelihood of survival of rotorcraft occupants in the event of a crash would significantly be improved through the retroactive application of the current improvements in fuel tank crash resistance and occupant safety for rotorcraft that were certified before the new certification specifications for type designs entered into force in the 1980s and 1990s. SRs have been raised by accident investigation boards on fuel tanks and occupant safety for helicopters certified before the upgrade of the rules for emergency landing conditions and fuel system crash resistance, for new type designs in the 1980s and 1990s. In November 2015, a new task was assigned by the FAA for the ARAC to provide recommendations regarding occupant protection rulemaking in normal and transport category rotorcraft for older certification basis type designs. EASA participates to the Working Group and should consider the application of the outcome of this activity for application to the existing European fleet.

Owner	Affected stakeholders
EASA CT.7	DOA and POA holders

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B2	ST	-	2019 Q3	2020 Q3	2021 Q3	2023 Q3	2023 Q3

RMT.0711 **Reduction in accidents caused by failures of critical rotor and rotor drive components through improved vibration health monitoring systems**

The use of VHM systems to detect imminent failures of critical rotor and rotor drive components have been shown to greatly improve the level of safety of rotorcraft particularly for offshore operations. However, there is a need to improve the current certification specifications to reflect the evolution of modern VHM systems in order to gain the associated benefits from these systems.

Improved certification specifications would drive and enable improvements in the fidelity of VHM systems and also foster the modernisation of these systems which would provide additional safety benefits when compared to the existing legacy systems.

Owner	Affected stakeholders
EASA CT.7	DOA and POA holders

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B1.5	ST	-	2019 Q2	2020 Q1	n/a	n/a	2020 Q3

RMT.0713 **Reduction in human-factor-caused rotorcraft accidents that are attributed to the rotorcraft design**

It is widely recognised that human factors contribute either directly or indirectly to a majority of aircraft accidents and incidents and that the design of the flight deck and systems can strongly influence the crew performance and the potential for crew errors.

Currently, the certification specifications for rotorcraft do not contain any specific requirements for a human factor assessment to be carried out. Large transport aircraft have benefited from human factor assessments of the design of the flight deck and associated systems. New generation helicopters are characterised by having a high level of integration of cockpit equipment, displays and controls. It is also likely that the future rotorcraft projects, embodying fly-by-wire technology flying controls, will pose new and additional challenges from a human factors perspective.

The development of certification specifications for human factors in the design of rotorcraft cockpits would mitigate the probability of human factors and pilot workload issues that could lead to an accident.

Owner	Affected stakeholders
EASA CT.7	DOA holders and HF

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B2	ST	-	31/8/2018	2019 Q2	n/a	n/a	2019 Q4

RMT.0724 **Rotorcraft flight crew operating manuals (FCOMs)**

The objective of this RMT is to improve the operating information provided to rotorcraft flight crew in the aircrew manuals. This could be achieved by standardising the structure and approach used to present operational information in rotorcraft manuals, thereby improving the clarity of this information. This RMT will consider the current approach utilised in CS-25 AMC, and other initiatives such as the activity undertaken by Heli Offshore.

Owner	Affected stakeholders
CT.7	

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A3	ST	-	2019 Q3	2020 Q2	n/a	n/a	2021 Q1

RMT.0325 **HEMS performance and public interest sites**

To properly address the issues stemming from non-implementation or deviation from JAR-OPS 3 performance and public interest sites (PIS) provisions, in particular performance in high mountains considering review of HEMS flights at night safety level following a UK Safety Directive.

Owner	Affected stakeholders
EASA FS.2	Helicopter CAT, HEMS operators and MOs (Part-145)

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0325 26/3/2014	2018-04 18/6/2018	2021 Q3	2023 Q3	2023 Q3

RMT.0725 **Rotorcraft chip detection system**

CS-27 and CS-29 require the installation of chip detectors to detect particles of ferromagnetic material that are released by elements of the rotor drive system as a result of damage or wear. Chip detectors provide a warning to the crew when particles of a sufficient size (or accumulation of particles) are detected and allow the crew to check the correct operation of the relevant drive system components. However, there is no explicit provision in the CS, nor detailed AMC, for consistently demonstrating that the chip detectors perform their intended function (i.e. particles are collected at a sufficient rate to provide the intended means of detection).
The task will also consider proportionate retrospective application of applicable CS-27 and CS-29 to existing fleets and types that are not compliant with the latest provisions.

Owner	Affected stakeholders
	DOA and POA holders

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A2.5	ST	-	2020 Q1	2021 Q1	n/a 2022 Q1	n/a 2024 Q1	2022 Q1 2024 Q1

RMT.0726 **Rotorcraft occupant safety in event of a bird strike**

Since the 1980s there have been an increasing number of accidents involving rotorcraft bird strikes where the rotorcraft was not certified in accordance with the latest bird strike protection provisions. This has resulted in a number of occurrences where rotorcraft bird impacts have had an adverse effect on safety. The objective of this RMT is to improve rotorcraft occupant safety in the event of a bird strike. This will be achieved by considering the development of new CS-27 provisions for bird strike and also considering proportionate retrospective application of applicable CS-27 and CS-29 to existing fleets and types that are not compliant with the latest provisions.

Owner	Affected stakeholders
CT.7	DOA and POA holders

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A1.5	ST	-	2020 Q1	2021 Q1	n/a 2022 Q1	n/a 2024 Q1	2022 Q1 2024 Q1

Research

RES.008 **Rotorcraft main gearbox (MGB) design to guarantee integrity of critical parts and system architecture to prevent separation of the main rotor following any MGB failure.**

1. Enhancement for new design features of helicopter MGB and attachment, to prohibit at any time separation of the mast and main rotor from the helicopter, allowing in case of any major failure of the main gear box components, the helicopter to autorotate.
2. Study to understand threats to rotor drive system critical component integrity and methods to design and substantiate flaw-tolerant critical component designs.

Owner	Activity Sector	Deliverable	Date
EASA SM.1	HE	Report	2020

RES.009 **Ditching in water or a survivable water impact (SWI) for rotary wing aircrafts (helicopter, tilt Rotor, compound rotorcraft)**

Sufficient real flotation time (2-3 minutes) before any capsizing or side floating movement to provide opportunities for the occupants to escape a rotary wing aircraft, taking into consideration sea state 6 conditions (irregular waves), in case of ditching in water or in the event of a SWI.

Owner	Activity Sector	Deliverable	Date
EASA SM.1	HE	Report	2020

RES.011 **Helicopter, tilt rotor and hybrid aircraft gearbox health monitoring — in-situ failure detection**

New technologies for in-situ detection of tilt rotor, helicopter and hybrid aircraft gearbox failures.

Owner	Activity sector	Deliverable	Date
EASA SM.1	HE	Report	2022

RES.020 **Identify helicopter technologies with safety benefits**

Revise and update the study performed by the NLR-Netherlands Aerospace Centre for EHEST on the safety benefits of technologies to assess and when relevant include new technologies addressing safety threats such as laser pointing, drones, bird strike, wire strike, etc.

Owner	Activity Sector	Deliverable	Date
EASA SM.1	HE	Report	2021

Safety Promotion

MST.015 **Helicopter safety events**

CAs, in partnership with industry representatives, to organise helicopter safety events annually or every two years. The EHEST, IHST, CA, Heli Offshore or other sources of safety promotion materials could be freely used and promoted.

Owner	Activity sector	Deliverable	Date
MS	HE	Workshop	Continuous

MST.031 **Implementation of SESAR solutions aiming to facilitate safe IFR operations**

MSs together with their ANSPs and their flight procedures 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 designed to improve safety should be implemented as far as it is feasible.

See SESAR Solutions Catalogue:
https://www.sesarju.eu/sites/default/files/solutions/SESAR_Solutions_Catalogue_Ed2_2017.pdf

This EPAS action is aligned with the ATM MP's (Level 3 Ed 2018) action NAV12 Low level IFR Routes for Rotorcraft.

Owner	Activity sector	Deliverable	Date
ANSPs/flight procedures designers/MS	HE	IFR routes/report	2025

SPT.082 **Support the development and implementation of FCOM for offshore helicopter operations**

To provide support to manufacturers, if needed, in the development of FCOMs for different helicopter types and support/encourage operators in their implementation.

Owner	Activity sector	Deliverable	Date
Offshore Helicopter CAG	HE	Report	2019

SPT.092 **Improve dissemination of existing safety promotion material by developing mobile applications & e-platforms**

Reaching target audience is one of the main challenges of safety promotion. This tasks aims at improving dissemination of existing safety promotion material by developing mobile applications & e-platforms. This will increase user-friendliness of existing paper format safety promotion material and will facilitate translations and future revisions.

Owner	Activity sector	Deliverable	Date
ESPN-R	HE	Mobile applications and/or e-platforms	2019

SPT.093 **Develop new safety promotion material on high-profile helicopter issues**

In cooperation with the IHST, develop new safety promotion material (leaflets, videos, applications, etc.) on subjects such as performance-based navigation, point in space, low level IFR, bird strike, operational and passenger pressure management, aimed at pilots and owners of private helicopters.

Owner	Activity sector	Deliverable	Date
ESPN-R	HE	Leaflets, videos, web-pages and/or applications	2021

SPT.094 **Helicopter safety and risk management**

Review existing helicopter safety & risk management material to check consistency and update (when applicable) material to new rules, standards and international good practice coming for example from IHST and SM-ICG.

Owner	Activity sector	Deliverable	Date
ESPN-R	HE	Revised helicopter safety & risk management manuals and/or toolkits	2021

SPT.095 **Promote helicopter technologies with safety benefits**

Following the RES identifying promising helicopter technologies (update of the study performed by the NLR for EHEST), promote the helicopter technologies having high safety benefits.

Owner	Activity sector	Deliverable	Date
ESPN-R	HE	Web-page, flyer and/or report	2021

SPT.096 **Organise an annual safety workshop**

The European Safety Promotion Network Rotorcraft (ESPN-R) to organise a safety forum, in cooperation with the trade shows. This high-profile event promotes safe helicopter operations and fosters interactions within the community. The event theme changes every year.

Owner	Activity sector	Deliverable	Date
ESPN-R	HE	Safety Workshop	Continuous

SPT.098 **European safety promotion task on rotorcraft**

Develop and implement a safety promotion task on the most important areas of rotorcraft as directed through the Rotorcraft Committee and EASA Rotorcraft Strategy.

Owner	Activity sector	Deliverable	Date
EASA SM.1	HE	Safety Promotion material	Continuous

SPT.099 **Helicopter hoist safety promotion**

Develop safety promotion material for helicopter hoists

Owner	Activity sector	Deliverable	Date
EASA SM.1	HE	Safety Promotion material	2019

5.4 General aviation: Non-commercial operations

This section covers General Aviation (GA) non-commercial operations involving aeroplanes of mass groups below 5 700 kg registered in an EASA MS. Addressing safety risks in GA in a proportionate and effective manner is a strategic priority.

In the last years, accidents involving recreational aeroplanes have led to an average of nearly 80 fatalities per year in Europe (excluding fatal accidents involving microlight airplanes), which makes it one of the sectors of aviation with the highest yearly number of fatalities. Furthermore, in 2017, there were 34 accidents causing 62 fatalities in non-commercial operations with aeroplanes and 25 fatal accidents causing 27 fatalities in the domain of sailplane operations. These two areas present the highest numbers of fatal accidents in 2017. The GA roadmap is key to the EASA strategy in this domain.

Although it is difficult to measure precisely the evolution of safety performance in GA due to lack of consolidated exposure data (e.g. accumulated flight hours), it is reasonable to assume that step changes in the existing safety level are not being achieved at European level, despite all initiatives and efforts.

5.4.1 Systemic enablers

Issue/rationale

This section addresses system-wide or transversal issues that affect GA as a whole and are common to several safety risk areas. In combination with triggering factors, transversal factors can play a significant role in incidents and accidents. Conversely, they also offer opportunities for improving safety across risk domains.

What we want to achieve

Reduce the number of fatalities in GA through the implementation of systemic enablers.

How we monitor improvement

Increase safety by continuously monitoring of safety issues identified in the GA fixed wing NCO Safety Risk Portfolio and the sailplane Safety Risk Portfolio (ref: ASR 2018, Section 5.1.2).

How we want to achieve it: actions

Safety Promotion

MST.025 **Improve the dissemination of safety messages**

Improve the dissemination of safety promotion and training material by authorities, associations, flying clubs, insurance companies targeting flight instructors and/or pilots through means such as safety workshops and safety days/evenings.

Owner	Activity sector	Deliverable	Date
Safety Promotion Network (SPN)	GA	Safety workshops and safety days/evenings	Continuous

MST.027 **Develop just culture in GA**

CAs should include provisions for just culture in GA in their SSPs to encourage occurrence reporting and foster positive safety behaviours.

Owner	Activity sector	Deliverable	Date
MS	GA	Just culture included in SSP	Continuous

SPT.083 **Flight instruction**

Develop safety promotional material aimed at making more effective use of and maximising the safety benefits of biennial class rating revalidation check flights with examiners and refresher training with flight instructors, including differences between aircraft types.

Owner	Activity sector	Deliverable	Date
GA Roadmap	GA	Safety Promotion material	2019

SPT.084 **Promoting safety by improving technology**

Encourage the installation and use of modern technology (e.g. weather information, moving maps, envelope protection, tablet applications, avoidance systems, angle of attack indicators, etc.). This task is linked to rulemaking activities in Section 7.5 'GA efficiency' that allow for the affordable and timely installation of such systems.

Owner	Activity sector	Deliverable	Date
GA Roadmap & SPN	GA	Safety Promotion material / Dissemination	2019

5.4.2 Staying in control

Issue/rationale

This section addresses subjects such as flying skills, pilot awareness and the management of upset or stall at take-off, in flight, or during approach and landing, flight preparation, aborting take-off and going around. Staying in control prevents loss of control accidents. Loss of control usually occurs because the aeroplane enters a flight regime outside its normal envelope, thereby introducing an element of surprise for the flight crew involved. Loss of control accidents are both frequent and severe.

With 409 higher-risk occurrences recorded in the period 2015 to 2017, aircraft upset, including loss of control, is the most significant key risk area for EASA MS non-commercial operations with aeroplanes of mass groups below 5 700 kg with an EASA State of Registry.

What we want to achieve

Increase safety by reducing the risk of loss of control accidents.

How we monitor improvement

Continuous monitoring of safety issues identified in the GA-related safety risk portfolios (ref: ASR 2018).

Following completion of the actions included under this section in EPAS 2018-2022, no further actions are included in this EPAS edition. The section is maintained as a placeholder for future actions.

5.4.3 Coping with weather

Issue/rationale

This section addresses subjects such as entering IMC, icing conditions, carburettor icing, and poor weather conditions. Weather is an important contributing factor to GA accidents, often related to pilots underestimating the risks of changing weather conditions prior to take-off and during the flight, as weather deteriorates. Dealing with poor weather may increase pilot workload and affect situational awareness and aircraft handling. Decision-making can also be impaired, as a plan continuation bias may lead pilots to press on to the planned destination despite threatening weather conditions. In the future, the EASA work on weather information to pilots, currently focusing on CAT, will be extended to also include recommendations and possible actions for GA[34].

What we want to achieve

Increase safety by reducing the number of weather-related accidents.

How we monitor improvement

Continuous monitoring of safety issues identified in the GA-related portfolios (ref: ASR 2018).

How we want to achieve it: actions

[34] https://www.easa.europa.eu/sites/default/files/dfu/EASA-Weather-Information-to-Pilot-Strategy-Paper.pdf

Safety Promotion

SPT.087 **Weather awareness for pilots**

Produce safety promotion material (video) addressing subjects such as weather awareness, flight preparation, management and debrief, the use of flight information services (FIS), the benefits of using modern technology including cockpit weather information systems (including GPS integrated, mobile/4G connected apps, etc.), communication with air traffic control (ATC), inadvertent entry into IMC, TEM, and HF.

Owner	Activity sector	Deliverable	Date
GA Roadmap	GA	Video/media product	2019

SPT.088 **Launch a safety promotion task promoting instrument flying for GA pilots**

Promote the results of RMT.0677 on the easier access of GA pilots to IFR flying in order to ensure that the safety and efficiency benefits materialise across Europe.

Owner	Activity sector	Deliverable	Date
GA Roadmap	GA	Safety Promotion material	2019

5.4.4 Preventing mid-air collisions

Issue/rationale

This section addresses subjects such as airspace complexity, airspace infringement and use of technology. Statistics show that MAC risks affect both novice and experienced pilots and can occur in all phases of flight and at all altitudes. However, the vast majority of them occur in daylight and in excellent meteorological conditions. A collision is more likely where aircraft are concentrated, especially close to aerodromes. Airspace infringements by GA aircraft into controlled airspace is an important related safety risk.

What we want to achieve

Increase safety by reducing the risk of MACs and airspace infringements in GA.

How we monitor improvement

Continuous monitoring of safety issues identified in the GA-related portfolios (ref: ASR 2018)

How we want to achieve it: actions

Focused Attention Topics

FOT.010 **Service provision to GA flights**

Raise the quality of support provided to GA flights by ANSPs through focused oversight.

Owner	Activity sector	Deliverable	Date
MS and GA.COM/ TeB	GA	Audit report	Continuous

Research

RES.021 **SESAR 2020 research projects aiming to prevent mid-air collision risks**

The following research activities are being addressed under the SESAR 2020 programme:

- Enhanced rotorcraft and general aviation operations around airports (TMA) (PJ.01-06);
- Enhanced airborne collision avoidance for GA (PJ. 11-A4)[35].

Owner	Activity Sector	Deliverable	Date
SESAR	GA	Report	2022

5.4.5 Managing the flight

Issue/rationale

This section addresses subjects such as navigation, fuel management, terrain and obstacle awareness, and forced landings. Most accidents are the result of the pilot's actions, including decisions made while preparing the flight, or due to changing circumstances during the flight. Pilot decisions, including their ability to prioritise workload, affect safety of the aircraft and survival of its occupants.

What we want to achieve

Reduce the number of fatalities and serious injuries in GA.

How we monitor improvement

Continuous monitoring of safety issues identified in the GA-related portfolios (ref: ASR 2018)

Following completion of the actions included under this section in EPAS 2018-2022, no further actions are included in this EPAS edition. The section is maintained as a placeholder for future actions.

5.5 Safe integration of new technologies and concepts

This section addresses the safe integration of new technologies and innovative solutions into the aviation system.

While many of the technologies and innovations emerging in the aviation industry bear significant potential to further improve the level of safety, EPAS gives due consideration to the safety issues derived from new technologies, new operational concepts or novel business models.

In the ATM domain, SESAR covers the development of new technologies for a better management of Europe's airspace as well as their contribution to the achievement of the SES goals and safety targets.

5.5.1 Civil drones (unmanned aircraft systems)

Issue/rationale

Most of the EU MSs have adopted national regulations to *ensure safe operations* of UASs with MTOM below 150 kg. There are currently no harmonised rules at EU level, and UAS operations still depend on an individual authorisation from every MS, which is a burdensome administrative process that stifles business development and innovation. The NBR extends the scope of the EU competence to regulate UAS below the MTOM of 150 kg, also to allow free circulation of UASs throughout the EU.

[35] More details about the related research projects can be found in https://www.atmmasterplan.eu/data/sesar_solutions

While this task has multiple drivers due to its very nature, there are also very strong efficiency and level playing field aspects.

In order to ensure safe UAS operations, it is extremely important to manage the safe integration of UASs in the airspace. SJU has worked with the support of EASA and all relevant stakeholders on the development of what is named U-space[36]. U-space is a set of new services and specific procedures designed to support the safe, efficient and secure access to airspace for large numbers of drones. In 2017, SJU prepared the U-space Blue Print[37] describing the vision for U-space. In addition, the European Roadmap for safe integration of drones in all airspace classes[38] was also prepared by SJU with EASA support and adopted by the EC.

What we want to achieve

To create a level playing field in all EU MSs, using an operation-centric concept, which is proportionate and risk-and performance-based, so that all companies can make best use of UAS technologies to create jobs and growth. At the same time, to enable the safe integration of drones in the European airspace while maintaining a high and uniform level of safety.

How we monitor improvement

The EASA ABs will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

[36] U-space is the European name for Unmanned Traffic Management (UTM)
[37] https://www.sesarju.eu/u-space-blueprint
[38] https://www.sesarju.eu/sites/default/files/documents/reports/European%20ATM%20Master%20Plan%20Drone%20roadmap.pdf

Rulemaking

RMT.0230 **Introduction of a regulatory framework for the operation of drones**

Development of IRs for UAS, implementing Articles 55 to 57 and Annex IX to Regulation (EU) No 2018/1139. There are three categories of UAS defined:

— Open category: low-risk operation not requiring authorisation or declaration before flight
— Specific operation category: medium-risk operation requiring authorisation or declaration before flight
— Certified category: high-risk operation requiring certification process

In order to implement an innovative new set of rules for the three categories, the following seven subtasks were identified:

1 Open and specific category with development of new, dedicated implementing rules
2 Certified category with amendments to FCL, OPS, TCO, ACAS, CAT, ARO, ORO, ARA, ORA, MED, AW, SERA, ADR
3 Specific category with new AMC standard scenario
4 Certified category with amendments to CS-ETSO and CS-36
5 Certified category with development of a new CS-UAS
6 Development of adequate rules to enable U-space implementation
7 Certified category with amendments to ATM/ANS, ATCO, SERA, ACAS and CS-ACNS

For the maintenance of the Regulation and the AMC developed under subtasks one and three, two new RMTs have been created. Please refer to the section on Regular Updates (RMT.0729 and RMT.0730).

Owner	Affected stakeholders
EASA CT.7	Member States, UAS operators (individuals and organisations), UAS manufacturers, manned aviation community, model aircraft ommunity, ANSPs, ADRs, all airspace users

PIA	Proc	3rdC	SubT	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	1	22/12/2016	4/5/2017	6/2/2018	2019 Q1	2019 Q2
	ST		2		2019 Q2	2020 Q4	2022 Q2	2022 Q2
	Art.15		3		2019 Q2*	n/a	n/a	2019 Q2
	ST		4		2019 Q3	n/a	n/a	2020 Q2
	Art.15		5		2019 Q2*	n/a	n/a	2019 Q3
	ST		6		tbd			tbd
	ST		7		2022 Q1	2023 Q1	2024 Q3	2024 Q4

*Instead of the NPA, Article 15 will apply

Safety Promotion

SPT.091 **European safety promotion on civil drones**

Coordinate European activities to promote safe operation of drones to the general public.

Owner	Activity sector	Deliverable	Date
SPN	General public	Safety Promotion material	2019

Research

RES.015 **Vulnerability of manned aircraft to drone strike**

Assess the potential MAC threat posed by drones to manned aircraft and validate its results by means of a complete set of activities including modelling and impact tests.

Owner	Activity Sector	Deliverable	Date
EASA SM.2	CAT	Report	2019

RES.022 **SESAR 2020 research projects aiming to safely integrate drones in the airspace**

The following research activities are being addressed under the SESAR 2020 programme: surface operations by RPAS (PJ.03a-09); IFR RPAS Integration (PJ. 10-05) and airborne detect and avoid systems supporting integrated RPAS operations (PJ.13-01-01)[39].

Owner	Activity Sector	Deliverable	Date
SESAR	RPAS	Report	2022

RES.023 **SESAR exploratory projects on U-space[40]**

SESAR JU has launched U-space exploratory research as steps towards realising the European Commission's U-space vision for ensuring safe and secure access to airspace for drones.

Owner	Activity Sector	Deliverable	Date
SESAR	RPAS/drones	Research reports	2020

5.5.2 New business models

Issue/rationale

This section addresses risks related to new and emerging business models arising from the increased complexity of the aviation industry, the number of interfaces between organisations, their contracted services and regulators. Some new business models are emerging: the increased demand for flying in the cities, urban air mobility; the increased digitalisation in aviation systems, the introduction of more autonomous vehicles, platforms starting for single pilot operations and completely autonomous cargo aircraft. These will challenge the way authorities regulate and oversee the aviation system. CAs should work better together and EASA should evaluate whether the existing safety regulatory system adequately addresses current and future safety risks arising from new and emerging business models. Upon the request of MSs, EASA tasked a working group of CAs to assess airlines' emerging 'new' business models and to identify related safety risks posed to the aviation system.

The same approach could be applied to monitor the development of urban air mobility should the MSs request EASA to do so. So far no actions have been foreseen in this EPAS update.

Managing current and future safety risks arising from new and emerging business models is a strategic priority.

What we want to achieve

Increase safety by continuously assessing and mitigating risks posed by new and emerging business models.

How we monitor improvement

The EASA ABs will give feedback on the effectiveness of the activities.

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39 More details about the related research projects can be found in https://www.atmmasterplan.eu/data/sesar_solutions

40 https://www.sesarju.eu/news/sesar-launches-u-space

How we want to achieve it: actions

Safety Promotion

MST.019 **Better understanding of operators' governance structure**

CAs to have a thorough understanding of operators' governance structure. This should in particular apply in the area of group operations.

Aspects to be considered include:
- extensive use of outsourcing,
- the influence of financial stakeholders, and
- controlling management personnel, where such personnel are located outside the scope of approval.

Note: The Agency will support this MST by providing guidance on how to effectively oversee group operations.

Owner	Activity sector	Deliverable	Date
MS	CAT/HE	Research/guidance material	2019

5.5.3 New products, systems, technologies and operations

Issue/rationale

This section addresses the introduction of new designs, technologies or types of operation for which regulatory updates are needed, and highlights some of the most relevant trends that will influence aviation in the years to come.

What we want to achieve

Manage the safe introduction of new products, systems, technologies and operations and continuously assess and mitigate safety risks related to new designs, technologies or types of operation.

How we monitor improvement

The EASA ABs will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0266

Powered lift (tilt rotor) applicable requirements (pilot licensing with synthetic training devices, air operations and maintenance)

To develop IRs for powered lift pilot licensing and operations.

This task is put on hold until further notice.

Owner	Affected stakeholders
EASA FS.5	Pilots, ATOs, CAs

RMT.0414

Operations and equipment for high-performance aircraft (HPA)

Review of IRs/AMC & GM in relation to the operation of HPA.

This task is put on hold until further notice.

Owner	Affected stakeholders
EASA FS.2	HPA operators

Safety Promotion

MST.020 **Loss of radar detection**

On 5 and 10 June 2014, there were several occurrences of radar losses from ATC displays in central Europe. These events resulted in reduced capacity in some of the affected ATC sectors, in introduction of flow measures and in delays. As this type of events may also have a serious impact on safety, EASA was mandated by the EC to perform a technical investigation and put forward recommendations.
The technical investigation concluded that the source of the interference was a system or installation which over-interrogated the transponders on board aircraft not only at rates beyond their requirements but also beyond design limits.

MSs are encouraged to implement the recommendations of the technical report and to consider implementation of other mitigation techniques against loss of detection of aircraft as a result of secondary surveillance radar (SSR) over-interrogation.

Owner	Activity sector	Deliverable	Date
MS	ALL	Report	2020

5.5.4 SESAR deployment

Issue/rationale

Implement the regulatory needs of the SESAR pilot common projects.

What we want to achieve

The rationale behind the following actions is to cater for the regulatory needs of the SESAR common projects and other new technological advancements (e.g. such as, but not limited to U-space deployment, virtualisation and cloud-based architecture and remote tower operations) by enabling the implementation of new working methods and technologies developed by SESAR. Interoperability, civil-military cooperation and compatibility, and NextGen international compatibility (e.g. such as but not limited to ICAO GANP/ASBUS and NextGen) will form an integral part of EASA's work in impact assessment and future rulemaking. In addition, there is a need to initiate a consolidated and coordinated implementation support action that should look holistically to the implementation needs of the necessary enabling infrastructure to facilitate the achievement of the needed operational improvements and new ATM operational concepts.

How we monitor improvement

The EASA ABs will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0524 **Data link services**

The analysis of the technical issues observed during the deployment of Regulation (EC) No 29/2009 resulted in various recommendations. This RMT will consider these regulatory recommendations to support the data link operations, including regulatory needs to support the ELSA Model D multi-frequency implementation, the identification and development of an 'end-to-end certification/validation' framework and the clarification of the notion of 'best in class' performance and the related avionics improvements. Furthermore, to improve the predictability of the aircraft trajectory leading to less tactical interventions and improved deconfliction, this RMT will addresses elements of the 'Pilot Common Project' (PCP) air traffic management (ATM) functionality 6 requirements ('Initial Trajectory Information Sharing'); in particular, the regulatory support for the implementation of the 'Extended Projected Profile' (EPP).

Owner	Affected stakeholders
EASA FS.4.2	CAs, ANSPs, ADR operators, Air operators, manufacturers and ATCOs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	RMT.0524 29/1/2018	2019 Q2	2020 Q2	2022 Q2	2022 Q2

RMT.0624 **Remote aerodrome ATS**

The development and introduction of new technologies enables provision of ADR ATS (aerodrome control service (ATC) or aerodrome flight information service (AFIS)) from geographically independent locations/facilities where direct visual observation is not available.

Phase 1 of this RMT resulted in the publication of 'Guidance Material on the implementation of the remote tower concept for single mode of operation' (ED Decision 2015/014/R) and 'Requirements on Air Traffic Controller licensing regarding remote tower operations' (ED Decision 2015/015/R amending Acceptable Means of Compliance and Guidance Material to Commission Regulation (EU) 2015/340).

Phase 2 of this RMT, which is ongoing, is extending the scope to cover also more complex modes of operations and to provide enhanced and extended generic guidance and requirements (hence not limited to any specific operational context/mode) for CAs, ANSPs and ADR operators, encompassing all possible types of operational modes/contexts, such as single and multiple mode of operation, contingency solutions and the use of new technical enablers which have traditionally not been available for ADR ATS. The general objective of the RMT is to ensure that ADR ATS provided from a remote tower meet the applicable EU and ICAO requirements and to ensure at least the same level of safety as when provided from a conventional tower.'

This EPAS task is aligned with the ATM MP's (Level 3 Ed 2018) action AOP14 (only single operation) (Remote TWR).

Owner	Affected stakeholders
EASA FS.4.2	CAs, ANSPs and aerodrome operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	RMT.0624 9/12/2014	2015-04 23/3/2015	n/a	n/a	3/7/2015
				2017-21 20/12/2017	n/a	n/a	2019 Q1

Rulemaking

RMT.0639 **Performance-based navigation implementation in the European ATM network**

PBN implementation that supports the improved performance of the EATMN, the uniform use of PBN specifications and functionalities. The optimal and safe use of airspace and the improved safe access to ADRs through the improved airspace design, arrival/departure routes and approach procedures would be ensured based on a common application of navigation specifications and functionalities.

These regulatory measures define the ICAO PBN specifications and functionalities that are to be used in the EU airspace and the dates by which they are to be applied in accordance with the SES objectives and the PCP implementation.

Owner	Affected stakeholders
EASA FS.4.2	MSs, CAs, ANSPs and Air Operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	RMT.0639 25/6/2014	2015-01 19/1/2015	10/2016 28/7/2016	2019 Q2	2019 Q2

RMT.0679 **Revision of surveillance performance and interoperability (SPI)**

The current SPI Regulation (Regulation (EU) No 1207/2011[41]) details the requirements for the carriage and operation of airborne surveillance equipment by both civil and State registered aircraft, and the dates by which qualifying aircraft must be equipped.

Note: Based on the Cost-Benefit Analysis results, EASA decided not to propose significant changes to the present SPI Regulation. Therefore, EASA will not publish an NPA but prepare a report to the European Commission. However, there is a proposal to change the Regulation.
In addition, the Agency may decide to provide some GM on items already identified by the rulemaking group. Therefore, the date for the ED Decision is also kept.

Owner	Affected stakeholders
EASA FS.4.2	MS, CAs, ANSPs,aircraft operators and Air Traffic Controllers.

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	RMT.0679 18/3/2016	n/a	n/a	n/a	2019 Q2

[41] Commission Implementing Regulation (EU) No 1207/2011 of 22 November 2011 laying down requirements for the performance and the interoperability of surveillance for the single European sky (OJ L 305, 23.11.2011, p. 35).

RMT.0682 **Implementation of the regulatory needs of the SESAR common projects**

The general objective of the task is the development of the implementing measures as required to enable the timely deployment of the ATM functionalities and other operational changes stemming from SESAR and the European ATM MP by addressing those issues which are not covered by existing RMTs.

The initial purpose of this task is to address the implementation needs, among others and when known, of the following:

— Extended arrival management (AMAN) in high-density terminal manoeuvring areas (TMAs);
— Airport integration and throughput;
— Flexible airspace management and free route;
— Network collaborative management;
— Initial system-wide information management (SWIM);
— Development of the requirements for the use of GBAS augmented GNSS to support CAT I/II/III operations;
— Other new essential operational changes (e.g. user-driven prioritisation process (UDPP), trajectory-based tools, sector-based operations, etc.)

Owner	Affected stakeholders
EASA FS.4.2	MSs, CAs, ANSPs, Air Operators, ADR operators, POA holders

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	2019 Q3	2020 Q3	2021 Q3	2023 Q3	2023 Q3

5.5.5 All-weather operations (AWOs)

Issue/rationale

AWOs are currently addressed by regulations in the following aviation domains: airworthiness, air operations, aircrew, aerodromes, air traffic management (ATM)/air navigation services (ANS) as well as in the standardised European rules of the air (SERA). The existing rules in these domains have a number of deficiencies that need to be addressed. Work on AWOs will allow to sufficiently address technological advancements, align with the ICAO SARPs (e.g. ICAO Annex 6 amendments introducing lower category (CAT) II and CAT III minima and the concept of operational credits, in particular for operations with vision systems), increase consistency of rules across different domains, carry out cross-domain risk assessments, ensure that better weather information is provided to pilots, as well as harmonise with the FAA and other regulators.

What we want to achieve

The European industry should be enabled to take full advantage of safety and economic benefits generated through new technologies and operational experience.

How we monitor improvement

The EASA ABs will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0379 All-weather operations

Review and update the AWO rules in all aviation domains, as regards:

— possibility of applying safety performance principle in redrafting of current rules with the aim of allowing a better integration of new and future technologies supporting AWOs, as e.g. enhanced flight vision systems (EFVSs), synthetic vision systems (SVSs), synthetic vision guidance systems (SVGSs), combined vision systems (CVSs), head-up displays (HUDs);
— conventional low-visibility operations (LVOs), such as instrument landing system (ILS)-based CAT II and CAT III approach operations or low-visibility take-offs (LVTOs);
— other than AWO, such as CAT I operations using ILS, GLS or SBAS, or approach operations to higher minima using area navigation (RNAV)(GNSS), non-directional beacons (NDBs) or very high frequency (VHF) omnidirectional ranges (VORs);
— miscellaneous items, such as the improvement of existing rules text and the transposition of the new ICAO approach classification;
— harmonisation with bilateral partners (e.g. FAA) to the extent possible;
— introduction of operations with operational credits such as newly introduced SA CAT I[42] not being yet part of the ICAO regulatory system.

Recommendations and consequent follow up actions to the Weather Information to Pilots Strategy Paper, itself an outcome of RMT.0379 are now being taken forward as a stand-alone project.
Phase 2 (subtask 2) will address AWOs for helicopters.

Owner	Affected stakeholders
EASA FS.2	POA holders, Air operators, ATOs, ADR operators andATM/ANS

PIA	Proc	3rdC	SubT.	ToR	NPA	Opinion	Commission IR	Decision
A-	AP	-	1	RMT.0379 9/12/2015	2018-06 13/7/2018	2020 Q2	2022 Q2	2022 Q2
			2		2019 Q2	2020 Q2	2022 Q2	2022 Q2

[42] Special authorisation CAT I represents a type of LVOs operations with operational credits with the following provisions:
— the decision height (DH) of an SA CAT I operation should not be lower than the highest of the minimum DH specified in the AFM (if stated), the applicable obstacle clearance height (OCH) for the category of aeroplane, the DH to which the flight crew is qualified to operate; or 150 ft; and
— the lowest RVR minima to be used are specified vs approach lighting system and are typically between 400 and 700 (m).

6 Environment

Environmental protection and sustainability are key challenges for the aviation industry, MSs and EASA. Sustainable aviation is about combatting climate change, and reducing the health effects from aircraft noise and air pollution. It is also about ensuring that European industry stays competitive on a level playing field in a rapidly changing world. Environmental standards are key to achieving this.

EASA is helping tackle the challenge of ensuring a cleaner, quieter and more sustainable future for the aviation system, including supporting the introduction of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

The information below reports on the status of environmental standards. For the full picture, including stakeholder actions and market-based measures, see the EAER (www.easa.europa.eu/eaer), which provides a concise view of the status and actions of Europe as regards environment and sustainability.

As European standards are developed by reference to ICAO standards, the below actions are directly aligned with the ICAO process. ICAO's CAEP is expected to adopt in February 2019 a new standard on non-volatile PM emissions, and propose improvements to the existing noise and emission standards. The agreed updates to the environmental standards will need to be implemented into European legislation in order to become effective.

The actions to implement ICAO standards in Europe will be adjusted and detailed once the outcome of the CAEP/11 process is known and communicated in ICAO State Letters, which are expected in 2019. Future actions will also need to address the new environmental challenges of new technologies, e.g. noise of drones and air taxis, recyclability of batteries and the requirements of the circular economy.

6.1 Climate change and air quality

Issue/rationale

In order to achieve the European objectives on climate change and air quality, the Basic Regulation (in particular Article 9) and the relevant CSs need to be adapted in line with the latest ICAO SARPs.

What we want to achieve

— To align Article 9 of the Basic Regulation with the ICAO CAEP/11 SARPs in order to achieve European objectives on climate change and air quality;

— To align CS-34/CS-36 with the ICAO CAEP/11 recommendations; and

— To balance the environmental needs with safety and with cost-efficient rules for progressive phase-out of halon.

How we monitor improvement

European Aviation Environmental Report

How we want to achieve it: actions

Rulemaking

RMT.0514 Implementation of the CAEP amendments

Align Article 9 of the Basic Regulation with the ICAO CAEP recommendations.
Align CS-34 with the ICAO CAEP recommendations

NB: The below timelines are related to the implementation of CAEP 10. The implementation of CAEP 11 will start in 2019 under this same RMT.

Owner			Affected stakeholders				
EASA CT.5			Design organisations and manufacturers				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
A-	ST	-	RMT.0513 & RMT.0514 13/6/2016	2017-01 17/1/2017 2019 Q3	09/2017 07/11/2017 2020 Q4	2018 Q4 2022 Q1	2018 Q4 2022 Q1

RMT.0560 Halon — Update of Part-26 to comply with ICAO standards

Balance the environmental needs with safety and with cost-efficient rules for progressive phase-out of halon

Owner			Affected stakeholders				
EASA CT.7			AOC holders (large aircraft), AMOs (Part-145) and POA holders				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
A-	ST	-	RMT.0560 18/9/2013	2014-26 18/11/2014	08/2016 2/8/2016	2019 Q2	2019 Q2

Research

RES.018 Development of particulate matter (PM) regulations and guidelines

Acquire high-quality PM data, analysis, modelling and expert support for regulatory action.

Owner	Activity sector	Deliverable	Date
EASA SM.1	ALL	Report	2022

RES.019 Aviation emissions support

Obtain high-quality technical expert support on standardisation issues.

Owner	Activity sector	Deliverable	Date
EASA SM.1	CAT	Report	2021

6.2 Aircraft noise

Issue/rationale

Further to the latest developments at ICAO level under the CAEP/10 framework, the relevant CSs need to be adapted accordingly.

What we want to achieve

To align CS-36 with the ICAO CAEP/11 recommendations.

How we monitor improvement

European Aviation Environmental Report

How we want to achieve it: actions

Rulemaking

RMT.0513 **Update CS 36 to refer to the environmental technical manual on noise certification as amended after CAEP**
Align CS-36 with the ICAO CAEP recommendations

NB: The below timelines are related to the implementation of CAEP 10. The implementation of CAEP 11 will start in 2019 under this same RMT.

Owner			Affected stakeholders				
EASA CT.5			DOA and POA holders				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
A-	ST	-	RMT.0513 & RMT.0514 13/6/2016	2017-01 17/1/2017	09/2017 7/11/2017	2018 Q4	2018 Q4
				2019 Q3	2020 Q4	2022 Q1	2022 Q1

7 Efficiency/proportionality

The actions in this chapter are driven by the need to ensure that EU rules are cost-effective in achieving their objective as well as proportionate to the risks identified. Even if for some of the actions under this heading the link to safety is not immediately evident, at the end they will translate, directly or indirectly, into safety improvements.

7.1 Aerodrome design and operations

Issue/rationale

Development of a framework commensurate with the complexity of ADR activities and management of potential risks.

What we want to achieve

Ensure safety with sufficient flexibility for ADR operators to adjust to local conditions.

How we monitor improvement

The EASA ABs and the ADR CAG will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0638 **Certification requirements for VFR heliports located at ADRs falling under the scope of the Basic Regulation**

Ensure a high uniform level of safety at ADRs by aligning Regulation (EU) No 139/2014 with ICAO Annex 14, Volume II, Heliports; develop necessary CS and GM for design and, if necessary, AMC & GM for operation and oversight of VFR heliports co-located at ADRs (falling under the scope of the Basic Regulation).

Owner	Affected stakeholders
EASA FS.4.3	ADR operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0638 22/9/2014	2017-14 1/8/2017	n/a	n/a	2019 Q1

RMT.0705 **Addition of a new requirement for the handling of dangerous goods at aerodromes**

Under the current provisions of Regulation (EU) No 139/2014 (ADR.OR.D.020), ADR operators are required to designate appropriate areas for the storage of dangerous goods. However, Regulation (EU) No 139/2014 does not contain a requirement for the establishment of the methods for the delivery storage, dispending and handling of dangerous goods at the ADR.

Under the current provisions of Regulation (EU) No 139/2014, there is no direct requirement for ADR operators to train their personnel in the handling of dangerous goods, in the case that the ADR operator is acting as sub-contractor (handling agent) of air operators.

It is therefore recommended to address these issues by incorporating relevant ICAO provisions in Regulation (EU) No 139/2014.

This task is put on hold until further notice.

Owner	Affected stakeholders
EASA FS.4.3	ADR operators

7.2 Evaluations

EPAS includes proposals for evaluation of existing rules with the objective of reviewing feedback from implementation and assessing the rules' relevancy, efficiency and effectiveness. The evaluations should identify which rules could be clarified, simplified, updated or possibly repealed. It should also assess whether a performance-based approach could be applied as a tool for increasing regulatory efficiency.

EVT.0006 **Evaluation on provisions for flight crew licences laid down in the Commission Regulation (EU) No 1178/2011**[43]

The Regulation will be reassessed with regard to pilot training, testing and periodic checking for performance-based regulation.

Owner			Affected stakeholders	
EASA FS.3			ATOs, flight examiners, flight instructors, air operators, pilots and CAs	
PIA	**Proc**	**3rdC**	**ToR**	**Evaluation report**
n/a	ST	-	2018	2019

EVT.0007 **Evaluation on Regulation (EU) No 748/2012 'Part 21'**

Evaluation of several aspects of the Regulation, including continued validity of TCs

Owner			Affected stakeholders	
EASA CT 7.1 in cooperation with SM.2.1			DAHs, POA holders and CAs (including EASA)	
PIA	**Proc**	**3rdC**	**ToR**	**Evaluation report**
n/a	ST	-	2021	2022

[43] Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 311, 25.11.2011, p. 1)

7.3 ATM/ANS

Issue/rationale

There is still a lack of harmonised rules based on ICAO SARPs in order to ensure compliance with the essential requirements that apply to ATM/ANS. In addition, Regulation (EC) 552/2004 has been repealed, so new rules must ensure that ATM/ANS systems and their constituents are successfully designed, manufactured and installed. If not, the achievement of the overall objectives of ATM/ANS may be compromised.

What we want to achieve

Regulation (EU) 2017/373 requires the inclusion of additional requirements concerning flight procedure design, ATS, AIS/AIM. Safe and cost-efficient ATM/ANS provision also needs to ensure harmonised conformity assessment of their supporting systems and constituents, so that the equipment involved performs as expected during the intended operation. After the adoption of the new rules, implementation issues associated with ATM/ANS systems and constituents should decrease, especially those related to lack of interoperability and performance that may have an impact on operations.

How we monitor improvement

The EASA ABs and the ATM/ANS CAG will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0161 Conformity assessment

Development and introduction of new technologies and systems that conform to agreed goals needs to be achieved in a harmonised and consistent manner. The general objective is to develop the requirements and guidance material for the declaration or certification of systems and constituents in a manner consistent with the existing process related to changes to the functional systems.

This task is de-prioritised in accordance with criteria described in Chapter 3

Owner	Affected stakeholders
EASA FS.4.2	ANSPs, POA holders of ATM/ANS systems and constituents, organisations maintaining ATM/ANS systems and constituents and CAs (including EASA)

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B2.5	ST	-					

Rulemaking

RMT.0445 Technical requirements and operating procedures for airspace design, including flight procedure design

Development of the necessary organisational and technical requirements on airspace design, thus ensuring that the specific safety objectives of the Basic Regulation are met. Basically, the scope of the task is to establish the requirements for the design of flight procedures and ATS routes, to support the implementation of PBN operations, and evaluate the need for extension to other airspace structures and flight procedure design. This will include an analysis of the need to include procedures for airspace design in the ATM/ANS certification scheme.

Owner	Affected stakeholders
EASA FS.4.2	MSs, CAs, ANSPs, ADR operators and air operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	RMT.0445 14/7/2014	2016-13 25/10/2016	02/2018 8/3/2018	2020 Q1	2020 Q1

RMT.0464 Requirements for air traffic services

Transposition of the relevant ICAO provisions on ATS. The objective is to establish a sufficient level of harmonisation throughout the EU, based on mandatory and flexible requirements, and to define proportionate and cost-efficient rules.

Owner	Affected stakeholders
EASA FS.4.2	MSs, CAs, ANSPs, ATCOs, ADR operators, aircraft operators, trade unions, pilots and ATCOs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	RMT.0464 9/7/2014	2016-09 14/9/2016	03/2018 22/5/2018	2020 Q1	2020 Q1

RMT.0477 Technical requirements and operational procedures for aeronautical information services and aeronautical information management

Development of the necessary harmonised requirements and AMC & GM for the provision of aeronautical information and data, mainly based on the transposition of ICAO Annex 15 and ICAO Annex 4. The task will also fulfil specific needs stemming from the SES implementation.

Owner	Affected stakeholders
EASA FS.4.2	MSs, CAs, ANSPs, ADR operators and air operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	RMT.0477 11/10/2013	2016-02 27/4/2016	02/2018 8/3/2018	2020 Q1	2020 Q1

7.4 Airlines (AOC holders in CAT)

Issue/rationale

Passenger and cargo transport by airlines generate producer, consumer and wider economic benefits. Regulatory and administrative burden reduce these benefits and need therefore to be fully justified by corresponding safety benefits.

What we want to achieve

Ensure an efficient regulatory framework for airlines.

How we monitor improvement

The EASA ABs and the CAT CAG will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0190 **Requirements for relief pilots**

Address the provisions for the use of relief pilots as regards experience, training, checking and CRM.

This task is de-prioritised in accordance with criteria described in Chapter 3.

Owner	Affected stakeholders
EASA FS.3	Pilots, ATOs, and air operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0190 2/11/2012	2014-25 4/11/2014			

RMT.0352 **Non-commercial operations of aircraft listed in the operations specifications (OpSpecs) by an AOC holder**

Identify the categories of flights considered to be non-commercial flights conducted by AOC holders; Standardise the unofficial terms used in order to have a clear understanding of the different categories of non-commercial flights;

Specify standards for non-commercial operations of AOC holders related to the preparation, programme and operational framework, as appropriate;

Establish the minimum requirements for qualifications and training of the crews for each type of non-commercial flights conducted by AOC holders, as appropriate;

Harmonise implementation.

Owner	Affected stakeholders
EASA FS.2	CAT operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0352 4/12/2013	2015-05 30/3/2015	04/2017 29/6/2017	2019 Q2	2019 Q2

RMT.0721 **RAMP reregulation**

Taking into account feedback and standardisation results, it appears that the current AMC & GM to Part-ARO Subpart RAMP (Regulation(EU) 965/2012) are currently too prescriptive in some areas, and lack clarity in others. With RAMP deregulation, EASA intends to reduce the size of the AMC & GM by means of developing a new ramp inspections manual where most of the AMC & GM are being transposed. The resulting documents would also be reviewed in order to modernise them and reduce the level of prescription.

Owner	Affected stakeholders
EASA FS.2	CAs and operators (commercial and non-commercial)

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	Art.16	-	RMT.0721 28/5/2018	n/a	n/a	n/a	2019 Q1

7.5 General Aviation

Issue/rationale

GA is a high priority for EASA. EASA is dedicating effort and resources towards creating simpler, lighter and better rules for GA. Recognising the importance of GA and its contribution to a safe European aviation system, EASA in partnership with the EC and other stakeholders has created the GA roadmap.

What we want to achieve

Reduce the regulatory burden for GA.

How we monitor improvement

The GA Committee (GA.COM) and the GA TeB will provide feedback on the effectiveness of the activities.

How we want to achieve it: actions

General

Rulemaking

RMT.0135 **B2L and L Part-66 aircraft maintenance licences**

Introduce licensing requirements for maintenance of:

— avionic and electrical systems applicable for lower complexity of light aircraft; and
— aircraft other than aeroplanes and helicopters and in the maintenance of ELA1 aeroplanes,

by adapting the current B2 licensing requirements for maintenance of avionic and electrical systems to the lower complexity of light aircraft, and propose a simple and proportionate system for the licensing of certifying staff involved in the maintenance of aircraft other than aeroplanes and helicopters and in the maintenance of ELA1 aeroplanes.

Owner	Affected stakeholders
EASA FS.1	approved maintenance training organisations, maintenance engineers or mechanics/GA

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	15/4/2011	2012-15 4/10/2012	05/2015 22/6/2015	2018/1142 14/8/2018	2019 Q1

RMT.0547 **Task force for the review of Part-M for general aviation (PHASE II)**

The following important topics are part of this task:

— Light Part-M;
— Defect management; and
— Time between overhaul (TBO) extension.

Owner	Affected stakeholders
EASA FS.1	AMOs (Part-145 and Part-M Subpart F), CAMOs, operators other than airlines, GAs and CAs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	RMT.0547 23/10/2012	2015-08 9/7/2015	05/2016 13/4/2016	2019 Q2	2019 Q2

RMT.0677 **Easier access of general aviation (GA) pilots to instrument flight rules (IFR) flying**

Review the existing requirements for the instrument ratings and most probably the development of a new instrument rating specifically catering for the needs of the PPL holders.

Owner	Affected stakeholders
EASA FS.3	Pilots, instructors, flight examiners and ATOs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	RMT.0677) 18/12/2015	2016-14 9/11/2016	2019 Q1	2021 Q1	2021 Q1

RMT.0678 **Simpler, lighter and better Part-FCL requirements for general aviation**

Review the different requirements which have been identified by the GA roadmap to cause problems for GA. Examples:

— Modular LAPL*;
— Review of different LAPL and PPL requirements (crediting, revalidation, seaplane rating for LAPL);
— Review of class & type ratings requirements (new propulsion systems, amphibious aircraft);
— Review of language proficiency requirements for GA pilots;
— Provisions on touring motor glider (TMG) (definition, additional crediting);
— Mountain rating for helicopters;
— Review of the flight test rating requirements in the context of GA;
— Development of a 'light aircraft flight instructor (LAFI)' for LAPL training only;
— Examiner's vested interests in the context of GA.

The starred (*) items will be processed through the procedure in accordance with Article 16 of the Rulemaking Procedure (accelerated procedure). For all other items, the standard rulemaking (ST) procedure will be applied. Opinion No 08/2017 was issued on 23 October 2017.

Owner	Affected stakeholders
EASA FS.3	Pilots, flight examiners and CAs

PIA	Proc	3rdC	SubT	ToR	NPA	Opinion	Commission IR	Decision
A-	AP	-	1	RMT.0678 1/9/2016	n/a	08-2017 23/10/2017	2018 Q4	n/a
	ST		2		2019 Q4	2020 Q4	2022 Q2	2022 Q2

RMT.0689 **'Part 21 proportionality'**
Introduction of proportionality and simplification of airworthiness and environmental certification regulations for small aircraft
Simplification of the approval process and the oversight of small design, production and maintenance organisations. A template manual should simplify the approval process. The oversight should be streamlined and privileges can be granted to organisations based on the demonstrated experience.
For individual simple aircraft, the task's objective is to explore if private operation of aircraft where the owner takes full responsibility should be allowed.

This RMT was initially planned to be completed in two phases. In the context of the activities of the former first phase (now being the sole one), EASA will investigate whether some immediate benefits can be derived by amendments to AMC & GM to Part 21. A decision will be issued in Q1/2019. The initially planned second phase of this RMT has been cancelled. The related activities will take place as part of the new RMT.0727.

Owner	Affected stakeholders
EASA CT.7	DOA holders, POA holders and AMOs (Part-145 and Part-M Subpart-F)

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	AP	-	RMT.0689 9/6/2016	FC	n/a	n/a	2019 Q1

Specific tasks for balloons and sailplanes

RMT.0654 **Revision of the balloon licensing requirements**
Address topics identified by the industry balloon experts on the aircrew and on the medical side. A focused consultation was performed and no NPA was published.

Owner	Affected stakeholders
EASA FS.3	Balloon operators, pilots, flight instructors and flight examiners, CAs and DTOs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	Art.16	-	RMT.0654 16/9/2016	n/a	2019 Q1	2021 Q1	2021Q1

RMT.0698 **Revision of the operational rules for sailplanes**
Establish a set of rules, which addresses the specificities and associated risks in an efficient and proportionate manner, for air operations with sailplanes as the only regulatory reference for such operations.

Owner	Affected stakeholders
EASA FS.2	Sailplane operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	AP	-	RMT.0698 26/4/2016	n/a	07/2017 29/8/2017	2019 Q2	2019 Q2

RMT.0701 **Revision of the sailplane licensing requirements**
Address topics identified by the industry sailplane experts on the aircrew side.

Owner	Affected stakeholders
EASA FS.3	Sailplane operators, pilots, flight instructors, flight examiners, ATOs and DTOs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	AP	-	RMT.0701 15/12/2016	n/a	2019 Q1	2021 Q1	2021 Q1

RMT.0727 **Part 21 — simple and proportionate rules for GA (implementation of the NBR)**

The objective of this RMT is to revisit Part 21 in view of the amendments to the Basic Regulation (NBR). The focus of this task is to introduce simple rules that will allow to apply a proportionate approach. It will take into account the various risk levels in GA in the initial airworthiness process, and is aiming at achieving a reduction of administrative burden and costs, while at the same time supporting GA innovation. The task will include the preparatory work done under RMT.0689 'Part 21 proportionality'.

In the first phase of this RMT, EASA will develop proposals required by NBR Article 140 (3) and a few other topics, while in the second phase EASA will develop proposals for the implementation of all amendments to Part 21 as required by the NBR.

Owner	Affected stakeholders
	DOA and POA holders and CAs including EASA

PIA	Proc	3rdC	SubT	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	1	2019 Q3	2019 Q4	2020 Q4	2022 Q4	2022 Q4
			2		2022 Q1	2023 Q1	2025 Q1	2025 Q1

7.6 Manufacturers (design and production)

Issue/rationales

Aircraft design evolves at a rapid pace. Requirements for initial airworthiness and CSs need to be constantly reviewed and adjusted for cost-effectiveness and to keep pace with technological developments.

What we want to achieve

Ensure an efficient regulatory framework for manufacturers.

How we monitor improvement

The EASA ABs will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0180 **CS-E engine testing, endurance/IMI/ETOPS**

Endurance:
Review the existing engine endurance test requirements, assess their suitability for all engines, and consider an alternate endurance test and associated methods of compliance. The current regulations may not adequately address the technological advancements in modern engines, as related to the current engine endurance test.
Initial maintenance inspection (IMI):
It has become increasingly clear that reliance upon robust development testing to support a certification programme can no longer be guaranteed. There is now a need to consider a potential revision to the CSs to better ensure that any reliability and integrity issues regarding the engine's design are identified and rectified prior to the engine entering service.
This task will introduce into CS-E a requirement based upon, if not identical to, the current FAR 33.90. This will ensure that engine tests are conducted at conditions representative of those expected to occur in service prior to the issue of a TC. The expected benefits of this include a reduction in the number of issues that arise following type certification, and a more robust certification programme.

This task is de-prioritised in accordance with the NBR roadmap.

Owner	Affected stakeholders
EASA CT.7	DAHs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B5	ST	-	2021 Q1	2022 Q1	n/a	n/a	2023 Q1

7.7 Rotorcraft operations

Issue/rationale

Helicopter operators perform a wide range of highly specialised operations that are important for the European economy and citizens. There is a need to further develop towards an efficient regulatory framework, considering technological advancements.

What we want to achieve

Increase efficiency by enabling implementation of appropriate and balanced regulation.

How we monitor improvement

The EASA ABs will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0712 **Enhancement of the safety assessment processes for rotorcraft designs**

The safety assessment of the design of aircraft systems and equipment can help to identify shortfalls in the robustness of the design and also help aircraft designers to mitigate the risk of undesirable events by introducing means to reduce their likelihood. Ensuring robust safety assessment of rotorcraft designs can be considered to be even more critical due to the high number of single-point failures. Technology and techniques have evolved since the inception of formal safety assessment processes and therefore it is vital that CSs keep abreast with the latest thinking on safety assessment to maximise the potential that safety issues are identified during certification.
The safety requirements for equipment, systems and installations contained in the CSs should be improved for small and large rotorcraft to reflect current best practice for safety assessment.
The FAA is also developing new rules for the safety assessment of rotorcraft and these changes will create significant standard differences between the EU and US regulations and are likely to result in a lower regulatory efficiency. The proposed RMT also aims at reviewing these changes to achieve harmonisation where possible.

Owner	Affected stakeholders
EASA CT.7	DAHs and POA holders

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B5	ST	✓	RMT.0712 15/10/2018	2019 Q3	n/a	n/a	2020 Q2

RMT.0714 **Enable the safe introduction of rotorcraft Fly-by-Wire technology**

Currently, civil rotorcraft are equipped with mechanical flight controls (with or without hydraulic assistance), and trim and automatic flight control system (AFCS) functions are typically introduced in the mechanical flight control chains. Fly-By-Wire (FbW/FBW) technology has been in service on civil large aeroplanes for more than 40 years and this technology is now being applied to civil rotorcraft. This technology allows the introduction of advanced flight control laws and flight control protections which greatly increase the complexity of the flight control system and integration with the other systems and interaction with the aircraft handling qualities. FbW flight control systems are highly complex and also highly safety-critical.

EASA has already been involved in a validation activity with a US applicant, for which a set of dedicated and bespoke requirements are being developed by the FAA and EASA. It is expected that there will be an application for a design containing FBW technology from an EU applicant shortly.
It is for these reasons that appropriate certification specifications for rotorcraft FbW systems should be developed to enable the safe introduction of this technology to rotorcraft.

Owner	Affected stakeholders
EASA CT.7	DAHs and POA holders

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B1.2	ST	✓	2020 Q2	2021 Q1	n/a	n/a	2021 Q3

RMT.0494 **FTL requirements for helictopter operations**
Establish harmonised and state-of-the-art rules for helicopter operations (CAT, SPO, NCC).

Owner	Affected stakeholders
EASA FS.2	CAT helicopter operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	2020 Q3	2021 Q2	2022 Q2	2024 Q2	2024 Q2

7.8 Specialised operations

Issue/rationale

Operators other than CAT, e.g. conducting specialised operations, make an important contribution to aviation's overall role in modern economies. There is thus a need for an efficient regulatory framework.

What we want to achieve

Increase efficiency by enabling implementation of appropriate balanced approach.

How we monitor improvement

The EASA ABs will give feedback on the effectiveness of the activities.

Following completion of the actions included under this section in EPAS 2018-2022, no further actions are included in this EPAS edition. The section is maintained as a placeholder for future actions.

7.9 Maintenance training organisations

Issue/rationale

At present Part-147 excludes the use of distance learning for the purpose of basic knowledge and aircraft type training as the training locations are part of the approval. Part-66 allows the use of 'synthetic training devices', but does not define them. Appendix III to Part-66 allows 'Multimedia Based Training (MBT) methods may be used to satisfy the theoretical training element either in the classroom or in a virtual controlled environment (…)'; however, it does not define these methods, and no guidance exists on how to evaluate, validate and/or approve courses based on MBT methods.

What we want to achieve

Part-147: The introduction of the new methods and technologies will lead to a level playing field, raise the efficiency, quality and safety of maintenance training. Additionally, this way the training provided amongst the approved maintenance training organisations will be at a similar level. Moreover, it may result in an increased number of young people choosing to engage in maintenance career, which may help to tackle the expected shortage of maintenance staff in the near future.

How we monitor improvement

The EASA ABs will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0281 **New training/teaching technologies for maintenance staff**

Set up the framework for:

- e-learning and distance learning;
- simulation devices or STDs;
- specialised training such as HF, FTS, continuation training; and
- blended teaching methods.

This task is de-prioritised in accordance with criteria described in Chapter 3.

Owner	Affected stakeholders
EASA FS.1	AMTOs, CAMOsand CAs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0281 19/12/2012	2014-22 9/9/2014			

RMT.0255 **Review of Part-66**

Amend Part-66 in line with the conclusions of the evaluation report issued following EVT.001.
In particular, further simplify the licensing system for aircraft below 5 700 kg and legacy aircraft.

Owner	Affected stakeholders
EASA FS.1	Maintenance engineers and AMTOs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
n/a	ST	-	2019 Q1	2020 Q3	2021 Q3	2023 Q3	2023 Q3

7.10 Maintenance organisations

Issue/rationale

Certain existing requirements are either not efficient or not proportionate to the risks involved.

What we want to achieve

Increase proportionality and efficiency in the airworthiness field.

How we monitor improvement

The EASA ABs will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0018 Installation of parts and appliances that are released without an EASA Form 1 or equivalent

The intent of this task is:

— to provide a consistent interpretation of the definition of 'parts & appliances' and other terms used in the various rules;
— to develop criteria for the acceptance of parts and appliances with different production background for installation in certified aircraft;
— to create a parts classification for commercial parts, allowing an installer to install commercial parts on a type-certified product without having to obtain parts manufactured under a POA. This proposal will also allow manufacturers to continue to use parts now categorised as commercial parts in their type designs. The added benefit of the proposal is to have the manufacturers identify for EASA approval the commercial parts they intend to use;
— to develop criteria for production and release of parts and appliances proportionate to the potential impact on safety as determined in the design certification process;
— to develop the draft amendments to Regulations (EU) Nos 748/2012 and 1321/2014 as necessary to incorporate the above concepts and integrate the existing alleviations for sailplanes and European light aircraft (ELA);
— to develop the necessary AMC and GM to accompany the amendments to the regulations;
— to develop AMC and GM to support the interpretation of the above-mentioned provisions in the Basic Regulation related to parts and appliances; and
— to elaborate the AMC and GM related to standard parts.

Owner	Affected stakeholders
EASA FS.1	DAHs, POA holders, aircraft operators, AMOs (Part-145 and Part-M Subpart F) and maintenance personnel

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0018 1/11/2012	2017-19 14/12/2017	2019 Q3	2021 Q3	2021 Q3

7.11 Regular updates

Issue/rationale

The aviation industry is complex and rapidly evolving. The corresponding rules need to be updated regularly to ensure that they are fit for purpose, cost-effective, can be implemented in practice, and are in line with the latest ICAO SARPs.

Regular updates are issued when relevant data is available following an update of industry standards or feedback from certification activities or minor issues raised by the stakeholders.

What we want to achieve

Ensure that the regulatory framework is cost-effective and can be effectively implemented.

How we monitor improvement

The EASA ABs will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0031 **Regular update of AMC & GM to Part 21**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	RMT.0031 15/12/2016	2019 Q2	n/a	n/a	2020 Q1

RMT.0037 **Regular update of CS-22**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	RMT.0037 14/1/2016	2020 Q2	n/a	n/a	2020 Q4

RMT.0128 **Regular update of CS-27&29, CS-VLR**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	RMT.0128 28/9/2016	2020 Q2	n/a	n/a	2021 Q1

RMT.0134 **Regular update of rotorcraft AMC**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	RMT.0134 20/10/2010	2020 Q1	n/a	n/a	2021 Q1

RMT.0184 **Regular update of CS-E**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	RMT.0184 27/7/2015	DP (2/5/2018)	n/a	n/a	2018 Q4

RMT.0287 **Updating Part-MED, ARA.MED and ORA.AeMC, and related AMC and GM**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.3	RMT.0287 22/10/2012	2017-22 21/12/2017	2021 Q1	2023 Q1	2023 Q1

RMT.0392 **Regular update of OPS rules**

This task is de-prioritised in accordance with criteria described in Chapter 3.

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.2		tbd			

RMT.0412 **Regular update of the authority and organisation requirements pertaining to Part-FCL**

This task is de-prioritised in accordance with criteria described in Chapter 3.

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.3	RMT.0412 30/10/2012				

RMT.0424 **Regular update of Part-MED**

This task is de-prioritised in accordance with criteria described in Chapter 3.

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.3	RMT.0424 9/10/2017				

RMT.0457 **Regular update of EASA TSOs**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	RMT.0457 21/8/2015	2019 Q1	n/a	n/a	2019 Q3

RMT.0476 **Regular update of SERA implementing rules (stemming from ICAO SL)**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.4.2	RMT.0476 18/8/2017	2021 Q4	2022 Q3	2024 Q4	2024 Q4

RMT.0499 **Regular update of CS-MMEL**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	RMT.0499 9/4/2018	2018-08 22/8/2018	n/a	n/a	2019 Q3

RMT.0502 **Regular update of CS for balloons**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	tbd	tbd	n/a	n/a	tbd

RMT.0503 **Regular update of CS-APU**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	tbd	tbd	n/a	n/a	tbd

RMT.0508 **Regular update of CS-CC**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	2019 Q3	2020 Q1	n/a	n/a	2020 Q3

RMT.0509 **Regular update of CS-FC**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	2019 Q1	2019 Q2	n/a	n/a	2019 Q4

RMT.0519 **Regular update of CS-ACNS**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.4.2	RMT.0519 12/9/2015	2018-02 22/02/2018	n/a	n/a	2019 Q1

RMT.0541 **Regular update of aircraft type ratings for Part-66 aircraft maintenance licence**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.1	66.024 12/5/2009	2018 Q4	n/a	n/a	2019 Q2

RMT.0587 **Regular update of regulations regarding pilot training, testing and checking and the related oversight**

The current cycle will be completed. Further cycles are de-prioritised in accordance with the NBR roadmap.

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.3	RMT.0587 11/5/2016	30/11/2016	03/2017 11/5/2017	2018 Q4	2018 Q4

RMT.0591 **Regular update of ADR rules**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.4.3	RMT.0591 29/7/2016	2018 Q4	n/a	n/a	2019 Q3

RMT.0605 **Regular update of CS-LSA**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	RMT.0605 14/1/2016	2020 Q2	n/a	n/a	2020 Q4

RMT.0643

Regular update of AMC-20

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	RMT.0643 20/7/2015	2018-09 24/08/2018	n/a	n/a	2019 Q2

RMT.0668 **Regular update of ATCO licensing rules (IRs/AMC & GM)**

Owner	ToR	NPA*	Opinion	Commission IR	Decision
EASA FS.4.1	RMT.0668 10/8/2017	DP	n/a	n/a	2020 Q2

RMT.0673 **Regular update of CS-25**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	RMT.0673 27/4/2015	2018-05 18/6/2018	n/a	n/a	2019 Q1

RMT.0684 **Regular update of CS-P**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	tbd	tbd	n/a	n/a	tbd

RMT.0687 **Regular update of CS-23**
*Instead of the NPA, Article 15/16 will apply

Owner	ToR	NPA*	Opinion	Commission IR	Decision
EASA CT.7	RMT.0687 9/8/2017	2019 Q1	n/a	n/a	2019 Q3

RMT.0688 **Regular update of CS-SIMD**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	2020 Q1	2020 Q2	n/a	n/a	2020 Q3

RMT.0690 **Regular update of CS-STAN**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA CT.7	RMT.0690 9/6/2016	2018-10 11/9/2018	n/a	n/a	2019 Q1

RMT.0692 **Regular update of the acceptable means of compliance and guidance material on the safety (key) performance indicators**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.4.2	8/10/2015	2019 Q1	n/a	n/a	2019 Q3

RMT.0719 **Regular update of ATM/ANS rules (IRs/AMC & GM)**

Owner	ToR	NPA	Opinion	Commission IR	Decision
EASA FS.4.1	18/8/2017	DP	02/2018 8/3/2018	2020 Q1	2020 Q1

RMT.0723 **Development of AMC & GM for SKPI (ATM performance IRs)**
Reference Period 3

An accelerated rulemaking procedure will be used, involving the NPA public consultation, but will not include a regulatory impact assessment (RIA), as per Article 16 of the Rulemaking Procedure, as the options are linked with low expected impact and no controversy.

Owner	ToR	NPA*	Opinion	Commission IR	Decision
SM.1	29/6/2018	2019 Q3	n/a	n/a	2020 Q2

RMT.0729 **Regular update of Regulation 2019/xxxx (drones in the open and specific category)**

Development of IRs for UAS implementing Articles 55 to 57 of and Annex IX to Regulation (EU) 2018/1139.
Categories of UAS:
— Open category: low-risk operation not requiring authorisation or declaration before flight
— Specific operation category: medium-risk operation requiring authorisation or declaration before flight

Owner	Affected stakeholders
EASA CT.7	MSs, UAS operators (individuals and organisations), UAS manufacturers, manned aviation community, model aircraft community, ANSPs, ADRs, all airspace users

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	Art.15	-	2019 Q1	2019 Q2	2019 Q3	2020 Q4	2020 Q4

RMT.0730 **Regular update of the AMC & GM to Regulation 2019/xxxx (drones in the open and specific category)**

Development of IRs for UAS implementing Articles 55 to 57 of and Annex IX to Regulation (EU) 2018/1139.
Categories of UASs:
— Open category: low-risk operation not requiring authorisation or declaration before flight
— Specific operation category: medium-risk operation requiring authorisation or declaration before flight

Owner	Affected stakeholders
EASA CT.7	MSs, UAS operators (individuals and organisations), UAS manufacturers, manned aviation community, model aircraft community, ANSPs, ADRs, all airspace users

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A-	ST	-	2019 Q1	2019 Q2	n/a	n/a	2019 Q3

8 Level playing field

The actions in this chapter are driven principally by the need to ensure that all players in a certain segment of the aviation market can benefit from the same set of rules, thereby promoting fair competition and free movement of persons and services. This is considered of particular importance for technological or business advancement where common 'rules of the game' need to be defined for all actors. This also includes the need for international harmonisation as well as the need to keep pace with ICAO amendments. These projects will also contribute to maintaining or even increasing the current level of safety.

8.1 Aerodrome operators

Issue/rationale

This regulatory requirement is stemming from the Basic Regulation.

What we want to achieve

The changes are expected to ensure compliance with ICAO SARPs on the provision of AMS, maintain a uniform and high level of safety in the MSs and ensure a harmonised approach which will support the free movement of services within the MSs and reduce the administrative burden especially for those providers providing AMS in different MSs.

How we monitor improvement

The EASA ABs will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0485 **Requirements for apron management services at ADRs**

The changes proposed allow the AMS to be provided either by the ADR operator or by the ANSP (or any subcontractor to them). The changes are expected to ensure compliance with ICAO SARPs on the provision of AMS, maintain a uniform and high level of safety in the MSs and ensure a harmonised approach which will support the free movement of services within the MSs and reduce the administrative burden especially for those providers providing AMS in different MSs. Opinion 02/2014 will be reviewed in 2019 and updated as necessary to bring in line with the NBR.

Owner	Affected stakeholders
EASA FS.4.3	ADR operators and APs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0485 and 0465 20/7/2012	2013-24 18/12/2013	02/2014 24/9/2014	tbd	tbd

8.2 Airlines (AOC holders)

Issue/rationale

Rules may need to be harmonised within the EU as well as with the main international trade partners in order to either ensure fair competition or facilitate the free movement of goods, persons and services.

What we want to achieve

Harmonise requirements where this ensures fair competition or facilitates the free movement of goods, persons and services.

How we monitor improvement

The EASA ABs will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0278 **Importing of aircraft from other regulatory systems and Part 21 Subpart H review**

Develop criteria for importing of aircraft from other regulatory systems and Part 21 Subpart H review.

This task is de-prioritised in accordance with criteria described in Chapter 3.

Owner	Affected stakeholders
EASA FS.1	Air operators and CAs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0278 1/2/2013	2016-08 7/9/2016			

RMT.0312 **Review of standard weight**

Transposed task from the JAA to review the standard weights due to demographic changes. Review of IRs/AMC & GM based on the weight survey commissioned by EASA.

This task is de-prioritised in accordance with criteria described in Chapter 3.

Owner	Affected stakeholders
EASA FS.2	CAT and NCC operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B3	ST	-					

RMT.0573 **Fuel planning and management**

Review and update the EU fuel rules, taking into account ICAO amendments and a related SR, and providing for operational flexibility.

Owner	Affected stakeholders
EASA FS.2	Air operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0573 27/4/2015	2016-06 15/7/2016	2020 Q1	2022 Q1	2022 Q1

RMT.0577 **Extended diversion time operations**

To harmonise the extended diversion time operation (EDTO) rules with the related ICAO SARPs and modernise the EASA ETOPS rules.

This task is de-prioritised in accordance with criteria described in Chapter 3.

Owner	Affected stakeholders
EASA FS.2	CAT aeroplane operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B3	ST	-					

RMT.0601 **Transposition of provisions on electronic flight bag from ICAO Annex 6**

Transpose ICAO SARPs in EU rules and update the EU rules in line with the latest EFB developments.

Owner	Affected stakeholders
EASA FS.2	CAs and air operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0601 & 0602 5/10/2015	2016-12 4/10/2016	10/2017 18/12/2017	2019 Q2	2019 Q2

Safety Promotion

SPT.097 **Promote the new European provisions on fuel planning and management**

The objective is to complement the new regulatory package on fuel planning and management with relevant safety promotion material. The event theme changes every year.

Owner	Activity sector	Deliverable	Date
EASA SM.1	ALL	Safety Promotion material	2019

8.3 Manufacturers (design and production)

Issue/rationale

Rules may need to be harmonised within the EU as well as with the main international trade partners in order to either ensure fair competition or facilitate the free movement of goods, persons and services.

What we want to achieve

Harmonise requirements where this ensures fair competition or facilitates the free movement of goods, persons and services.

How we monitor improvement

The EASA ABs will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0252 **Instructions for continued airworthiness (ICA)**

Subtask 1:
— Definition and identification of ICA (to be provided during the certification process)
— Completeness of ICA (during the certification process)
— LOI of the CA (during the certification process)
Subtask 2:
— Availability of ICA (to owners, operators, MOs, etc.)
Subtask 3:
MRB Scheduling Information (guidance on the MRB process) -> cancelled Subtask 4:
— Acceptance/approval of ICAs by other than the authority.
Subtask 5:
— Certification maintenance requirements.
With regard to Subtasks 1, 2 and 4, EASA developed an NPA, which was published in 2018. Following the NPA public consultation, EASA will develop an opinion proposing amendments to Part 21 and Regulation (EU) No 1321/2014 (Continuing Airworthiness).
Subtask 5, is completed with the amendment to CS-25 (ED Decision 2017/018/R issued on 30 of August 2017)

Owner	Affected stakeholders
EASA CT.7	DAHs and POA holders

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0252 15/05/2013	2016-15 23/11/2016 2018-01 29/1/2018	n/a 2019 Q3	n/a 2021 Q3	2017/018/R 30/8/2017 2021 Q3

RMT.0348 **Flights related to design and production activities**

To establish IRs and associated AMC & GM on operational requirements for flights related to design and production activities ('manufacturers flights').

This task is put on hold until further notice.

Owner	Affected stakeholders
EASA FS.2	DOA and POA holders

RMT.0384 **Enable open rotor engine & installation**

A new engine concept is being proposed to power future large transport aircraft as a means of improving aircraft fuel burn and emissions. This concept is known as the 'open rotor engine'.
The objective of this task is to identify and recommend harmonised draft requirements and advisory material for CS-E, 14 CFR Part 33, CS-25 and 14 CFR Part 25 to address the novel features inherent in open rotor engine designs and their integration with the aircraft.

Consideration should also be given to the development of new requirements to provide the required safety objectives based on the unique nature of the open rotor configuration. These new provisions and associated AMC material should ensure that the safety levels of open rotor engine installations are consistent with those of the existing turbofan fleet.

Harmonisation with 14 CFR Part 25 and 33 (and/or Special Conditions) is an objective of this RMT.
EASA will issue a second NPA on this RMT in Q2/2021. EASA plans to issue its decisions on the basis of the first and second NPA.

Owner			Affected stakeholders				
EASA CT.7			Engine DOA andPOA holders				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B-	ST	✓	RMT.0384 14/3/2011	2015-22 21/12/2015	n/a	n/a	n/a
				2021 Q2	n/a	n/a	2022 Q2

RMT.0561 **Update of AMC-20 'in-flight entertainment (IFE), lead-free soldering, harmonisation of safety and software criteria'**

The objective of this task is to address issues related to those parts of AMC-20 that contain provisions on airworthiness for various systems that can be installed on different aircraft categories, namely related to the criteria for safety assurance and software development, lead-free soldering and IFE systems.

Owner			Affected stakeholders				
EASA CT.7			AOC holders, POA holders of aircraft and equipment				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B	ST	-	RMT.0561 20/7/2015	2017-09 22/6/2017	n/a	n/a	2019 Q1

RMT.0695 **Non-ETOPS operations using performance class A aeroplanes with a MOPSC of 19 or less**

The objective is to accommodate new business-jet aeroplanes operated by European CAT operators in the 180' non-ETOPS category.

Owner			Affected stakeholders				
EASA FS.2			Air operators (CAT) and POA holders				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B-	ST	-	RMT.0695 15/12/2015	2017-15 25/9/2017	2019 Q1	2021 Q1	2021 Q1

8.4 Operators other than airlines (AOC holders)

Issue/rationale

Rules may need to be harmonised within the EU as well as with the main international trade partners in order to either ensure fair competition or facilitate the free movement of goods, persons and services.

What we want to achieve

Harmonise requirements where this ensures fair competition or facilitates the free movement of goods, persons and services.

How we monitor improvement

The EASA ABs will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0300 **Operations with airships**

Development of rules for the operation of airships.

This task is put on hold until further notice.

Owner	Affected stakeholders
EASA FS.2	Airship operators and airship DOA/POA holders

RMT.0318 **Single-engine helicopter operations**

Review the applicable rules and the associated AMC and GM in order to re-evaluate:
— Restrictions on piston engine helicopters to operate over hostile environment;
— Restrictions on single-engine helicopters to operate over congested environment.

This task is de-prioritised in accordance with criteria described in Chapter 3.

Owner	Affected stakeholders
EASA FS.2	Helicopter operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0318 6/2/2018				

RMT.0492 **Development of FTL for CAT operations of emergency medical services (EMS) by aeroplanes**

Harmonised and state-of-the-art rules for EMS.
This RMT will continue only in the field of EMS with aeroplanes (AEMS).
Development of FTL for HEMS will be addressed in RMT.0494.

Owner	Affected stakeholders
EASA FS.2	CAT aeroplane operators performing EMS

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	18/4/2012	2017-17 30/10/2017	2021 Q3	2023 Q3	2023 Q3

RMT.0493 **Update and harmonisation of FTL for CAT by aeroplane for air taxi operations and single-pilot operations taking into account operational experience and recent scientific evidence**

Develop harmonised and state-of-the-art-rules for air taxi and single-pilot operations.

Owner	Affected stakeholders
EASA FS.2	CAT aeroplane operators

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B-	ST	-	RMT.0493 21/8/2012	2017-17 30/10/2017	2021 Q3	2023 Q3	2023 Q3

RMT.0495 **FTL requirements for aeroplane commercial operations other than CAT**

Establish harmonised and state-of-the-art rules for aeroplane commercial operations other than CAT.

Owner	Affected stakeholders
EASA FS.2	AOC holders

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
A2	ST	-	2020 Q2	2021 Q2	2023 Q1	2025 Q1	2025 Q1

8.5 Maintenance organisations — CAMOs

Issue/rationale

Rules may need to be harmonised within the EU as well as with the main international trade partners in order to either ensure fair competition or facilitate the free movement of goods, persons and services.

What we want to achieve

Harmonise requirements where this ensures fair competition or facilitates the free movement of goods, persons and services.

How we monitor improvement

The EASA ABs will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0096 **Amendments (IR and AMC & GM) in line with the process of granting foreign Part-145 approvals**
Streamline the approval process.

Owner			Affected stakeholders				
EASA FS.1			AMOs (Part-145)				
PIA	**Proc**	**3rdC**	**ToR**	**NPA**	**Opinion**	**Commission IR**	**Decision**
B-	ST	-	RMT.0096 (145.023) 17/6/2008	2013-12 11/7/2013	n/a	n/a	2020 Q3

8.6 Medical requirements

Issue/rationale

Rules may need to be harmonised within the EU as well as with the main international trade partners in order to either ensure fair competition or facilitate the free movement of goods, persons and services.

What we want to achieve

Harmonise requirements where this ensures fair competition or facilitates the free movement of goods, persons and services.

How we monitor improvement

The EASA ABs will give feedback on the effectiveness of the activities.

How we want to achieve it: actions

Rulemaking

RMT.0707 Medical Regulation — combine Part-MED and Part ATCO MED

The main benefits are that the medical assessor (MA) within the authorities, and the aero-medical examiner (AME) and aero-medical centres (AeMC) only need to use one common regulatory document, encouraging harmonisation and removing duplication between Part-MED and Part ATCO.MED. Consequently, the regulation should be easier to keep up to date. Moreover, currently AMEs and AeMCs require duplicate certifications on both Part-MED and Part ATCO.MED.
The task may also consider alleviations to the existing pilot age limitation by applying a more evidence-based medical approach, subject to existing scientific evidence available as a results of EASA commissioned study on pilot age limitations, complemented with other scientific research on the same topic.

This task is de-prioritised in accordance with criteria described in Chapter 3.

Owner	Affected stakeholders
EASA FS.3	AMEs, AeMCs, pilots and ATCOs

PIA	Proc	3rdC	ToR	NPA	Opinion	Commission IR	Decision
B5	ST	-					

Appendix A: Opinions and Decisions published in 2018

Title of official publication	Task Number	Task Title	Delivery Date ToR	Delivery Date Decision / Opinion	Duration (years)
2018/001/R	RMT.0595	Technical review and regular update of learning objectives and syllabi for commercial licences (IR)	11/03/2015	08/02/2018	2,9
2018/002/R	RMT.0457	Regular update of EASA TSOs	21/08/2015	19/02/2018	2,5
2018/003/R	RMT.0674	Revision of the European operational rules for balloons	23/04/2015	23/03/2018	2,9
2018/004/R	RMT.0674	Revision of the European operational rules for balloons	23/04/2015	23/03/2018	2,9
2018/005/R	RMT.0647	Loss of control or loss of flight path during go-around or climb	06/07/2015	27/03/2018	2,7
2018/005/R	RMT.0673	Regular update of CS-25	27/04/2015	27/03/2018	2,9
2018/006/R	RMT.0196	Improve flight simulation training devices (FSTDs) fidelity	15/07/2016	03/05/2018	1,8
2018/007/R	RMT.0120	Helicopter ditching and water impact occupant survivability	24/10/2012	25/06/2018	5,7
2018/007/R	RMT.0128	Regular update of CS-27&29, CS VLR	29/09/2016	25/06/2018	1,7
2018/007/R	RMT.0608	Rotorcraft gearbox loss of lubrication	22/05/2014	25/06/2018	4,1
2018/008/R	RMT.0456	Integrated modular avionics (IMA)	24/10/2013	27/08/2018	4,8
2018/009/R	RMT.0657	Review of the Aircrew Regulation in order to provide a system for private pilot training outside approved training organisations, and of the associated acceptable means of compliance and guidance material	13/10/2015	14/09/2018	2,9
Opinion 01/2018	RMT.0230	Introduction of a regulatory framework for the operation of drones	22/12/2016	06/02/2018	1,1
Opinion 02/2018	RMT.0445	Technical requirements and operational procedures for airspace design, including flight procedure design	14/07/2014	08/03/2018	3,7
Opinion 02/2018	RMT.0477	Technical requirements and operational procedures for aeronautical information services and aeronautical information management	11/10/2013	08/03/2018	4,4
Opinion 02/2018	RMT.0719	Regular update of ATM/ANS rules (IR/AMC/GM)	18/08/2017	08/03/2018	0,6
Opinion 03/2018	RMT.0464	Requirements for air traffic services	09/07/2014	22/05/2018	3,9

Please note:

- Regular updates have varying cycles and may have produced more than 1 Decision and / or Opinion;
- RMT.0657 is a Decision that was published following the adoption of the relevant IR amendment;
- Like for the “regular updates” some tasks have produced more than 1 Decision and / or Opinion; therefore please consult EPAS for detailed information.

Opinions adopted by the Commission in 2018, including duration (ToR to Opinion to adoption)

			DATE OF PUBLICATION			DURATION (years)		
Task Number	**Task Title**	**Opinion ref**	**ToR**	**Opinion**	**Commission IR**	**Opinion**	**Commission IR**	**Total**
RMT.0135	B2L and L Part-66 aircraft maintenance licences	05/2015	15/04/2011	22/06/2015	01/08/2018	4.19	3.11	7.30
RMT.0697	Part-66 basic examinations performed by Part-147 maintenance training organisations (MTOs)	07/2015	09/09/2015	12/10/2015	01/08/2018	0.09	2.81	2.90
RMT.0371	TAWS operation in IFR and VFR and TAWS for turbine-powered aeroplanes under 5 700 kg MTOM able to carry six to nine passengers	15/2016	31/01/2014	16/12/2016	01/08/2018	2.88	1.62	4.50
RMT.0555	Control of suppliers	12/2013	15/04/2011	10/12/2013	01/08/2018	2.66	4.64	7.30
RMT.0674	Revision of the European operational rules for balloons	1/2016	23/04/2015	07/01/2016	13/03/2018	0.71	2.18	2.89
RMT.0587	Regular update of regulations regarding pilot training, testing and checking and the related oversight	16/2016	11/05/2016	19/12/2016	01/08/2018	0.61	1.62	2.22
RMT.0587	Regular update of regulations regarding pilot training, testing and checking and the related oversight	3/2017	11/05/2016	11/05/2017	01/08/2018	1.02	1.20	2.22
RMT.0657	Review of the Aircrew Regulation in order to provide a system for private pilot training outside approved training organisations, and of the associated AMC/GM	11/2016	13/10/2015	07/09/2016	01/08/2018	0.90	1.90	2.80
RMT.0591	Regular update of aerodrome rules	3/2016	10/04/2014	29/03/2016	15/03/2018	1.97	1.96	3.93
RMT.0639	Performance-based navigation implementation in the European air traffic management network	10/2016	25/06/2014	28/07/2016	01/08/2018	2.09	2.01	4.10
RMT.0700	Germanwings task force	14/2016	20/04/2016	09/12/2016	26/10/2018	0.64	1.88	2.52

Appendix B: Deliverables expected in 2019

Terms of Reference (ToRs):

Driver	Baseline Quarter	Task Number	Task Title	Count
Safety	1	RMT.0708	Controlled Flight into Terrain (CFIT) prevention with Helicopter Terrain Avoidance Warning Systems (HTAWS)	1.0
	3	RMT.0127	Pilot compartment view	1.0
	3	RMT.0194	Modernising the European pilot training system and improve the supply of competent flight instructors	1.0
	3	RMT.0376	Anti-collision systems on aircraft other than aeroplanes in excess of 5 700 kg or 19 pax	1.0
	3	RMT.0709	Prevention of catastrophic accidents due to rotorcraft hoists issues	1.0
	3	RMT.0710	Improvement in the survivability of rotorcraft occupants in the event of a crash	1.0
	3	RMT.0724	Rotorcraft FCOM	1.0
	3	RMT.0725	Rotorcraft chip detection system	1.0
	3	RMT.0727	Implementing NBR into Part 21	1.0
	4	RMT.0711	Reduction in accidents caused by failures of critical rotor and rotor drive components through improved Vibration Health Monitoring Systems	1.0
Efficiency / Proportionality	1	RMT.0509	Regular update of CS-FC	1.0
	1	RMT.0729	Regular update of Regulation 2019/xxxx (drones in the open and specific category)	1.0
	1	RMT.0730	Regular update of the AMC/GM to Regulation 2019/xxxx (drones in the open and specific category)	1.0
	2	RMT.0714	Enable the safe introduction of rotorcraft Fly-by-Wire technology	1.0
	3	RMT.0508	Regular update of CS-CC	1.0
	3	RMT.0682	Implementation of the regulatory needs of the SESAR common projects	1.0
Level Playing field	2	RMT.0728	Organisation requirements for Groundhandling service providers / Development of requirements for Groundhandling operations	1.0
TOTAL				17.0

Notice of Proposed Amendments (NPAs):

Driver	Baseline Quarter	Task Number	Task Title	Count
Safety	1	RMT.0070	Additional airworthiness specifications for operations: Fire hazard in Class D cargo compartments	1.0
	1	RMT.0196	Improve flight simulation training devices (FSTDs) fidelity	1.0
	1	RMT.0251	Embodiment of safety management system requirements into Commission Regulations (EU) Nos 1321/2014 and 748/2012	1.0
	1	RMT.0262	Embodiment of level of involvement (LOI) requirements into Part-21	1.0
	1	RMT.0400	Amendment of requirements for flight recorders and underwater locating devices	1.0
	1	RMT.0648	Aircraft cybersecurity	1.0
	1	RMT.0713	Reduction in human factors caused rotorcraft accidents that are attributed to the rotorcraft design	1.0
	2	RMT.0720	Cybersecurity risks	1.0
	2	RMT.0379	All-weather operations	1.0
	3	RMT.0249	Recorders installation and maintenance thereof — certification aspects	1.0
	4	RMT.0708	Controlled Flight into Terrain (CFIT) prevention with Helicopter Terrain Avoidance Warning Systems (HTAWS)	1.0
	4	RMT.0727	Implementing NBR into Part 21	1.0
Efficiency / Proportionality	1	RMT.0457	Regular update of EASA TSOs	1.0
	1	RMT.0591	Regular update of aerodrome rules	1.0
	1	RMT.0692	Regular update of the acceptable means of compliance and guidance material on the safety (key) performance indicators	1.0
	2	RMT.0031	Regular update of AMC/GM to Part-21	1.0
	2	RMT.0230	Introduction of a regulatory framework for the operation of drones	1.0
	2	RMT.0509	Regular update of CS-FC	1.0
	2	RMT.0524	Data link services	1.0
	2	RMT.0673	Regular update of CS-25	1.0
	2	RMT.0712	Enhancement of the safety assessment processes for rotorcraft designs	1.0
	2	RMT.0730	Regular update of the AMC/GM to Regulation 2019/xxxx (drones in the open and specific category)	1.0
	3	RMT.0230	Introduction of a regulatory framework for the operation of drones	1.0
	3	RMT.0723	Development of AMC/GM for SKPI (ATM performance IR)	1.0
	4	RMT.0678	Addressing other FCL GA issues (FCL 'Light')	1.0
Environment	3	RMT.0513	Update CS 36 to refer to the environmental technical manual on noise certification as amended after CAEP	0.5
	3	RMT.0514	Implementation of the CAEP amendments	0.5
TOTAL				26.0

Decisions:

Driver	Baseline Quarter	Task Number	Task Title	Count
Safety	1	RMT.0249	Recorders installation and maintenance thereof — certification aspects	1.0
	2	RMT.0049	Specific risk and standardised criteria for conducting aeroplane-level safety assessments of critical systems	1.0
	3	RMT.0570	Reduction of runway excursions	1.0
	3	RMT.0589	Rescue and firefighting services (RFFS) at aerodromes	1.0
	3	RMT.0648	Aircraft cybersecurity	1.0
	4	RMT.0713	Reduction in human factors caused rotorcraft accidents that are attributed to the rotorcraft design	1.0
	3	RMT.0106	Certification specifications and guidance material for maintenance certifying staff type rating training	1.0
	4	RMT.0400	Amendment of requirements for flight recorders and underwater locating devices	1.0
	4	RMT.0469	Assessment of changes to functional systems by service providers in ATM/ANS and the oversight of these changes by competent authorities	1.0
Efficiency / Proportionality	1	RMT.0519	Maintaining CS-ACNS	1.0
	1	RMT.0561	Update of AMC-20 — 'In-flight entertainment (IFE), lead-free soldering, harmonisation of safety and software criteria'	1.0
	1	RMT.0673	Regular update of CS-25	1.0
	1	RMT.0689	PART-21 proportionality	1.0
	1	RMT.0690	Regular update of CS-STAN	1.0
	1	RMT.0721	RAMP Deregulation	1.0
	2	RMT.0643	Regular update of AMC-20	1.0
	3	RMT.0499	Regular update of CS-MMEL	1.0
	3	RMT.0230	Introduction of a regulatory framework for the operation of drones	1.0
	3	RMT.0457	Regular update of EASA TSOs	1.0
	3	RMT.0591	Regular update of aerodrome rules	1.0
	3	RMT.0687	Regular update of CS 23	1.0
	3	RMT.0692	Regular update of the acceptable means of compliance and guidance material on the safety (key) performance indicators	1.0
	3	RMT.0730	Regular update of the AMC/GM to Regulation 2019/xxxx (drones in the open and specific category)	1.0
	4	RMT.0509	Regular update of CS-FC	1.0
TOTAL				24.0

Opinions:

Opinion	DA / IA	Task Number	Driver	Task Title	Baseline Quarter
1	IA	RMT.0249	Safety	Recorders installation and maintenance thereof — certification aspects	1
		RMT.0271		In-flight recording for light aircraft	
		RMT.0296		Review of aeroplane performance requirements for CAT operations	
		RMT.0695	Level Playing field	Non-ETOPS operations using performance class A aeroplanes with an MOPSC of 19 or less	
2	IA	RMT.0654	Efficiency / Proportionality	Revision of the balloon licensing requirements	
		RMT.0677		Easier access of General Aviation (GA) pilots to instrument flight rules (IFR) flying	
		RMT.0701		Revision of the sailplane licensing requirement	
3	IA	RMT.0703	Safety	Runway Safety	2
4	IA	RMT.0570		Reduction of runway excursions	3
		RMT.0070		Additional airworthiness specifications for operations: Fire hazard in Class D cargo compartments	
5	IA	RMT.0599		Update of ORO.FC	
6	DA+IA	RMT.0252	Level Playing field	Instructions for continuing airworthiness (ICA)	
		RMT.0018	Efficiency / Proportionality	Installation of parts and appliances that are released without an EASA Form 1 or equivalent	
7	IA	RMT.0729		Regular update of Regulation 2019/xxxx (drones in the open and specific category)	4

Decisions pending IR:

Driver	Baseline Quarter	Task Number	Task Title	Count
Safety	2	RMT.0069	Seat crashworthiness improvement on large aeroplanes — Dynamic testing 16g	1.0
	2	RMT.0071	Additional airworthiness specifications for operations: Thermal/acoustic insulation material	1.0
	2	RMT.0188	Update of EASA FCL implementing rules	1.0
	2	RMT.0262	Embodiment of level of involvement (LOI) requirements into Part-21	1.0
	2	RMT.0516	Update of the rules on air operations (Air OPS Regulation - all Annexes & related AMC/GM)	1.0
	2	RMT.0581	Loss of control prevention and recovery training	1.0
	2	RMT.0700	Germanwings task force	1.0
	3	RMT.0393	Maintenance check flights (MCFs)	1.0
Efficiency / Proportionality	1	RMT.0445	Technical requirements and operational procedures for airspace design, including flight procedure design	1.0
	1	RMT.0464	Requirements for air traffic services	1.0
	1	RMT.0477	Technical requirements and operational procedures for aeronautical information services and aeronautical information management	1.0
	2	RMT.0230	Introduction of a regulatory framework for the operation of drones	1.0
	2	RMT.0287	Updating Part-MED and related AMC and GM	1.0
	2	RMT.0352	Non-commercial operations of aircraft listed in the operations specifications (OpSpecs) by an AOC holder	1.0
	2	RMT.0547	Task force for the review of Part-M for General Aviation (PHASE II)	1.0
	2	RMT.0679	Revision of surveillance performance and interoperability (SPI)	1.0
	2	RMT.0639	Performance-based navigation implementation in the European air traffic management network	1.0
	2	RMT.0698	Revision of the operational rules for sailplanes	1.0
Level Playing field	2	RMT.0601	Transposition of provisions on electronic flight bag from ICAO Annex 6	1.0
	3	RMT.0276	Technical records	1.0
Environment	1	RMT.0560	Halon — Update of Part-26 to comply with ICAO standards	1.0
TOTAL				21.0

Appendix C: New actions, deleted actions and negative priorities overview

New tasks

Type	Strategic Priorities	Driver	Task Number	Task Title	Chapter
Regulation	Regular Update	Efficiency/Proportionality	RMT.0723	Development of AMC & GM for SKPI (ATM performance IR)	7.11.0
	standard - high	Safety	RMT.0724	Rotorcraft FCOM	5.3.0
	standard - high		RMT.0725	Rotorcraft chip detection system	5.3.0
	standard - high		RMT.0726	Rotorcraft occupant safety in event of a bird strike	5.3.0
	strategic		RMT.0727	Implementing NBR into Part 21	5.2.8
	strategic	Level Playing field	RMT.0728	Organisation requirements for Groundhandling service providers	5.2.5
	strategic	Efficiency/Proportionality	RMT.0729	Regular update of Regulation 2019/xxxx (drones in the open and specific category)	7.11.0
	strategic		RMT.0730	Regular update of the AMC/GM to Regulation 2019/xxxx (drones in the open and specific category)	7.11.0
Research/Study	strategic	Safety	RES.021	SESAR 2020 research projects aiming to prevent mid-air collision risks	5.4.4
	strategic		RES.022	SESAR 2020 research projects aiming to safely integrate drones in the airspace	5.5.1
	strategic		RES.023	U-space exploratory research launched by SESAR JU as a as steps towards realising the European Commission's U-space vision for ensuring safe and secure access to airspace for drones	5.5.1
Safety Promotion	strategic	Safety	SPT.097	Promote the new European provisions on fuel planning and management	8.2.0
	strategic		SPT.098	European Safety Promotion Task on Rotorcraft	5.3.0
	strategic		SPT.099	Promote of helicopter hoists	5.3.0
	strategic		SPT.100	Safety Promotion on Disruptive Passengers	5.6.2
	strategic		SPT.101	Develop new Safety Promotion material on high profile commercial flight operations safety issues	5.2.8
	strategic		SPT.102	Develop new Safety Promotion material on high profile aerodrome and ground handling safety issues	5.2.5
	strategic		SPT.103	Develop new Safety Promotion material on high profile ATM safety issues	5.2.8
	strategic		SPT.104	Develop new Safety Promotion material on high profile maintenance safety issues	5.2.4
	strategic		MST.028	Member States to establish and maintain a State Plan for Aviation Safety	5.1.1
	strategic		MST.029	Implementation of SESAR Runway safety solutions	5.2.2
	strategic		MST.030	Safety Promotion on Disruptive Passengers	5.2.3
	strategic		MST.031	Implementation of SESAR solutions aiming to facilitate safe IFR operations	5.3.0

Deleted tasks

Strategic Priorities	Task Number	Task Title	Driver	Reason
standard	EVT.0005	Evaluation of Part-145	Efficiency / Proportionality	Given the fact that changes are still planned to be introduced in Part-145 (i.e. SMS), the Part-145 EVAL action from the EPAS has been removed in order to first let the planned changes materialise.
standard	RMT.0209	Contracting of continuing airworthiness management activities	Level Playing field	This task has been deleted as a result of the strategic priorities identified in the EPAS to prioritise the work. An Opinion will be issued to close the task, which will include the analysis of the impacts of this deletion.

De-prioritised tasks

Driver	Task Number	Task Title	Domains
Safety	RMT.0116	Real weight and balance of an aircraft	IAW
	RMT.0217	CAMOs' and Part-145 organisations' responsibilities	CAW
	RMT.0486	Alignment with ICAO on ATCO fatigue management provisions	ATM/ANS std
	RMT.0521	Airworthiness review process	CAW
	RMT.0586	Tyre pressure monitoring system	IAW
	RMT.0706	Update of authority and organisation requirements	SM
	RMT.0722	Provision of aeronautical data by the aerodrome operator	ADR
Efficiency / Proportionality	RMT.0161	Conformity assessment	ATM/ANS std
	RMT.0190	Requirements for relief pilots	Aircrew
	RMT.0281	New training/teaching technologies for maintenance staff	CAW
	RMT.0392	Regular updates of OPS rules	OPS
	RMT.0412	Update of the authority and organisation requirements pertaining to Part-FCL	Aircrew
	RMT.0424	Regular update of Part-MED	Aircrew
	RMT.0587	Regular update of regulations regarding pilot training, testing and checking and the related oversight	Aircrew
Level Playing field	RMT.0097	Functions of B1 and B2 support staff and responsibilities	CAW
	RMT.0278	Importing of aircraft from other regulatory system, and Part-21 Subpart H review	CAW
	RMT.0312	Review of standard weight	OPS
	RMT.0318	Single-engine helicopter operations	OPS
	RMT.0577	Extended diversion time operations	OPS
	RMT.0707	Medical Regulation – Combine and harmonise Part-MED and ATCO MED	Aircrew

Appendix D: European Commission's priorities and EASA's Strategic Plan

EASA is a European Union body, therefore its planning exercise must be aligned to the 10 key priorities defined by the Juncker's Commission at the beginning of its mandate, which are the following:

1. Jobs, Growth and Investment
- ✓ Creating jobs and boosting growth

2. Digital Single Market
- ✓ Bringing down barriers to unlock online opportunities

3. Energy Union and Climate
- ✓ Making energy more secure, affordable and sustainable

4. Internal Market
- ✓ Stronger industry, fewer national trade barriers, stricter business ethics

5. Economic and Monetary Union
- ✓ A deeper and fairer economic and monetary Union

6. EU-US Free Trade
- ✓ Reaching a reasonable and balanced trade agreement

7. Justice and Fundamental Rights
- ✓ Upholding shared values, the rule of law and fundamental rights

8. Migration
- ✓ Towards a European agenda on Migration

9. EU as a Global Actor
- ✓ A stronger global actor

10. Democratic Change
- ✓ Making the EU more democratic

Out of the above priorities for the transport sector, Commissioner Bulc identified the following as key priorities:
- Jobs, Growth and Investment
- Internal Market
- EU as a Global Actor
- Democratic Change

Cascading from these priorities, the Transport Agencies of the EC have been assigned the following objectives:
- Become global leaders
- One-stop shop for all domain-related matters
- Efficiency effort to be made, in particular on the simplification of processes
- Support to the industry
- Strategic alignment with the Juncker Objectives
- Innovative funding schemes

EASA reviewed its planning framework taking into account all the elements above, aiming for a clear cascade from the Commisions's vision to its objectives and actions. This lead to the development of 6 strategic statements that represent the goals to be achieved by . The strategic statements respond to the inputs analysed by EASA as well as the objectives set by Commissioner Bulc.

1. Our ambition is to be the foremost Aviation Safety Agency in the world
(Linked to the Junker objective: EU as Global Actor)

2. EASA works on safety, in a proactive manner, helped by an enhanced safety analysis capability
(Linked to the Junker objective: EU as Global Actor)

3. One system based on partners working in an integrated, harmonised and coordinated manner
(Linked to the Junker objective: Jobs, Growth and Investment)

4. EASA builds on committed, agile and talented staff
(Linked to the Junker objective: EU as Global Actor)

5. Rules are smart, proportionate and contribute to the competitiveness of the Industry
(Linked to the Junker objective: Jobs, Growth and Investment)

6. EASA will continue to be independent from political or economic influence in all its safety actions
(Linked to the Junker objective: EU as Global Actor)

Strategic objectives

Each strategic statement has a set of underlying strategic objectives which are further described through the expected outcomes and a brief description of the actions EASA will take to achieve the objectives. The strategic actions will be monitored through specific KPIs that together with the ones used to monitor the recurrent activities of EASA will constitute the 'operational dashboard'.

Strategic statement		Objective	Outcome	Action
1. Our ambition is to be the foremost Aviation Safety Agency in the world	1.1	Facilitating competitiveness, innovation and emerging technologies which generate European success	Achieving proportionate and performance-based regulatory actions that efficiently maintain safety, stimulate jobs, growth and European industry	EASA increases safety and environmental performance by facilitating new technology deployment, impact assessment, analysis and mitigation of risks, and ex post evaluations.
	1.2	Sustaining worldwide recognition for the European aviation safety system	Recognition and respect as a strong partner with integrity, transparency and professional excellence	EASA shall implement an 'international strategy', promote European aviation standards and continue improving global safety and environmental protection levels.
2. EASA works on safety, in a proactive manner, helped by an enhanced safety analysis capability.	2.1	Applying an advanced, pro-active and systematic approach to aviation safety	In consultation with NAAs and Industry, develop a Safety Management capability that can programme and deliver effective and robust safety actions.	Within the framework of the European Plan for Aviation Safety (EPAS), EASA shall assess, integrate and programme actions that result in Safety Promotion, Focused Oversight or Rulemaking.
	2.2	Using information technology to the benefit of the European Safety Management process	Managerial and technical processes and interactions with stakeholders are simplified, efficient and information is accessible to multiple parties	Consistent with strategic priorities, EASA shall implement integrated safety and environmental programming. Taking a holistic approach, EASA shall manage the analysis of complex safety data efficiently and effectively. EASA shall follow an 'Information Security Roadmap' to protect its technical infrastructure.
3. One system based on partners working in an integrated, harmonised and coordinated manner	3.1	Identifying safety deficiencies and taking corrective actions in a common, coordinated and rapid manner	A comprehensive risk-based oversight system provides safety performance monitoring of aviation activities.	EASA shall develop and implement one harmonised risk-based oversight system capable of targeted and timely responses to identified risks.
	3.2	Integrating technical resource management at European level for efficiency, effectiveness and flexibility	Competent well-trained technical experts can be deployed in a coordinated manner to support safety activities and NAAs throughout Europe.	EASA shall harmonise the training and assessment standards for aviation authority staff through the Common Training Initiative Group (CTIG) and through training course approvals in accordance with Article 92 of EASA's Basic Regulation 2018/1139. EASA shall lead the integration of planning, deployment and support for the 'common pool' of experts.
	3.3	Establishing a new resource scheme to sustain the European aviation safety system	One new harmonised resource management mechanism that forecasts revenues and reliably provides funds over the complete business cycle. Cooperative oversight and pooling of experts at EU level will also ensure a proper use of funds to sustain the European Aviation Safety System.	EASA shall investigate, report and recommend innovative and proportionate new funding mechanisms.

Strategic statement		Objective	Outcome	Action
4. EASA builds on committed, agile and talented staff	4.1	Empowering individuals to develop, engage and grow so as to deliver on our priorities	Clear, concise and complete HR policies, procedures and practices that include encompassing recognition, training and development	For all activities, EASA shall ensure regular tailored job evaluations, professional growth opportunities and succession planning for its staff. EASA shall train its staff based on training programmes and prioritised needs assessments.
	4.2	Creating a quality work environment that helps staff succeed	Facilities that encourage team work, cooperation and collaboration and encompass a paperless workplace with up-to-date support tools	EASA shall provide customised work premises and tools for active staff collaboration and support.
	4.3	Pledging to improve, refine and simplify processes, procedures and practices so as to drive efficiency.	Stakeholders receive an efficient, straightforward, quality service at a high level of availability and low level of bureaucracy.	EASA shall implement improvements, track progress, benchmark and review performance; with particular attention to developing stakeholders' two-way feedback.
5. Rules are smart, proportionate and contribute to the competitiveness of the Industry.	5.1	Optimising Rulemaking activities to ensure a consistent, efficient and effective approach	Consultation mechanisms and rules, opinions and guidance that are objective, understandable and responsive to demand	EASA shall monitor the rulemaking process, in order to ensure a consistent, efficient, and effective approach. In addition EASA shall consistently conduct preliminary impact assessments.
	5.2	Assessing implementation of Rules and Regulations to ensure they are effective, proportionate and remain relevant	A smart feedback loop constantly improving aviation rules and regulations.	In consultation with stakeholders, EASA shall regularly review enacted rules and regulations to maintain, amend, remove or replace them with measures like safety promotion.
6. EASA will continue to be independent from political or economic influence in all its safety actions	6.1	Demonstrating integrity by assuring technical independence and robustness of safety decision-making	Technical safety decision-making that is objective, based on analysis, impact assessment and fair judgment and not influenced by bias or undue influence.	EASA shall maintain a conflict of interest management system and strengthen existing mechanisms such as the job rotation scheme.
	6.2	Minimising the consequences of political or unexpected constraints that may impact on aviation safety	Problems are anticipated and countermeasures are enacted so that safety risks are minimised and stakeholder expectations are satisfied	EASA shall employ data-based decision-making processes and establish practical measures to counter safety risks stemming from resource constraints and the impact of undue influence.

Appendix E: Policy on Safety Management Systems

General

1.1. The main purpose of an SMS is to ensure that, beyond assuring mere compliance with regulations, organisations have the capacity of identifying the risks they may pose to flight safety and mitigating those risks.

1.2. Accidents having generally multiple, cross-domain causes, Authorities and organisations should have a consistent approach when dealing with the identification of hazards and management of safety risks.

1.3. In its report 'Harmonised European Approach to a Performance Based Environment'[44] EASA identified that effective implementation of SMS is the most important driver for implementing a risk- and performance-based approach[45].

Applicability and consistency

1.4. As a general principle, all organisations exposed to or possibly contributing to aviation safety risks, should be subject to SMS requirements. Possible exceptions should be determined based on:
— the overall contribution of a particular activity to the safety of the total system;
— the relative costs and benefits of SMS implementation both for organisations and authorities.

1.5. Applicability dates should be adapted to the type of activity of the organisations, in particular as regards their contribution to aviation safety risks.

1.6. In order to minimise changes in existing regulations and therefore the impact on organisations, the introduction of SMS requirements into new domains should be based on a careful gap analysis between existing requirements and the ICAO Annex 19 framework.

1.7. While minimising those changes, the resulting regulations should foster consistent implementation of SMS in the regulated fields. This is particularly important for those organisations holding multiple approvals within the scope of the Basic Regulation.

1.8. Common core authority requirements should apply in all technical domains to support the standardisation objectives set out in the Basic Regulation, support the implementation of SSP/EPAS, to streamline competent authority management systems and procedures, and to ensure consistency in organisation approvals.

Proportionality and flexibility

1.9. The Organisation's SMS must be commensurate with the size and complexity of the organisation and the level of risks involved.

1.10. To ensure proportionality and flexibility, the SMS requirements at Implementing Rule level should be limited to key principles. Non-essential implementation provisions should be included as AMC.

1.11. The implementation provisions at AMC level should be further adapted to the size, nature and complexity of specific technical domains or categories of organisations, while ensuring a consistent approach between different technical domains.

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[44] https://www.easa.europa.eu/document-library/general-publications/harmonised-european-approach-performance-based-environment

[45] This view also aligns with the majority views expressed by stakeholders through the A-NPA 2014-12 consultation as related to question 3.1.1, which gave birth to Regulation (EU) 2018/1139.

Implementation

1.12. The development and acceptance of industry standards and Safety Promotion material should be encouraged to support SMS implementation.

1.13. SMS implementation should be given reasonable time, beyond the mere implementation deadline, following a phased, performance-based approach.

1.14. Further emphasis should be put on supporting the implementation of simple, robust and proportionate SMS for simple, low-risk organisations.

General aviation and small organisations

1.15. Safety management principles, centred on the individual, should systematically be considered when developing or amending regulations.

International harmonisation

1.16. The common EASA management system framework should address the elements of ICAO Annex 19 while providing proportionality and flexibility. However, a less prescriptive and more proportionate approach than the ICAO Annex 19 SARPS is desirable.

Appendix F: Acronyms and definitions

14 CFR Part 25	airworthiness standards: transport category airplanes
14 CFR Part 33	airworthiness standards: aircraft engines
4G	fourth generation of wireless mobile telecommunications technology
AAD	advanced anomaly detection
ABs	Advisory Bodies
ACARE	Advisory Council for Aviation Research and Innovation in Europe
ACAS	airborne collision avoidance system
ACNS	Airborne Communications, Navigation and Surveillance
ADR	aerodromes
ADS-B	automatic dependent surveillance - broadcast
ADS-C	automatic dependent surveillance - contract
AMTO	approved maintenance training organisation (Part-147)
EAER	European Aviation Environmental Report
AFCS	automatic flight control system
AFIS	aerodrome flight information service
AI	Artificial Intelligence
AIW	Airworthiness
AltMoC	alternative means of compliance
AMAN	arrival management
AMC	acceptable means of compliance
AMC 20	general Acceptable Means of Compliance for airworthiness of products, parts and appliances
AMM	aircraft maintenance manual
AMO	approved maintenance organisation
ANAC	Agência Nacional de Aviação Civil (Portuguese national aviation authority)
A-NPA	advance notice of proposed amendment
ANS	air navigation services
ANSP	air navigation service provider
AOC	air operator certificate
AP	accelerated procedure
ARA	authority requirements (in the aircrew Regulation)
ARAC	Aviation Rulemaking Advisory Committee
ASAGA	aeroplane state awareness during go-around
ASAWG	ARAC Airplane-level Safety Analysis Working Group
ASBUs	Aviation System Block Upgrades
ASISP	Aircraft Systems Information Security/Protection

ASR	annual safety review
ATC	air traffic control
ATCO	air traffic controller
ATM	air traffic management
ATM MP	The ATM Master Plan
ATO	approved training organisation
ATPL	air transport pilot licence
ATQP	Alternative and Training Qualification Programme
ATS	air traffic services
AV-CERT	Aviation Computer Emergency Response Team
AWOs	all-weather operations
B777	Boeing 777
BEA	Bureau d'Enquêtes et d'Analyses
BPL	balloon pilot licence
BR	Basic Regulation (Regulation (EU) 2018/1139)
CA	competent authority
CAA	civil aviation authority
CABA	Certification Authorities for Bilateral Agreements & Certification Procedures
CAEP	Committee on Aviation Environmental Protection (ICAO)
CAEP/10	tenth meeting of the committee on Aviation Environmental Protection
CAG	Collaborative Analysis Group
CAMO	continuing airworthiness management organisation
CASA	Civil Aviation Safety Authority of Australia
CAT	commercial air transport
CAT I, II, III	category I, II, III
CAW	continuing airworthiness
CB	Cumulonimbus
CBTA	competency-based training and assessment
CE	Critical Element
CERT-EU	Computer Emergency Response Team
CFIT	controlled flight into terrain
CMT	Certification Management Team
CO_2	carbon dioxide
CPDLC	controller–pilot data link communication
CPL	commercial pilot licence
CRM	crew resource management
CS	certification specification
CS SIMD	Certification Specifications for Simulator Data

CS VLR	Certification Specifications for Very Light Rotorcraft
CS-22	Certification Specifications for sailplanes and powered sailplanes
CS-23	Certification Specifications for normal, utility, aerobatic and commuter aeroplanes
CS-25	Certification Specifications for large aeroplanes
CS-26	Certification Specifications for additional airworthiness specifications for operations
CS-27	Certification Specifications for small rotorcraft
CS-29	Certification Specifications for large rotorcraft
CS-34	Certification Specifications for aircraft engine emissions and fuel venting
CS-ACNS	Certification Specifications for Airborne Communication, Navigation and Surveillance
CS-APU	Certification Specifications for Auxiliary Power Units
CS-CC	Certification Specifications for cabin crew data
CS-E	Certification Specifications for Engines
CS-ETSO	Certification Specifications for European Technical Standard Orders
CS-FCD	Certification Specifications for flight crew data
CS-LSA	Certification Specifications for Light Sport Aeroplanes
CS-MMEL	Certification Specifications for Master Minimum Equipment List
CS-STAN	Certification Specifications for Standard Changes/Standard Repairs
CS-VLA	Certification Specifications for Very Light Aeroplanes
CTIG	Common Training Initiative Group
CVS	combined vision systems
CZ	Czech Republic
DAH	design approval holder
DAT provider	(aeronautical) data provider, indirectly, competent authority
DAT.OR	organisational requirements for the data service providers
DAT.TR	technical requirements for the provision of data services
D-ATIS	Data link-automatic terminal information service
DCL	departure clearance
DLS	data link services
DOA	design organisation approval
DP	direct publication
D-TAXI	delivery of planned and cleared departure routes by datalink
DTO	declared training organisation
EACTB	Engine Aircraft Certification Tracking Board
EACWG	Engine/Aircraft Certification Working Group
EAFDM	European Authorities Coordination Group on Flight Data Monitoring
EAPPRE	European Action Plan for the Prevention of Runway Excursions
EASA	European Union Aviation Safety Agency
EASA CT	EASA Certification

EASA CT.2	EASA General Aviation & Remotely Piloted Aircraft Systems (RPAS) Department
EASA CT.5	EASA Environment Department
EASA CT.7	EASA Certification Policy & Safety Information Department
EASA FS.1	EASA Maintenance & Production Department
EASA FS.2	EASA Air Operations Department
EASA FS.3	EASA Aircrew & Medical Department
EASA FS.4	EASA Air Traffic Management/Air Navigation Services (ATM/ANS) & Aerodromes Department
EASA FS.4.1	EASA Air Traffic Management/Air Navigation Services (ATM/ANS) Standards, Implementation and Oversight Section
EASA FS.4.2	EASA Air Traffic Management/Air Navigation Services (ATM/ANS) Development Section
EASA FS.4.3	EASA Aerodromes Regulations Section
EASA SM.1	EASA Safety Intelligence & Performance Department
EASA SM.2	EASA Strategy & Programmes Department
EASA SM.2.1	EASA Safety Programmes Section
EATMN	European air traffic management network
EBT	evidence-based training
EC	European Commission
ECCSA	European Centre for Cyber Security in Aviation
ECQB	European Central Question Bank
ECR	European Central Repository for accident and incident reports in aviation
ECTRL	Eurocontrol
EDTO	extended diversion time operation
EEA	European Environment Agency
EFB	electronic flight bag
EFVS	enhanced flight vision systems
EHEST	European Helicopter Safety Team
EI	Effective Implementation
ELA	European light aircraft
EMS	emergency medical services
EOFDM	European Operators Flight Data Monitoring forum
EPAS	European Plan for Aviation Safety
ERCS	European Risk Classification Scheme
ESCP	European Strategic Coordination Platform
ESSI	European Strategic Safety Initiative
ETOPS	extended-range twin-engine operational performance standards
ETSO	European technical standard order
ETSOA	European technical standard order (authorisation)
EU	European Union

EUROCAE	European Organisation for Civil Aviation Equipment
EVS	enhanced vision systems
FAA	Federal Aviation Administration
FABs	functional airspace blocks
FAR 33.90	Federal Aviation Regulation Section 33.90 — Initial maintenance inspection test
FbW/FBW	fly-by-wire
FCHWG	ARAC Flight Controls Harmonisation Working Group
FCOM	flight crew operating manual
FDD	fault detection & diagnosis
FDM	flight data monitoring
FEM	flight examiner manual
FIS	flight information services
F-NI	fire - non-impact
FOT	focused attention topics
FR	France
FRM	fatigue risk management
FTC	fault tolerant control
FSTD	flight synthetic training devices
FTE	flight test engineer
FTL	flight time limitation
FTS	flight time specifications
FW	fixed wing
GA	general aviation
GA.COM	General Aviation Committee (EASA Advisory Body)
GANP	Global Air Navigation Plan
GASP	Global Aviation Safety Plan (ICAO)
GBAS	Ground-based augmentation system
GCOL	ground collision
GH	Ground Handling
GLS	GBAS (ground-based augmentation system) landing system
GM	guidance material
GNSS	global navigation satellite system
GPS	global positioning system
H2020	Horizon 2020
HE	Helicopter
HEMS	helicopter emergency medical services
HF	human factors
HF CAG	Human Factors Collaborative Analysis Group

HOSSWG	Helicopter Offshore Safety and Survival Working Group
HP	Human performance
HPA	high-performance aircraft
HTAWS	helicopter terrain avoidance warning systems
HUD	head-up displays
HUMS	health and usage monitoring systems
IAW	initial airworthiness
IATA	International Air Transport Association
ICA	instructions for Continued Airworthiness
ICAO	International Civil Aviation Organization
ICAO SL	ICAO State letter
IFE	in-flight entertainment
IFR	instrument flight rules
IHST	International Helicopter Safety Team
ILS	instrument landing system
IMA	Integrated modular avionics
IMC	instrument meteorological conditions
IMI	initial maintenance inspection
Init. Airw.	initial airworthiness
IR	(Commission) implementing rule
IR	Instrument rating
JAA	Joint Aviation Authorities
JAR-25	joint aviation requirements
JARUS	Joint Authorities for Rulemaking on Unmanned Systems
KPI	key performance indicator
KRE	key risk element
LAFI	light aircraft flight instructor
LAPL	light aircraft pilot licence
LAPL(A)	allows pilots to act as pilot in command on aeroplanes or touring motor gliders
LAPL(S)	allows pilots to act as pilot in command on EASA sailplanes and powered sailplanes
LFTE	lead flight test engineer
LO	learning objective
LOCART	loss of control avoidance and recovery training
LOC-I	loss of control - inflight
LOI	level of involvement
LVO	low-visibility operation
MA	medical assessor
MB	Management Board

MAC	mid-air collision
MCF	maintenance check flights
MET	meteorology/meteorologic
MET provider	Meteorological service provider, indirectly, competent authority
MGB	main gearbox
MH17	Malaysia Airlines flight 17
MMEL	master minimum equipment list
mn	Minutes
MO	maintenance organisation
MOPS	minimum operational performance specification
MOPSC	maximum operational passenger seating configuration
MPL	multi-crew pilot licence
MRB	Maintenance Review Board
MS	Member States
MST	Member States' task
MTO	maintenance training organisation
MTOM	maximum take-off mass
NBR	New Basic Regulation - Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91
NCC	non-commercial air operations with complex motor-powered aircraft
NCO	non-commercial air operations with other-than-complex motor-powered aircraft
NDB	non-directional beacon
NextGen	next generation
NO	Norway
NoAs	Network of Analysts
NPA	notice of proposed amendment
OEM	original equipment manufacturer
OJ	Official Journal of the European Union
OPS	air operations
OpSpecs	operations specifications
ORO.FC	organisation requirements for air operations - flight crew
PANS	procedures for air navigation services (ICAO)
Part-145	maintenance organisation approvals
Part-147	training organisations requirements
Part 21	airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations
Part 21 Subpart H	Airworthiness certificates and restricted certificates of airworthiness

Part-26	additional airworthiness requirements for operations
Part-66	certifying staff
Part-ARO	authority requirements for air operations
Part-FCL	flight crew licensing
Part-M	continuing airworthiness requirements
Part-MED	medical certification of pilots, medical fitness of cabin crew, certification of AMEs and requirements of GMPs and OHMPs
Part-ORA	Organisation requirements for aircrew
Part-ORO	Organisation requirements for air operations
Part-SPO	specialised operations
pax	passengers
PBN	performance-based navigation
PBR	performance-based regulation
PCP	pilot common project (SESAR)
PED	personal electronic device
PIA	preliminary impact assessment
PIA A	preliminary impact assessment 'Strategic'
PIA B	preliminary impact assessment 'Standard'
PIA C	preliminary impact assessment 'Regular Update'
PIS	public interest sites
PM CPDLC	protected mode controller–pilot data link communication
POA	production organisation approval
PoC	proof of concept
PPL	private pilot license
Q	Quarter
RASG	Regional Aviation Safety Group
RASP	Regional Aviation Safety Plan
RAMP	aerodrome ramp
RE	runway excursion
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals – EC Directive 1907/2006
RES	research actions
RFFS	rescue and firefighting services
RFID	radio frequency identification
RI	runway incursion
RIA	regulatory impact assessment
RI-VAP	runway incursion (vehicle animal person)
RMT	rulemaking task
RNAV	area navigation

R.COM	Rotorcraft Committee (Avisory Body)
RSOO	Regional Safety Oversight Organisation
SA CAT I	Special authorisation CAT I
SAR	Standardisation Annual Report
SARPS	Standards and Recommended Practices (ICAO)
SATCOM	Satellite Communications
SBAS	satellite-based augmentation system
SCF-NP	system component failure (non-powerplant)
SCF-PP	system component failure (powerplant)
SERA IR	standardised European rules of the air implementing rule
SERA Part C	Commission Implementing Regulation (EU) 2016/1185 of 20 July 2016 amending Implementing Regulation (EU) No 923/2012 as regards the update and completion of the common rules of the air and operational provisions regarding services and procedures in air navigation (SERA Part C) and repealing Regulation (EC) No 730/2006
SES	single European sky
SESAR	Single European Sky ATM Research
SET	single-engined turbine
SIA	safety issue assessment
SHARP	Safety Helmet Assessment and Rating Programme
SJU	SESAR Joint Undertaking
SLD	super-cooled large droplets
SMICG	Safety Management International Collaboration Group
SMS	safety management system
SM TeB	Safety Management Technical Body
SOPs	standard operating procedures
SPAS	State Plan for Aviation Safety
SPD	Single Programming Document
SPI	safety performance indicator
SPL	sailplane pilot license
SPN	Safety Promotion Network
SPO	specialised sperations
SPT	safety promotion task
SR	safety recommendation
SRIA	Strategic Research and Innovation Agenda
SRM	safety risk management
SSIP	supplemental structural inspection programme
SSP	state safety programme
SSR	secondary surveillance radar (SSR)
ST	standard (rulemaking) procedure

STC	supplemental type certificate
STD	synthetic training device
Subparts J & K of Part-FCL	instructors and examiners
SVGS	synthetic vision guidance systems
SVS	synthetic vision systems
SWI	survivable water impact
SWIM	system-wide information management
TAWS	terrain awareness warning system
TBD	to be determined
TBO	time between overhaul
TC	type certificate
TCO	third-country operator
TCAS	traffic collision avoidance system
TCCA	Transport Canada Civil Aviation
TCP	tricresyl phosphate
TeB	Member State technical body
TeC	Stakeholder technical body
TEM	threat and error management
TMA	terminal manoeuvring area
TMG	touring motor glider
TO	training organisation
ToR	terms of reference
TSO	technical standard order
UAS	unmanned aircraft systems
UDPP	user-driven prioritisation process
UK	United Kingdom
UNCs	Undertaking Non-Compliances
UPRT	upset prevention and recovery training
USOAP	Universal Safety Oversight Audit Programme
UTM	unmanned traffic management
VFR	visual flight rules
VHF	very high frequency
VHM	vibration health monitoring
VLA	very light aeroplane
VLD	very large-scale demonstration
VOR	VHF omnidirectional range
WFD	widespread fatigue damage

WIDDCWG	Water Impact, Ditching Design and Crashworthiness Working Group
WP	working paper

Appendix G: Working groups and bodies having a role in EPAS

EAFDM
Web Link
EASA and CAs have formed a group of experts called the **European Authorities Coordination Group on FDM (EAFDM).** It is a voluntary and independent safety initiative with the objectives of contributing to:

- improving the implementation of FDM programmes and to making them more safety effective;
- EASA's objective of a high and uniform level of safety in Europe;
- a better overview of air transport operational safety in Europe for EASA and CAs.

Among the topics covered by EAFDM are:

- Development of national FDM forums;
- Oversight of FDM programs by CAs; and
- FDM-based indicators.

EOFDM
Web Link
The **European Operators Flight Data Monitoring (EOFDM)** forum is a project of a voluntary partnership between European operators and EASA in order to:

- facilitate the implementation of Flight Data Monitoring (FDM) by Operators,
- help operators draw the maximum safety benefits from an FDM Programme.

The EOFDM steering groups manages its work with a series of working groups. Depending on the group the following organisations may participate: Operators, Operator associations, Flight-crew associations, Aircraft Manufacturers, Flight-data-monitoring software vendors, Research and educational institutions, Regulators (national aviation authorities and international aviation regulators) and EASA. Non-European organisations are encouraged to join this safety initiative.

CTIG
The Common Training Initiative Group (CTIG), is composed of training managers from CAs. The CTIG plays a crucial role in the implementation of the new EASA aviation training strategy. The Group is mandated to harmonise training and assessment standards for aviation inspectors, with the aim to provide for highly qualified and sufficiently trained authority inspectors across Europe. The CTIG is now a Subgroup of the MAB.
The CTIG deliverables, among others, are
contribute to the functioning of the pool-of-experts,
training-related annex in CA Partnership Agreements
strengthen the role of EASA as an RSOO (Regional Safety Oversight Organisation).

NoAs
The **Network of Analysts** was established in 2011 to provide a collaborative framework for the EASA MSs to work together on safety analysis activities. The NoAs was formalised within European Regulation (EU) 376/2014. It has the purpose (at Union level) of:

- reporting, analysing and following -up of occurrences in civil aviation using the European Central Repository of mandatory occurrences,
- assisting States in assessing their priorities for the State Safety Programmes (SSP),
- supporting both EPAS and to assist States in assessing their priorities for the State Safety Programmes (SSP).
- working closely with the CAGs in the identification of Safety Issues, Safety Risk Assessment and the monitoring of safety performance.

SM ICG
Web Link
The **SMS International Collaboration Group (SMICG)** was created in February 2009. It is a joint collaboration activity between aviation regulatory authorities in order to

- promote a common understanding and collaboration of SMS / State Safety Programme (SSP) principles and requirements in different countries, facilitating their implementation across the international aviation community
- share lessons learned
- encourage the progression of a harmonised SMS.

- collaborate with international organisations such as ICAO and civil aviation authorities that have implemented or are implementing SSP/SMS

The SMICG consists of a core group and a participant group. The core group is comprised of authorities with resources and expertise for product development. It includes members from the FAA, TCCA, EASA, FOCA Switzerland, DGAC France, AESA Spain, CAA of the Netherlands, ENAC Italy, Irish Aviation Authority, Trafi Finland, UK CAA, CASA of Australia, JCAB of Japan, CAA of New Zealand, ANAC of Brazil, United Arab Emirates General Civil Aviation Authority, Civil Aviation Authority of Singapore and Civil Aviation Department of Hong Kong. The International Civil Aviation Organization (ICAO) is an observer to this group.

SPN

Web Link

The **Safety Promotion Network (SPN)** is a voluntary partnership between EASA and other aviation organisations. The objective of the SPN is to enhance aviation safety in Europe by providing a framework for the collaboration of safety promotion activity throughout the MSs.
For mutual benefit and a common purpose the members of the safety promotion network take on these objectives:

- exchanging information.
- coordinating activities.
- cooperating and sharing joint activities.
- collaborating to increase the capacity for activities.

The Network activities will include coordinating, cooperating and collaboration with respect to the design, development, publication, translation and dissemination of safety information. The Network will also explore common tools and develop means to measure the effectiveness of Safety Promotion products that have been disseminated.

ESPN-R

Web Link

The **European Safety Promotion Network Rotorcraft (ESPN-R)** is a mixed industry-authorities team established by the Rotorcraft Sectorial Committee (RSC) in January 2017.
The ESPN-R develops, disseminates and evaluates Safety Promotion (SP) material and actions on a voluntary basis in support of the RSC, of EASA and of the industry. The ESPN-R can also contribute to Safety Promotion campaigns and ensuring that Safety Promotion material reaches the target audience.

The ESPN-R contributes to the implementation of rotorcraft Safety Promotion actions from EPAS, rotorcraft section, and can suggest Safety Promotion actions for inclusion in EPAS or other considerations. Scope includes but is not limited to operations and SMS, training and emerging safety-enhancing technologies.

Members come from the former European Helicopter Safety Team (EHEST) community and the former European Helicopter Safety Implementation Team (EHSIT), the implementation team of the EHEST. The ESPN-R leverages the former EHSIT competences for development, dissemination and evaluation of Safety Promotion material and actions.

CAG

The **Collaborative Analysis Groups (CAGs)** enable EASA to work with both the EASA MSs and industry on the tasks of identifying Safety Issues, Safety Risk Assessment and the monitoring of Safety Performance.
The CAGs produce the following outputs:

- Safety Risk Portfolios per aviation domain,
- Safety Issue Assessments (SIA),
- Best Intervention Strategy (BIL)
- Preliminary Impact Assessments (PIA)

These outputs can stem in action proposals for EPAS.

The CAGs provide a mechanism for external engagement with industry and the MS' NoA Representatives on the Safety Risk Portfolios, which are used to ensure agreement on the Key Risk Areas and Safety Issues in each domain. CAGs operate at a domain level and have been established for the following ones: CAT Aeroplanes, offshore helicopters, Balloons, Human Factors, ATM, Aerodrome/ground handling, HEMS and GA aeroplanes.

Advisory Bodies
Web Link
The **Advisory Bodies (ABs)** provide EASA with a forum for consultation of interested parties and national authorities. to the main purpose of the ABs is to :

- facilitate the discussion of strategic/technical priorities as well as controversial or horizontal issues at early Agency programming stage,
- provide EASA with a forum to consult on strategic safety priorities,

When the proposed actions affect the MS, the purpose of the ABs is to:

- provide advice to EASA on content, priorities and execution of its safety programmes,
- provide advice on ongoing efforts to improve EPAS, rulemaking, standardisation, safety promotion, and research programming process.

The following ABs are relevant for the EPAS:
Member States Technical Bodies (TeBs): The TeBs encompass the scope of the TAGs and Standardisation meetings and enlarge their scope to also include safety promotion.
Stakeholder Technical Bodies (TeCs): The TeCs replaces the sub-committees of the Safety Standards Consultative Committee (SSCC). They are responsible for reviewing and committing to concrete actions that address the specific Safety Issues at sectorial and technical level.
Member State Advisory Body (MAB): The MAB is body advising on strategic developments. It encompasses and extends the scope of RAG, EASAC and EASp Summit.
Stakeholder Advisory Body (SAB): The SAB replaced the Safety Standards Consultative Committee (SSCC) and the EASA Advisory Board (EAB). Within the SRM process is responsible for advising on strategic developments.

The **Safety Management TeB (SM TeB)** is particularly relevant for the EPAS as it is the forum to

- advise MSs with the implementation and maintenance of their SSPs and SPASs by exchanging information and addressing implementation issues;
- provide input and feedback on the implementation of the EPAS in regards to systemic issues;
- provide recommendations to EASA/EC on further actions required to support SSP / EPAS implementation;
- address issues stemming from the Standardisation SYS inspections; and
- discuss and provide recommendations where action is required on any safety management implementation issues.

Appendix H: Index

EValuation Tasks

FOcussed attention Topics

Member State Tasks

RESearch Tasks

RuleMaking Tasks

Safety Promotion Tasks

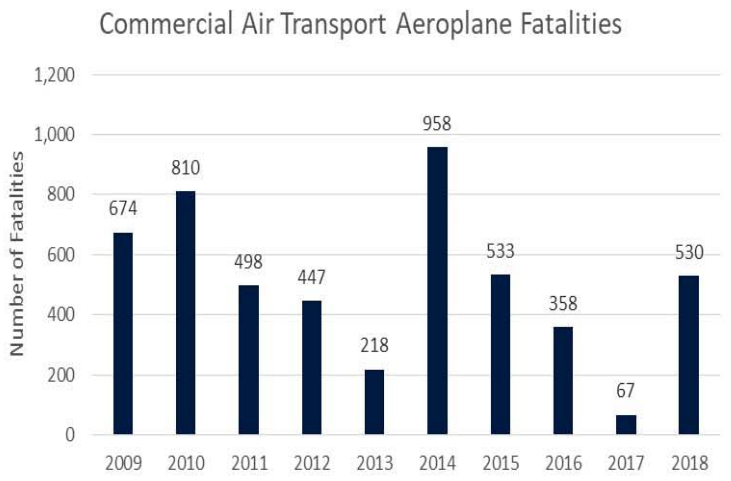
EASA PRELIMINARY SAFETY REVIEW 2018
Commercial Air Transport Operations

2017 was considered the safest year ever in commercial aviation history, nevertheless the events in 2018 were a reminder that safety should not be taken for granted. Worldwide in 2018 there were 530 fatalities in 11 fatal accidents, setting us back to a level not experienced since 2015.

The detailed figures for Europe show that there were no fatal accidents involving commercial passenger airlines, however 20 persons were killed in a fatal accident involving a sightseeing flight using a historic aircraft in the Swiss Alps.

The key message from the European Union Aviation Safety Agency (EASA) is that we should never be complacent with safety and remain persistent in our efforts devoted to protecting passengers and citizens. Furthermore, EASA is committed to the collaborative safety efforts to ensure that risks at European Level and worldwide are identified and mitigated effectively.

WORLDWIDE COMMERCIAL AEROPLANE OPERATIONS

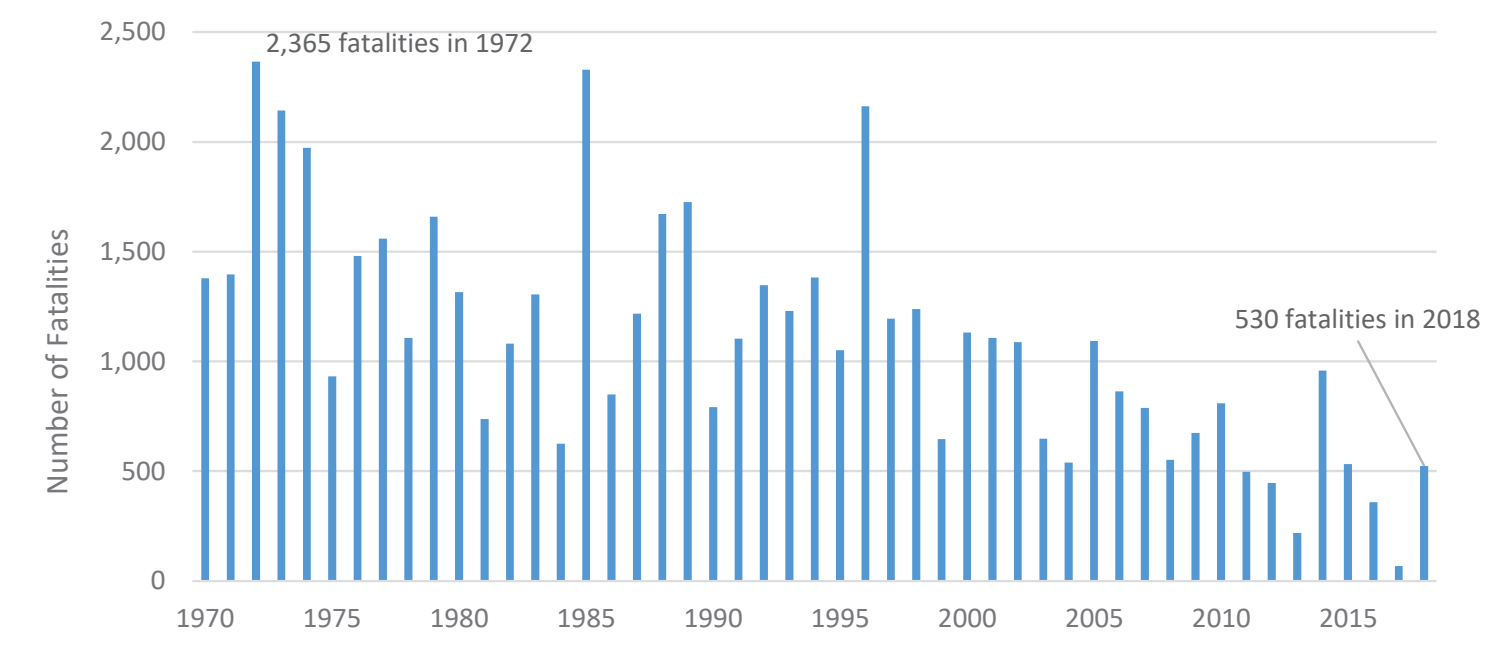


Figures show that there were 11 fatal accidents and 530 fatalities at a global level for commercial air transport involving large aeroplanes. Despite there being the same number of fatal accidents in 2018 compared with the previous year, there were the highest number of fatalities since 2015.

EASA
European Union Aviation Safety Agency

EASA PRELIMINARY SAFETY OVERVIEW 2018

Looking at the number of fatalities since 1970 the number of fatalities in 2018 is still significantly below even recent historical figures in the 1990s and 2000s. The technological advances in aviation and the industry's efforts to introduce Safety Management Systems (SMS) helps to maintain aviation as a very safe form of transport.



The following fatal accidents occurred during 2018:

- **11 February – An148 crashed during climb out near Dergayevo, Russia, with 71 fatalities**
- **18 February – ATR72 crashed into the Dena Mountains, Iran, with 66 fatalities**
- **11 March – CL600 crashed in mountainous terrain in bad weather conditions near Shahr-e Kord, Iran, with 11 fatalities**
- **12 March – DHC8 overran the runway and fell down a slope at Kathmandu-Tribhuvan Airport, with 51 fatalities**
- **17 April – B737 experienced a sudden decompression due to an uncontained engine failure, NW of Philadelphia, USA, fatally injuring a passenger.**
- **18 May – B737 lost height shortly after take-off and crashed, with 112 fatalities**
- **4 August - JU-52 accident in elevated terrain (Alps, Switzerland) for as yet unknown reason, with 20 fatalities**
- **28 September – B737 short landing in a lagoon during an attempted landing in stormy weather, 1 fatality**
- **28 October – B737 crashed into the sea soon after take-off with 189 fatalities**
- **9 November – B757 overran the runway on landing at Georgetown, Guyana, with 1 fatality.**
- **20 December – An26 crashed on approach to Kinshasa airport with 7 fatalities**

EASA
European Union Aviation Safety Agency

EASA PRELIMINARY SAFETY OVERVIEW 2018

Aviation Safety in the EASA Member States

There were no fatal accidents in commercial airline operations involving an operator from the EASA Member States. However, there was one fatal accident in commercial operations with aeroplanes, which was a Junkers JU-52 that crashed in elevated terrain in the Alps of Switzerland on 4 August 2018 with the loss of 20 lives. This accident involved a historic aircraft built in 1939, although the aircraft was undertaking a commercial flight it was a unique event compared with traditional airline operations.

Key Risk Areas for Commercial Air Transport involving Aeroplanes

Over the past 5 years between 2014 and 2018, accidents and serious incidents involving large aeroplane commercial air transport operations most commonly involved the following Key Risk Areas, otherwise known as potential accident outcomes:

- Aircraft Upset.
- Runway Excursions.
- Technical Faults relating to Aircraft Pressurisation or Fire.

These Key Risk Areas are reflected in the European strategic safety priorities that are identified in the European Plan for Aviation Safety (EPAS). The EPAS identifies both the accident outcomes that we are looking to prevent and the safety issues that we need to address through mitigating actions.

Aviation Safety in the EASA Member States for Other Aviation Domains

EASA is pleased to also provide some key headlines on aviation safety is other aviation domains. The key headlines from the preliminary analysis are:

- In small aeroplane commercial air transport operations there was one fatal accident involving operators from the EASA MS, which was the same as 2017.
- For specialised operations involving aeroplanes (such as aerial advertising, crop spraying, air shows, photography and parachute dropping) there were 7 fatal accidents, compared with a 5 year average of 8.8 per year.
- In all areas of commercial rotorcraft (helicopter) operations and specialised operations there were 4 fatal accidents in 2018.

EASA
European Union Aviation Safety Agency

Source: https://www.easa.europa.eu/newsroom-and-events/news/new-e-learning-course-easa%E2%80%99s-new-basic-regulation-regulation-eu-20181139 23 Jan 2019

23
JAN
2019

NEW e-learning course: EASA's new Basic Regulation (Regulation (EU) 2018/1139)

Last September the new Regulation for EASA and the European aviation system (EASA's "Basic Regulation" - Regulation (EU) 2018/1139) entered into force.
To support the aviation community in this transition, EASA has designed a dedicated online e-learning course and is offering it free-of-charge to aviation authorities, industry and other interested stakeholders.

The 2-hour course offers a comprehensive overview of all the main features, focusing on the changes introduced by the new Regulation. Furthermore, it covers all technical areas (operations, flight crew training, ATM/ANS, aerodromes, airworthiness etc), subdivided into dedicated modules.

Enrol now to get up to speed with the new rules and be part of this new chapter for aviation in Europe!

How to enrol

Aviation Authorities

You do not require a record of completion?
Please follow this link to access the course!

You require a record of completion?
You have the following options:

Do you have an ELG user account?
In this case, please log in to the EASA Learning Gateway (ELG) with your credentials and enrol yourself! The online course can be found under the '**Aviation Authority catalogue**'.

You do not have an ELG user account?
In this case, please contact your **appointed national ELG Coordinator** or if a national ELG Coordinator has not been appointed, you should contact **EASA Technical Training Section** at TT@easa.europa.eu.

Industry and other stakeholders

You can only benefit from the free-of-charge online course **without** receiving a record of completion. Please follow this link to access the course!

EASA
The European Authority in aviation safety

EASA
European Aviation Safety Agency

SERA
(IR + AMC/GM)

eRules

Easy Access Rules for Standardised European Rules of the Air (SERA)

EASA eRules: aviation rules for the 21st century

Rules and regulations are the core of the European Union civil aviation system. The aim of the **EASA eRules** project is to make them **accessible** in an efficient and reliable way to stakeholders.

EASA eRules will be a comprehensive, single system for the drafting, sharing and storing of rules. It will be the single source for all aviation safety rules applicable to European airspace users. It will offer easy (online) access to all rules and regulations as well as new and innovative applications such as rulemaking process automation, stakeholder consultation, cross-referencing, and comparison with ICAO and third countries' standards.

To achieve these ambitious objectives, the **EASA eRules** project is structured in ten modules to cover all aviation rules and innovative functionalities.

The **EASA eRules** system is developed and implemented in close cooperation with Member States and aviation industry to ensure that all its capabilities are relevant and effective.

Published December 2018[1]

[1] The published date represents the date when the consolidated version of the document was generated.

DISCLAIMER

This version is issued by the European Aviation Safety Agency (EASA) in order to provide its stakeholders with an updated and easy-to-read publication. It has been prepared by putting together the officially published regulations with the related acceptable means of compliance and guidance material (including the amendments) adopted so far. However, this is not an official publication and EASA accepts no liability for damage of any kind resulting from the risks inherent in the use of this document.

NOTE FROM THE EDITOR

The content of this document is arranged as follows: the cover regulation (recitals and articles) with the implementing rule (IR) points appear first, followed by the related acceptable means of compliance (AMC) and guidance material (GM) paragraph(s).

All elements (i.e. cover regulation, IRs, AMC, and GM) are colour-coded and can be identified according to the illustration below. The Commission regulation or EASA Executive Director (ED) decision through which the point or paragraph was introduced or last amended is indicated below the point or paragraph title(s) *in italics*.

Cover regulation article

Commission regulation

Implementing rule

Commission regulation

Acceptable means of compliance

ED decision

Guidance material

ED decision

This document will be updated regularly to incorporate further amendments.

The format of this document has been adjusted to make it user-friendly and for reference purposes. Any comments should be sent to erules@easa.europa.eu.

INCORPORATED AMENDMENTS

IMPLEMENTING RULES (IRS) (COMMISSION REGULATIONS)

Incorporated Commission Regulation	Regulation amendment	Applicability date[1]
Regulation (EU) No 923/2012	Initial issue	4/12/2012
Regulation (EU) 2016/1185	Amendment 1	12/10/2017

AMC/GM TO IRS (ED DECISIONS)

Incorporated ED Decision	AMC/GM Issue No, Amendment No	Applicability date
ED Decision 2013/013/R	Initial issue	17/7/2013
ED Decision 2016/023/R	Amendment 1	15/10/2016

Note: To access the official versions, please click on the hyperlinks provided above.

[1] *This is the date of application (i.e. the date from which an act or a provision in an act produces its full legal effects) as defined in the relevant cover regulation article. Some provisions of the regulations though may be applicable at a different date (deferred applicability). Besides, there may be some opt-outs (derogations from certain provisions) notified by the Member States.*

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COVER REGULATION

COMMISSION IMPLEMENTING REGULATION (EU) No 923/2012 of 26 September 2012

laying down the common rules of the air and operational provisions regarding services and procedures in air navigation and amending Implementing Regulation (EU) No 1035/2011 and Regulations (EC) No 1265/2007, (EC) No 1794/2006, (EC) No 730/2006, (EC) No 1033/2006 and (EU) No 255/2010

Regulation (EU) 923/2012

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EC) No 551/2004 of the European Parliament and of the Council of 10 March 2004 on the organisation and use of the airspace in the single European sky[1] (the airspace Regulation), and in particular Article 4(a) and (b) thereof,

Having regard to Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency[2] (the EASA Basic Regulation), and in particular Articles 8 and 8b and Annex Vb thereto,

Whereas:

(1) Pursuant to Regulation (EC) No 551/2004 and Regulation (EC) No 216/2008, the Commission is required to adopt implementing rules in order to adopt appropriate provisions on rules of the air based upon Standards and recommended practices of the International Civil Aviation Organisation (ICAO), and to harmonise the application of the ICAO airspace classification, with the aim to ensure the seamless provision of safe and efficient air traffic services within the single European sky.

(2) Eurocontrol has been mandated in accordance with Article 8(1) of Regulation (EC) No 549/2004 of the European Parliament and the Council of 10 March 2004 laying down the framework for the creation of the single European sky[3] to assist the Commission in the development of implementing rules which lay down appropriate provisions on rules of the air based upon ICAO Standards and recommended practices, and harmonise the application of the ICAO airspace classification.

(3) In accordance with Articles 1(3) and 13 of Regulation (EC) No 549/2004 and Article 2 of Regulation (EC) No 216/2008, the single European sky initiative should assist the Member States in fulfilling their obligations under the 1944 Chicago Convention on International Civil Aviation (hereafter the Chicago Convention) by providing for common interpretation and implementation.

(4) The objective of Regulation (EC) No 551/2004 is to support the concept of a more integrated operating airspace within the context of the common transport policy, and to establish common procedures for design, planning and management while ensuring the efficient and safe performance of air traffic management. This objective is particularly relevant for the rapid implementation of functional airspace blocks in the single European sky.

(5) The outcome of the work undertaken by the joint group created by the Commission, Eurocontrol and ICAO, which charted the national differences filed by Member States relating to ICAO Standards dealing with rules of the air and related provisions for air navigation services,

[1] OJ L 96 31.3.2004, p. 20

[2] OJ L 79 19.3.2008, p. 1

[3] OJ L 96, 31.3.2004, p. 1.

supports the need for standardisation of common rules and differences with respect to the single European sky.

(6) In order to ensure safe, efficient and expeditious international air traffic and to support the establishment of functional airspace blocks, all participants in the single European sky should adhere to a common set of rules. Furthermore, a key enabler of safe cross-border operations is the creation of a transparent regulatory system, where the actors can be provided a legal certainty and predictability. To this end, standardised rules of the air and related operational provisions regarding services and procedures in air navigation should be established, and be supplemented, where appropriate, with guidance material and/or acceptable means of compliance.

(7) To achieve those objectives, only commonly agreed European differences should be notified to ICAO by the Member States on areas which are covered by Union law. Those differences should be established and monitored through a permanent process.

(8) Member States that have adopted additional provisions complementing an ICAO standard, should, if they are still considered necessary and provided such additional provisions do not constitute a difference under the Chicago Convention or against existing Union law, continue to apply such provisions until they are addressed by appropriate Union provisions.

(9) The application of this Regulation should be without prejudice to the Member States' obligations and rights over the high seas, in accordance with Article 12 of the Chicago Convention, and in particular with Annex 2 to the Chicago Convention, as well as the obligations of Member States and the Union under the United Nations Convention on the Law of the Sea and the obligations of Member States under the Convention on the International Regulations for Preventing Collisions at Sea, 1972.

(10) In accordance with Article 1(2) of the framework Regulation (EC) No 549/2004, the regulatory framework for the creation of the single European sky does not cover military operations and training.

(11) The existing process for amending ICAO Standards and recommended practices within the framework of the Chicago Convention is not addressed by this Regulation.

(12) The extension of the competence of EASA to include air traffic management safety requires consistency between the development of implementing rules under Regulations (EC) No 551/2004 and (EC) No 216/2008.

(13) In order to ensure consistency between the transposition of provisions of Annex 2 to the Chicago Convention set out in this Regulation and the future provisions stemming from other annexes to the Chicago Convention, which will be included in the next stages of work as well as the implementation of future Union rules, the initial provisions should be revisited where necessary.

(14) Where necessary, other Union legislation should be updated to refer to this Regulation,

HAS ADOPTED THIS REGULATION:

Article 1 Subject matter and scope

Regulation (EU) 2016/1185

1. The objective of this Regulation is to establish the common rules of the air and operational provisions regarding services and procedures in air navigation that shall be applicable to general air traffic within the scope of Regulation (EC) No 551/2004.

2. This Regulation shall apply in particular to airspace users and aircraft engaged in general air traffic:

   (a) operating into, within or out of the Union;

   (b) bearing the nationality and registration marks of a Member State of the Union, and operating in any airspace to the extent that they do not conflict with the rules published by the country having jurisdiction over the territory overflown.

3. This Regulation shall also apply to the competent authorities of the Member States, air navigation service providers, aerodrome operators and ground personnel engaged in aircraft operations.

4. This Regulation shall not apply to model aircraft and toy aircraft. However, Member States shall ensure that national rules are established to ensure that model aircraft and toy aircraft are operated in such a manner as to minimise hazards related to civil aviation safety, to persons, property or other aircraft.

Article 2 Definitions

Regulation (EU) 2016/1185

For the purpose of this Regulation the following definitions shall apply:

1. 'accuracy' means a degree of conformance between the estimated or measured value and the true value;

3. 'advisory airspace' means an airspace of defined dimensions, or designated route, within which air traffic advisory service is available;

4. 'advisory route' means a designated route along which air traffic advisory service is available;

5. 'aerobatic flight' means manoeuvres intentionally performed by an aircraft involving an abrupt change in its attitude, an abnormal attitude, or an abnormal variation in speed, not necessary for normal flight or for instruction for licenses or ratings other than aerobatic rating;

6. 'aerodrome' means a defined area (including any buildings, installations and equipment) on land or water or on a fixed, fixed off-shore or floating structure intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft;

7. 'aerodrome control service' means air traffic control service for aerodrome traffic;

8. 'aerodrome control tower' means a unit established to provide air traffic control service to aerodrome traffic;

9. 'aerodrome traffic' means all traffic on the manoeuvring area of an aerodrome and all aircraft flying in the vicinity of an aerodrome. An aircraft operating in the vicinity of an aerodrome includes but is not limited to aircraft entering or leaving an aerodrome traffic circuit;

10. 'aerodrome traffic circuit' means the specified path to be flown by aircraft operating in the vicinity of an aerodrome;

11. ‘aerodrome traffic zone’ means an airspace of defined dimensions established around an aerodrome for the protection of aerodrome traffic;
12. ‘aerial work’ means an aircraft operation in which an aircraft is used for specialised services such as agriculture, construction, photography, surveying, observation and patrol, search and rescue, aerial advertisement, etc.;
13. ‘Aeronautical Information Publication (AIP)’ means a publication issued by or with the authority of a State and containing aeronautical information of a lasting character essential to air navigation;
14. ‘aeronautical mobile service’ means a mobile service between aeronautical stations and aircraft stations, or between aircraft stations, in which survival craft stations may participate; emergency position-indicating radio beacon stations may also participate in this service on designated distress and emergency frequencies;
15. ‘aeronautical station’ means a land station in the aeronautical mobile service. In certain instances, an aeronautical station may be located, for example, on board ship or on a platform at sea;
16. ‘aeroplane’ means a power-driven heavier-than-air aircraft, deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under given conditions of flight;
17. ‘airborne collision avoidance system (ACAS)’ means an aircraft system based on secondary surveillance radar (SSR) transponder signals which operates independently of ground-based equipment to provide advice to the pilot on potential conflicting aircraft that are equipped with SSR transponders;
18. ‘aircraft’ means any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth’s surface;
19. ‘aircraft address’ means a unique combination of 24 bits available for assignment to an aircraft for the purpose of air-ground communications, navigation and surveillance;
20. ‘aircraft observation’ means the evaluation of one or more meteorological elements made from an aircraft in flight;
21. ‘AIRMET information’ means information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather phenomena which may affect the safety of low-level aircraft operations and which was not already included in the forecast issued for low-level flights in the flight information region concerned or sub-area thereof;
22. ‘air-ground communication’ means two-way communication between aircraft and stations or locations on the surface of the earth;
23. ‘air-ground control radio station’ means an aeronautical telecommunication station having primary responsibility for handling communications pertaining to the operation and control of aircraft in a given area;
24. ‘air-report’ means a report from an aircraft in flight prepared in conformity with requirements for position, and operational and/or meteorological reporting;
25. ‘air-taxiing’ means movement of a helicopter/vertical take-off and landing (VTOL) above the surface of an aerodrome, normally in ground effect and at a ground speed normally less than 37 km/h (20 kts);
26. ‘air traffic’ means all aircraft in flight or operating on the manoeuvring area of an aerodrome;

27. 'air traffic advisory service' means a service provided within advisory airspace to ensure separation, in so far as practical, between aircraft which are operating on instrument flight rules (IFR) flight plans;

28. 'air traffic control (ATC) clearance' means authorisation for an aircraft to proceed under conditions specified by an air traffic control unit;

29. 'air traffic control instruction' means directives issued by air traffic control for the purpose of requiring a pilot to take a specific action;

30. 'air traffic control service' means a service provided for the purpose of:

    (a) preventing collisions:

        (1) between aircraft; and

        (2) on the manoeuvring area between aircraft and obstructions; and

    (b) expediting and maintaining an orderly flow of air traffic;

31. 'air traffic control unit' means a generic term meaning variously, area control centre, approach control unit or aerodrome control tower;

32. 'air traffic service (ATS)' means a generic term meaning variously, flight information service, alerting service, air traffic advisory service, air traffic control service (area control service, approach control service or aerodrome control service);

33. 'air traffic services (ATS) airspaces' mean airspaces of defined dimensions, alphabetically designated, within which specific types of flights may operate and for which air traffic services and rules of operation are specified;

34. 'air traffic services (ATS) reporting office (ARO)' means a unit established for the purpose of receiving reports concerning air traffic services and flight plans submitted before departure;

34a. 'air traffic services (ATS) surveillance service' means a service provided directly by means of an ATS surveillance system;

35. 'air traffic services (ATS) unit' means a generic term meaning, variously, air traffic control unit, flight information centre, aerodrome flight information service unit or air traffic services reporting office;

36. 'airway' means a control area or portion thereof established in the form of a corridor;

37. 'alerting service' means a service provided to notify appropriate organisations regarding aircraft in need of search and rescue aid, and assist such organisations as required;

38. 'alternate aerodrome' means an aerodrome to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or to land at the aerodrome of intended landing, where the necessary services and facilities are available, where aircraft performance requirements can be met and which is operational at the expected time of use. Alternate aerodromes include the following:

    (a) take-off alternate: an alternate aerodrome at which an aircraft would be able to land should this become necessary shortly after take-off and it is not possible to use the aerodrome of departure;

    (b) en-route alternate: an alternate aerodrome at which an aircraft would be able to land in the event that a diversion becomes necessary while en route;

(c) destination alternate: an alternate aerodrome at which an aircraft would be able to land should it become either impossible or inadvisable to land at the aerodrome of intended landing;

39. 'altitude' means the vertical distance of a level, a point or an object considered as a point, measured from mean sea level (MSL);

40. 'approach control service' means air traffic control service for arriving or departing controlled flights;

41. 'approach control unit' means a unit established to provide air traffic control service to controlled flights arriving at, or departing from, one or more aerodromes;

42. 'apron' means a defined area, intended to accommodate aircraft for purposes of loading or unloading passengers, mail or cargo, fuelling, parking or maintenance;

43. 'area control centre (ACC)' means a unit established to provide air traffic control service to controlled flights in control areas under its jurisdiction;

44. 'area control service' means air traffic control service for controlled flights in control areas;

45. 'area navigation (RNAV)' means a method of navigation which permits aircraft operation on any desired flight path within the coverage of ground- or space-based navigation aids or within the limits of the capability of self-contained aids, or a combination of these;

46. 'ATS route' means a specified route designed for channelling the flow of traffic as necessary for the provision of air traffic services;

47. 'automatic dependent surveillance — broadcast (ADS-B)' means a means by which aircraft, aerodrome vehicles and other objects can automatically transmit and/or receive data such as identification, position and additional data, as appropriate, in a broadcast mode via a data link;

48. 'automatic dependent surveillance — contract (ADS-C)' means a means by which the terms of an ADS-C agreement will be exchanged between the ground system and the aircraft, via a data link, specifying under what conditions ADS-C reports would be initiated, and what data would be contained in the reports;

48a. 'automatic dependent surveillance — contract (ADS-C) agreement' means a reporting plan which establishes the conditions of ADS-C data reporting (i.e. data required by the air traffic services unit and frequency of ADS-C reports which have to be agreed to, prior to using ADS-C in the provision of air traffic services);

49. 'automatic terminal information service (ATIS)' means the automatic provision of current, routine information to arriving and departing aircraft throughout 24 hours or a specified portion thereof:

(a) 'Data link-automatic terminal information service (D-ATIS)' means the provision of ATIS via data link;

(b) 'Voice-automatic terminal information service (Voice-ATIS)' means the provision of ATIS by means of continuous and repetitive voice broadcasts;

50. 'ceiling' means the height above the ground or water of the base of the lowest layer of cloud below 6 000 m (20 000 ft) covering more than half the sky;

51. 'change-over point' means the point at which an aircraft navigating on an ATS route segment defined by reference to very high frequency omnidirectional radio ranges is expected to transfer its primary navigational reference from the facility behind the aircraft to the next facility ahead of the aircraft;

52. ‘clearance limit’ means the point to which an aircraft is granted an air traffic control clearance;
53. ‘cloud of operational significance’ means a cloud with the height of cloud base below 1 500 m (5 000 ft) or below the highest minimum sector altitude, whichever is greater, or a cumulonimbus cloud or a towering cumulus cloud at any height;
54. ‘code (SSR)’ means the number assigned to a particular multiple pulse reply signal transmitted by a transponder in Mode A or Mode C;
55. ‘competent authority’ means the authority designated by the Member State as competent to ensure compliance with the requirements of this Regulation;
56. ‘control area’ means a controlled airspace extending upwards from a specified limit above the earth;
57. ‘controlled aerodrome’ means an aerodrome at which air traffic control service is provided to aerodrome traffic regardless whether or not a control zone exists;
58. ‘controlled airspace’ means an airspace of defined dimensions within which air traffic control service is provided in accordance with the airspace classification;
59. ‘controlled flight’ means any flight which is subject to an air traffic control clearance;
60. ‘controller-pilot data link communications (CPDLC)’ mean a means of communication between controller and pilot, using data link for ATC communications;
61. ‘control zone’ means a controlled airspace extending upwards from the surface of the earth to a specified upper limit;
62. ‘cruise climb’ means an aeroplane cruising technique resulting in a net increase in altitude as the aeroplane mass decreases;
63. ‘cruising level’ means a level maintained during a significant portion of a flight;
64. ‘current flight plan (CPL)’ means the flight plan, including changes, if any, brought about by subsequent clearances;
65. ‘danger area’ means an airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times;
66. ‘data link communications’ mean a form of communication intended for the exchange of messages via a data link;
67. ‘datum’ means any quantity or set of quantities that may serve as a reference or basis for the calculation of other quantities;
68. ‘downstream clearance’ means a clearance issued to an aircraft by an air traffic control unit that is not the current controlling authority of that aircraft;
69. ‘estimated elapsed time’ means the estimated time required to proceed from one significant point to another;
70. ‘estimated off-block time’ means the estimated time at which the aircraft will commence movement associated with departure;
71. ‘estimated time of arrival (ETA)’ means for IFR flights, the time at which it is estimated that the aircraft will arrive over that designated point, defined by reference to navigation aids, from which it is intended that an instrument approach procedure will be commenced, or, if no navigation aid is associated with the aerodrome, the time at which the aircraft will arrive over the aerodrome. For visual flight rules (VFR) flights, the time at which it is estimated that the aircraft will arrive over the aerodrome;

72. 'expected approach time' means the time at which ATC expects that an arriving aircraft, following a delay, will leave the holding fix to complete its approach for a landing. The actual time of leaving the holding fix will depend upon the approach clearance;

73. 'filed flight plan (FPL)' means the flight plan as filed with an ATS unit by the pilot or a designated representative, without any subsequent changes;

74. 'flight crew member' means a licensed crew member charged with duties essential to the operation of an aircraft during a flight duty period;

75. 'flight information centre' means a unit established to provide flight information service and alerting service;

76. 'flight information region' means an airspace of defined dimensions within which flight information service and alerting service are provided;

77. 'flight information service' means a service provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights;

78. 'flight level (FL)' means a surface of constant atmospheric pressure which is related to a specific pressure datum, 1013,2 hectopascals (hPa), and is separated from other such surfaces by specific pressure intervals;

79. 'flight plan' means specified information provided to air traffic services units, relative to an intended flight or portion of a flight of an aircraft;

80. 'flight visibility' means the visibility forward from the cockpit of an aircraft in flight;

81. 'forecast' means a statement of expected meteorological conditions for a specified time or period, and for a specified area or portion of airspace;

82. 'ground visibility' means the visibility at an aerodrome, as reported by an accredited observer or by automatic systems;

83. 'heading' means the direction in which the longitudinal axis of an aircraft is pointed, usually expressed in degrees from North (true, magnetic, compass or grid);

84. 'height' means the vertical distance of a level, a point or an object considered as a point, measured from a specified datum;

85. 'helicopter' means a heavier-than-air aircraft supported in flight chiefly by the reactions of the air on one or more powerdriven rotors on substantially vertical axes;

86. 'high seas airspace' means airspace beyond land territory and territorial seas, as specified in the United Nations Convention on the Law of the Sea (Montego Bay, 1982);

87. 'IFR' means the symbol used to designate the instrument flight rules;

88. 'IFR flight' means a flight conducted in accordance with the instrument flight rules;

89. 'IMC' means the symbol used to designate instrument meteorological conditions;

89a. 'instrument approach operation' means an approach and landing using instruments for navigation guidance based on an instrument approach procedure. There are two methods for executing instrument approach operations:

(a) a two-dimensional (2D) instrument approach operation, using lateral navigation guidance only; and

(b) a three-dimensional (3D) instrument approach operation, using both lateral and vertical navigation guidance;

90. 'instrument approach procedure (IAP)' means a series of predetermined manoeuvres by reference to flight instruments with specified protection from obstacles from the initial approach fix, or where applicable, from the beginning of a defined arrival route to a point from which a landing can be completed and thereafter, if a landing is not completed, to a position at which holding or en-route obstacle clearance criteria apply. Instrument approach procedures are classified as follows:

    (a) non-precision approach (NPA) procedure. An instrument approach procedure designed for 2D instrument approach operations Type A;

    (b) approach procedure with vertical guidance (APV). A performance-based navigation (PBN) instrument approach procedure designed for 3D instrument approach operations Type A;

    (c) precision approach (PA) procedure. An instrument approach procedure based on navigation systems (ILS, MLS, GLS and SBAS Cat I) designed for 3D instrument approach operations Type A or B;

91. 'instrument meteorological conditions (IMC)' mean meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling, less than the minima specified for visual meteorological conditions;

92. 'landing area' means that part of a movement area intended for the landing or take-off of aircraft;

93. 'level' means a generic term relating to the vertical position of an aircraft in flight and meaning variously, height, altitude or flight level;

94. 'manoeuvring area' means that part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons;

94a. 'minimum fuel' means a term used to describe a situation in which an aircraft's fuel supply has reached a state where the flight is committed to land at a specific aerodrome and no additional delay can be accepted;

95. 'mode (SSR)' means the conventional identifier related to specific functions of the interrogation signals transmitted by an SSR interrogator. There are four modes specified in ICAO Annex 10: A, C, S and intermode;

95a. 'model aircraft' means an unmanned aircraft, other than toy aircraft, having an operating mass not exceeding limits prescribed by the competent authority, that is capable of sustained flight in the atmosphere and that is used exclusively for display or recreational activities;

95b. 'mountainous area' means an area of changing terrain profile where the changes of terrain elevation exceed 900 m (3 000 ft) within a distance of 18,5 km (10,0 NM);

96. 'movement area' means that part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, consisting of the manoeuvring area and the apron(s);

97. 'night' means the hours between the end of evening civil twilight and the beginning of morning civil twilight. Civil twilight ends in the evening when the centre of the sun's disc is 6 degrees below the horizon and begins in the morning when the centre of the sun's disc is 6 degrees below the horizon;

98. 'obstacle' means all fixed (whether temporary or permanent) and mobile objects, or parts thereof, that:

    (a) are located on an area intended for the surface movement of aircraft; or

    (b) extend above a defined surface intended to protect aircraft in flight; or

(c) stand outside those defined surfaces and that have been assessed as being a hazard to air navigation;

99. 'operating site' means a site selected by the operator or pilot-in-command for landing, take-off and/or hoist operations;

100. 'pilot-in-command' means the pilot designated by the operator, or in the case of general aviation, the owner, as being in command and charged with the safe conduct of a flight;

101. 'pressure-altitude' means an atmospheric pressure expressed in terms of altitude which corresponds to that pressure in the Standard Atmosphere, as defined in Annex 8, Part 1 to the Chicago Convention;

102. 'problematic use of substances' means the use of one or more psychoactive substances by aviation personnel in a way that:

(a) constitutes a direct hazard to the user or endangers the lives, health or welfare of others; and/or

(b) causes or worsens an occupational, social, mental or physical problem or disorder;

103. 'prohibited area' means an airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited;

104. 'psychoactive substance' means alcohol, opioids, cannabinoids, sedatives and hypnotics, cocaine, other psychostimulants, hallucinogens, and volatile solvents, whereas caffeine and tobacco are excluded;

105. 'radar' means a radio detection device which provides information on range, azimuth and/or elevation of objects;

106. 'radio mandatory zone (RMZ)' means an airspace of defined dimensions wherein the carriage and operation of radio equipment is mandatory;

107. 'radio navigation service' means a service providing guidance information or position data for the efficient and safe operation of aircraft supported by one or more radio navigation aids;

108. 'radiotelephony' means a form of radiocommunication primarily intended for the exchange of information in the form of speech;

109. 'repetitive flight plan' means a flight plan related to a series of frequently recurring, regularly operated individual flights with identical basic features, submitted by an operator for retention and repetitive use by ATS units;

110. 'reporting point' means a specified geographical location in relation to which the position of an aircraft can be reported;

111. 'restricted area' means an airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is restricted in accordance with certain specified conditions;

112. 'route segment' means a route or portion of route usually flown without an intermediate stop;

113. 'runway' means a defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft;

114. 'runway-holding position' means a designated position intended to protect a runway, an obstacle limitation surface, or an instrument landing system (ILS)/microwave landing system (MLS) critical/sensitive area at which taxiing aircraft and vehicles are to stop and hold, unless otherwise authorised by the aerodrome control tower;

115. 'runway visual range (RVR)' means the range over which the pilot of an aircraft on the centre line of a runway can see the runway surface markings or the lights delineating the runway or identifying its centre line;

116. 'safety-sensitive personnel' means persons who might endanger aviation safety if they perform their duties and functions improperly, including crew members, aircraft maintenance personnel, aerodrome operations personnel, rescue, fire-fighting and maintenance personnel, personnel allowed unescorted access to the movement area and air traffic controllers;

117. 'sailplane' means a heavier-than-air aircraft which is supported in flight by the dynamic reaction of the air against its fixed lifting surfaces, the free flight of which does not depend on an engine, including also hang gliders, paragliders and other comparable craft;

118. 'secondary surveillance radar (SSR)' means a surveillance radar system which uses transmitters/receivers (interrogators) and transponders;

119. 'SIGMET information' means information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather phenomena which may affect the safety of aircraft operations;

120. 'signal area' means an area on an aerodrome used for the display of ground signals;

121. 'significant point' means a specified geographical location used in defining an ATS route or the flight path of an aircraft and for other navigation and ATS purposes;

122. 'special VFR flight' means a VFR flight cleared by air traffic control to operate within a control zone in meteorological conditions below VMC;

123. 'strayed aircraft' means an aircraft which has deviated significantly from its intended track or which reports that it is lost;

124. 'surveillance radar' means radar equipment used to determine the position of an aircraft in range and azimuth;

125. 'taxiing' means movement of an aircraft on the surface of an aerodrome or an operating site under its own power, excluding take-off and landing;

126. 'taxiway' means a defined path on a land aerodrome established for the taxiing of aircraft and intended to provide a link between one part of the aerodrome and another, including:

    (a) Aircraft stand taxilane means a portion of an apron designated as a taxiway and intended to provide access to aircraft stands only.

    (b) Apron taxiway means a portion of a taxiway system located on an apron and intended to provide a through taxi route across the apron.

    (c) Rapid exit taxiway means a taxiway connected to a runway at an acute angle and designed to allow landing aeroplanes to turn off at higher speeds than are achieved on other exit taxiways thereby minimising runway occupancy times;

127. 'territory' means the land areas and territorial waters adjacent thereto under the sovereignty, suzerainty, protection or mandate of a State;

128. 'threshold' means the beginning of that portion of the runway usable for landing;

129. 'total estimated elapsed time' means:

    (a) for IFR flights, the estimated time required from take-off to arrive over that designated point, defined by reference to navigation aids, from which it is intended that an

instrument approach procedure will be commenced, or, if no navigation aid is associated with the destination aerodrome, to arrive over the destination aerodrome;

(b) for VFR flights, the estimated time required from take-off to arrive over the destination aerodrome;

129a. 'toy aircraft' means an unmanned aircraft designed or intended for use, whether or not exclusively, in play by children under 14 years of age;

130. 'track' means the projection on the earth's surface of the path of an aircraft, the direction of which path at any point is usually expressed in degrees from North (true, magnetic or grid);

131. 'traffic avoidance advice' means an advice provided by an air traffic services unit specifying manoeuvres to assist a pilot to avoid a collision;

132. 'traffic information' means information issued by an air traffic services unit to alert a pilot to other known or observed air traffic which may be in proximity to the position or intended route of flight and to help the pilot avoid a collision;

133. 'transfer of control point' means a defined point located along the flight path of an aircraft, at which the responsibility for providing air traffic control service to the aircraft is transferred from one control unit or control position to the next;

134. 'transition altitude' means the altitude at or below which the vertical position of an aircraft is controlled by reference to altitudes;

135. 'transition level' means the lowest flight level available for use above the transition altitude;

136. 'transponder mandatory zone (TMZ)' means an airspace of defined dimensions wherein the carriage and operation of pressure-altitude reporting transponders is mandatory;

137. 'unidentified aircraft' means an aircraft which has been observed or reported to be operating in a given area but whose identity has not been established;

138. 'unmanned free balloon' means a non-power-driven, unmanned, lighter-than-air aircraft in free flight;

139. 'VFR' means the symbol used to designate the visual flight rules;

140. 'VFR flight' means a flight conducted in accordance with the visual flight rules;

141. 'visibility' means visibility for aeronautical purposes which is the greater of:

(a) the greatest distance at which a black object of suitable dimensions, situated near the ground, can be seen and recognised when observed against a bright background;

(b) the greatest distance at which lights in the vicinity of 1 000 candelas can be seen and identified against an unlit background;

142. 'visual meteorological conditions' mean meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling, equal to or better than specified minima;

143. 'VMC' means the symbol used to designate visual meteorological conditions.

GM1 Article 2(25) Air-taxiing

ED Decision 2013/013/R

The actual height during air-taxiing may vary, and some helicopters may require air-taxiing above 8 m (25 ft) AGL to reduce ground effect turbulence or provide clearance for cargo sling loads.

GM1 Article 2(27) Air traffic advisory service

ED Decision 2016/023/R

AIR TRAFFIC ADVISORY SERVICE

(a) Air traffic advisory service does not afford the degree of safety and cannot assume the same responsibilities as air traffic control (ATC) service in respect of the avoidance of collisions, since the information regarding the disposition of traffic in the area concerned available to the unit providing air traffic advisory service may be incomplete.

(b) Aircraft wishing to conduct IFR flights within advisory airspace, but not electing to use the air traffic advisory service, are nevertheless to submit a flight plan, and notify changes made thereto to the unit providing that service.

(c) ATS units providing air traffic advisory service:

(1) *advise* the aircraft to depart at the time specified and to cruise at the levels indicated in the flight plan if it does not foresee any conflict with other known traffic;

(2) *suggest* to aircraft a course of action by which a potential hazard may be avoided, giving priority to an aircraft already in advisory airspace over other aircraft desiring to enter such advisory airspace; and

(3) *pass* to aircraft traffic information comprising the same information as that prescribed for area control service.

GM1 Article 2(28) Air traffic control clearance

ED Decision 2013/013/R

(a) For convenience, the term 'air traffic control clearance' is frequently abbreviated to 'clearance' when used in appropriate contexts.

(b) The abbreviated term 'clearance' may be prefixed by the words 'taxi', 'take-off', 'departure', 'en route', 'approach' or 'landing' to indicate the particular portion of flight to which the air traffic control clearance relates.

GM1 Article 2(34) Air traffic services reporting office

ED Decision 2013/013/R

An air traffic services reporting office may be established as a separate unit or combined with an existing unit, such as another air traffic services unit, or a unit of the aeronautical information service.

GM1 Article 2(38) Alternate aerodrome

ED Decision 2013/013/R

The aerodrome from which a flight departs may also be an en-route or a destination alternate aerodrome for that flight.

GM1 Article 2(39) Altitude

ED Decision 2013/013/R

(a) A pressure type altimeter calibrated in accordance with the Standard Atmosphere when set to a QNH altimeter setting will indicate altitude (above the mean sea level).

(b) The term 'altitude' indicates altimetric rather than geometric altitude.

GM1 Article 2(41) Approach control unit

ED Decision 2013/013/R

The purpose of the definition is to describe the specific services associated to approach control unit. This does not preclude the possibility for an approach control unit to provide air traffic control services to flights other than those arriving or departing.

GM1 Article 2(45) Area navigation (RNAV)

ED Decision 2013/013/R

Area navigation includes performance-based navigation as well as other operations that do not meet the definition of performance-based navigation.

GM1 Article 2(46) ATS route

ED Decision 2013/013/R

(a) The term 'ATS route' is used to mean variously airway, advisory route, controlled or uncontrolled route, arrival or departure route, etc.

(b) An ATS route is defined by route specifications which include an ATS route designator, the track to or from significant points (waypoints), distance between significant points, reporting requirements and, as determined by the competent authority, the lowest safe altitude.

GM1 Article 2(48) Automatic dependent surveillance — contract (ADS-C)

ED Decision 2013/013/R

The abbreviated term 'ADS-C' is commonly used to refer to ADS event contract, ADS demand contract, ADS periodic contract, or an emergency mode.

GM1 Article 2(48a) ADS-C agreement

ED Decision 2013/013/R

The terms of the ADS-C agreement, which establishes the conditions of the ADS-C data reporting, will be exchanged between the ground system and the aircraft by means of a contract, or a series of contracts.

GM1 Article 2(51) Change-over point

ED Decision 2013/013/R

Change-over points are established to provide the optimum balance in respect of signal strength and quality between ground facilities at all levels to be used and to ensure a common source of azimuth guidance for all aircraft operating along the same portion of a route segment.

GM1 Article 2(58) Controlled airspace

ED Decision 2013/013/R

Controlled airspace is a generic term which covers ATS airspace Classes A, B, C, D and E.

GM1 Article 2(78) Flight level

ED Decision 2013/013/R

A pressure type altimeter calibrated in accordance with the Standard Atmosphere, when set to a pressure of 1 013,2 hPa, may be used to indicate flight levels.

GM1 Article 2(84) Height

ED Decision 2013/013/R

(a) A pressure type altimeter calibrated in accordance with the Standard Atmosphere, when set to a QFE altimeter setting, will indicate height (above the QFE reference datum).

(b) The term 'height' indicates altimetric rather than geometric height.

GM1 Article 2(89a) Instrument approach operation

ED Decision 2016/023/R

Lateral and vertical guidance utilised in an instrument approach procedure refers to the guidance provided either by:

(a) a ground-based navigation aid; or

(b) computer-generated navigation data from ground-based, space-based, self-contained navigation aids or a combination of these.

GM1 Article 2(90) Instrument approach procedure

ED Decision 2016/023/R

Instrument approach operations are classified based on the designed lowest operating minima below which an approach operation should only be continued with the required visual reference as follows:

(a) Type A: a minimum descent height or decision height (DH) at or above 75 m (250 ft); and

(b) Type B: a DH below 75 m (250 ft). Type B instrument approach operations are categorised as:

(1) Category I (CAT I): a DH not lower than 60 m (200 ft) and with either a visibility not less than 800 m or a runway visual range (RVR) not less than 550 m;

(2) Category II (CAT II): a DH lower than 60 m (200 ft) but not lower than 30 m (100 ft) and an RVR not less than 300 m;

(3) Category IIIA (CAT IIIA): a DH lower than 30 m (100 ft) or no DH and an RVR not less than 175 m;

(4) Category IIIB (CAT IIIB): a DH lower than 15 m (50 ft) or no DH and an RVR less than 175 m but not less than 50 m; and

(5) Category IIIC (CAT IIIC): no DH and no RVR limitations.

Where DH and RVR fall into different categories of operation, the instrument approach operation would be conducted in accordance with the requirements of the most demanding category (e.g. an operation with a DH in the range of CAT IIIA but with an RVR in the range of CAT IIIB would be considered a CAT IIIB operation, or an operation with a DH in the range of CAT II but with an RVR in the range of CAT I would be considered a CAT II operation).

The required visual reference means that section of the visual aids or of the approach area which should have been in view for sufficient time for the pilot to have made an assessment of the aircraft

position and rate of change of position, in relation to the desired flight path. In the case of a circling approach operation, the required visual reference is the runway environment.

GM1 Article 2(97) Night

ED Decision 2013/013/R

To enable practical application of the definition of night, evening and morning civil twilight may be promulgated pertinent to the date and position.

GM1 Article 2(114) Runway-holding position

ED Decision 2013/013/R

In radiotelephony phraseology, the term 'holding point' is used to designate the runway-holding position.

GM2 Article 2(114) Runway-holding position

ED Decision 2013/013/R

Runway-holding positions also exist at aerodromes with no ATC. In such circumstances authorisation from an aerodrome control tower is not possible.

GM1 Article 2(121) Significant point

ED Decision 2013/013/R

There are three categories of significant points: ground-based navigation aid, intersection, and waypoint. In the context of this definition, intersection is a significant point expressed as radials, bearings and/or distances from ground-based navigation aids.

GM1 to Article 2(129a) Toy aircraft

ED Decision 2016/023/R

Directive 2009/48/EC (the Toy Safety Directive) requires that toys, including the chemicals they contain, shall not jeopardise the safety or health of users or third parties when they are used as intended or in a foreseeable way, bearing in mind the behaviour of children. The Toy Safety Directive additionally requires that toys made available on the market shall bear the CE marking. The CE marking indicates the conformity of the product with the Union legislation applying to the product and providing for CE marking.

GM1 Article 2(138) Unmanned free balloons

ED Decision 2013/013/R

Unmanned free balloons are classified as heavy, medium or light in accordance with the specifications contained in Appendix 2 to this Regulation.

GM1 Article 2(141) Visibility

ED Decision 2013/013/R

(a) The two distances which may be defined by a given visibility have different values in the air of a given extinction coefficient. Visibility based on seeing and recognising an object is represented by the meteorological optical range (MOR) (Article 2(141)(a)). Visibility based on seeing and identifying lights varies with the background illumination (Article 2(141)(b)).

(b) The definition of visibility applies to the observations of visibility in local routine and special reports, to the observations of prevailing and minimum visibility reported in METAR and SPECI, and to the observations of ground visibility.

Article 3 Compliance

Regulation (EU) No 923/2012

The Member States shall ensure compliance with the common rules and provisions set out in the Annex to this Regulation without prejudice to the flexibility provisions contained in Article 14 of the Regulation (EC) No 216/2008 and the safeguards contained in Article 13 of Regulation (EC) No 549/2004.

Article 4 Exemptions for special operations

Regulation (EU) No 2016/1185

1. The competent authorities may, either on their own initiative or based on applications by the entities concerned, grant exemptions to individual entities or to categories of entities from any of the requirements of this Regulation for the following activities of public interest and for the training necessary to carry out those activities safely:
   (a) police and customs missions;
   (b) traffic surveillance and pursuit missions;
   (c) environmental control missions conducted by, or on behalf of public authorities;
   (d) search and rescue;
   (e) medical flights;
   (f) evacuations;
   (g) fire fighting;
   (h) exemptions required to ensure the security of flights by heads of State, Ministers and comparable State functionaries.
2. The competent authority authorising these exemptions shall inform EASA of the nature of the exemptions at latest two months after the exemption has been approved.
3. This Article is without prejudice to Article 3 and may be applied in the cases where the activities listed under paragraph 1, cannot be carried out as operational air traffic or where they otherwise may not benefit from the flexibility provisions contained in this Regulation.

   This Article shall also be without prejudice to helicopter operating minima contained in the specific approvals granted by the competent authority, pursuant to Annex V to Commission Regulation (EU) No 965/2012[1].

[1] Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1).

GM1 Article 4 Exemptions for special operations

ED Decision 2013/013/R

GENERAL

(a) The exemptions covered by Article 4 are intended for cases where the operation is of sufficient public interest to warrant allowing non-compliance with this Regulation, including the acceptance of the additional safety risks involved in such operations. Possible exemptions for normal operations, which are outside the scope of this Article, are covered by the specific provisions in the Annex (e.g. in provisions containing formulations such as 'as permitted by the competent authority', 'unless otherwise specified by the competent authority', etc.).

(b) Depending on the case, the competent authority may decide to grant the exemption to individual flights, groups of flights, or types of operations performed by specified operators.

(c) The exemptions may be granted either permanently, or as a temporary measure. Where the exemption is granted permanently, particular attention should be paid to ensuring that the conditions of the exemptions continue to be complied with over time.

(d) As referred to in Article 4(3), and depending on national rules, some of these operations may be performed under the Operational Air Traffic (OAT) rules in certain Member States and, thus, are entirely outside the scope of this Regulation.

GM2 Article 4 'Exemptions for special operations'

ED Decision 2016/023/R

The competent authority, when granting exemptions in accordance with Article 4, should consider not only case-by-case requests coming from individual entities, but also may grant general exemptions for groups of entities entitled to carry out the listed activities.

Article 5 Differences

Regulation (EU) No 923/2012

1. Further to the entry into force of this Regulation and at the latest by the date of its applicability, the Member States shall:

   (a) formally notify ICAO that all previously notified differences with respect to ICAO Standards and recommended practices that are covered by this Regulation are withdrawn, with the exception of those relating to essential security and defence policy interests of the Member States in accordance with Article 13 of Regulation (EC) No 549/2004;

   (b) notify ICAO of the commonly agreed differences contained in the supplement to the Annex to this Regulation.

2. In accordance with Annex 15 to the Chicago Convention, each Member State shall publish through its Aeronautical Information Publication the commonly agreed differences notified to ICAO in accordance with point (b) of paragraph 1 of this Article, as well as any other provisions necessitated by local air defence and security considerations in accordance with point (a) of paragraph 1 of this Article.

Article 6 Monitoring of amendments

Regulation (EU) No 923/2012

1. Further to the entry into force of this Regulation, the Commission shall establish, with the support of Eurocontrol and EASA, a permanent process:

   (a) to ensure that any amendments adopted under the framework of the Chicago Convention which are of relevance with respect to the scope of this Regulation are monitored and analysed; and

   (b) where necessary, to develop proposals for amendments to the Annex to this Regulation.

2. The provisions of Article 5 of this Regulation relating to the withdrawal and notification of differences and publication in the Aeronautical Information Publication and Article 7 regarding amendments to the Annex shall apply as appropriate.

Article 7 Amendments to the Annex

Regulation (EU) No 923/2012

1. The Annex shall be amended in accordance with Article 5(3) of Regulation (EC) No 549/2004.

2. The amendments referred to in paragraph 1 may include, but shall not be limited to, amendments required to ensure consistency of legal provisions during the future extension of this Regulation to contain the relevant provisions of other ICAO annexes and documents than Annex 2 or changes stemming from updates of those ICAO annexes and documents themselves or from changes to any relevant Union Regulations.

Article 8 Transitional and additional measures

Regulation (EU) No 923/2012

1. Member States that have adopted prior to the entry into force of this Regulation additional provisions complementing an ICAO Standard shall ensure that those are compliant with this Regulation.

2. For the purpose of this Article, such additional provisions complementing an ICAO Standard shall not constitute a difference under the Chicago Convention. The Member States shall publish such additional provisions as well as any matters left to the decision of a competent authority under this Regulation, through their aeronautical information publications. They shall also inform the Commission and EASA at the latest two months after entry into force of this Regulation, or when the additional provision has been adopted.

GM1 Article 8.2 Transitional and additional measures

ED Decision 2016/023/R

Without prejudice to its publication in other relevant sections of the Aeronautical Information Publication (AIP), information pertaining to Article 8.2 should be grouped and published in the national AIP section GEN 1.6.

Examples:

(a) If the competent authority decides to permit VFR flights at night in accordance with SERA.5005(c), general information for the permission should be published in the AIP section GEN 1.6 with reference to the section in the AIP where the details for the conditions applicable for VFR flights at night are published;

(b) If the competent authority designates certain parts of airspace as Radio Mandatory Zones (RMZs) and/or as Transponder Mandatory Zones (TMZs) in accordance with SERA.6005, the general information for such designation should be published in the AIP section GEN 1.6 with reference to the section in the AIP where the details for the established RMZs and/or TMZs are published;

(c) If the competent authority selects separation minima in accordance with SERA.8010(c)(2), general information for such selection should be published in AIP section GEN 1.6 with reference to the section in the AIP where the details for the these minima are published.

It should be noted that the above examples do not cover all possible cases which may require publication of information relevant to Article 8.2 in the national AIP section GEN 1.6.

Article 9 Safety requirements

Regulation (EU) No 923/2012

Further to the entry into force of this Regulation and without prejudice to Article 7, Member States shall, in order to maintain or enhance existing safety levels, ensure that, within the context of a safety management process addressing all aspects of the implementation of this Regulation, a safety assessment on the implementation plan, including hazard identification, risk assessment and mitigation, is conducted, preceding the actual changes to the previously applied procedures. Such mitigation may include the application of Article 3.

Article 10 Amendments to Regulations (EC) No 730/2006, (EC) No 1033/2006, (EC) No 1794/2006, (EC) No 1265/2007, (EU) No 255/2010 and Implementing Regulation (EU) No 1035/2011

Regulation (EU) No 923/2012

1. Regulation (EC) No 730/2006 is amended as follows:

   (a) Article 2(3) and (4) shall be replaced by the following:

   ‘3. “IFR” means the symbol used to designate instrument flight rules;

   4. “VFR” means the symbol used to designate visual flight rules.’

2. Regulation (EC) No 1033/2006 is amended as follows:

   (a) Article 2(2), point 8, shall be replaced by the following:

   ‘8. “IFR” means the symbol used to designate instrument flight rules.’;

   (b) Article 3(1) shall be replaced by the following:

   ‘1. The provisions specified in the Annex shall apply to the submission, acceptance and distribution of flight plans for every flight subject to this Regulation and to all changes to a key item in a flight plan in the pre-flight phase in accordance with this Regulation.’;

   (c) the heading and first indent of the Annex shall be replaced by the following:

‘PROVISIONS REFERRED TO IN ARTICLE 3(1)

1. Section 4 of Commission Implementing Regulation (EU) No 923/2012[1].’

[1] OJ L 281, 13.10.2012, p. 1..

3. Regulation (EC) No 1794/2006 is amended as follows:

   (a) Article 2(c) and (d) shall be replaced by the following:

   ‘(c) “IFR” means the symbol used to designate instrument flight rules;

   (d) “VFR” means the symbol used to designate visual flight rules.’.

4. Regulation (EC) No 1265/2007 is amended as follows:

   (a) Article 2(5) shall be replaced by the following:

   ‘5. “flights operated under visual flight rules” (VFR flights) means any flights conducted in accordance with visual flight rules.’.

5. Regulation (EU) No 255/2010 is amended as follows:

   (a) Article 2(3) shall be replaced by the following:

   ‘3. “IFR” means the symbol used to designate instrument flight rules’.

6. Implementing Regulation (EU) No 1035/2011 is amended as follows:

   (a) the reference in Annex II, point 4(a), to ‘Annex 2 on rules of the air in its 10th edition of July 2005’ shall be replaced by a reference to ‘Implementing Regulation (EU) No 923/2012’;

   (b) the reference in Annex II, point 4(c), to ‘Annex 11 on air traffic services in its 13th edition of July 2001, including all amendments up to No 47-B’ shall be amended by adding at the end of that sentence ‘and Implementing Regulation (EU) No 923/2012 as applicable.’;

   (c) the reference in Annex III, point 2(b), to ‘Annex 11 on air traffic services in its 13th edition of July 2001, including all amendments up to No 47-B’ shall be amended by adding at the end of that sentence ‘and Implementing Regulation (EU) No 923/2012 as applicable;’

Article 11 Entry into force

Regulation (EU) No 923/2012

1. This Regulation shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

   It shall apply from 4 December 2012.

2. By way of derogation from the second subparagraph of paragraph 1, Member States may decide not to apply the provisions of this Regulation until 4 December 2014.

   When a Member State makes use of that possibility, it shall notify to the Commission and EASA in accordance with Article 12(1) of Regulation (EC) No 549/2004, the reasons for that derogation, its duration, as well as the envisaged and related timing of implementation of this Regulation.

Regulation (EU) No 923/2012

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 26 September 2012.

For the Commission
The President
José Manuel BARROSO

ANNEX: RULES OF THE AIR

SECTION 1 FLIGHT OVER THE HIGH SEAS

SERA.1001 General

Regulation (EU) No 923/2012

(a) For flight over the high seas, the rules specified in Annex 2 to the Chicago Convention shall apply without exception. For the purposes of continuity and seamless operation of air traffic services in particular within Functional Airspace Blocks, the provisions of Annex 11 to the Chicago Convention may be applied in airspace over high seas in a manner that is consistent with how those provisions are applied over the territory of the member States. This shall be without prejudice to the operations of State Aircraft under Article 3 of the Chicago Convention. This shall also be without prejudice to the responsibilities of Member States to ensure that aircraft operations within the Flight Information Regions within which they are responsible for the provision of air traffic services in accordance with ICAO regional air navigation agreements are undertaken in a safe, expeditious and efficient manner.

(b) For those parts of the high seas where a Member State has accepted, pursuant to an ICAO regional air navigation agreement, the responsibility of providing air traffic services, the Member State shall designate the ATS provider for providing those services.

SECTION 2 APPLICABILITY AND COMPLIANCE

SERA.2001 Subject

Regulation (EU) No 2016/1185

Without prejudice to SERA.1001 above, this annex addresses, in accordance with Article 1, in particular airspace users and aircraft:

(a) operating into, within or out of the Union;

(b) bearing the nationality and registration marks of a Member State of the Union, and operating in any airspace to the extent that they do not conflict with the rules published by the State having jurisdiction over the territory overflown.

This annex addresses also the actions of the Competent Authorities of the Member States, Air Navigation Service Providers (ANSP), aerodrome operators and the relevant ground personnel engaged in aircraft operations.

SERA.2005 Compliance with the rules of the air

Regulation (EU) No 923/2012

The operation of an aircraft either in flight, on the movement area of an aerodrome or at an operating site shall be in compliance with the general rules, the applicable local provisions and, in addition, when in flight, either with:

(a) the visual flight rules; or

(b) the instrument flight rules.

GM1 SERA.2005(b) Compliance with the rules of the air

ED Decision 2013/013/R

GENERAL

When determining whether to operate in accordance with the visual flight rules or the instrument flight rules, a pilot may elect to fly in accordance with instrument flight rules in visual meteorological conditions, or may be required to do so by the competent authority.

SERA.2010 Responsibilities

Regulation (EU) No 923/2012

(a) Responsibility of the pilot-in-command

The pilot-in-command of an aircraft shall, whether manipulating the controls or not, be responsible for the operation of the aircraft in accordance with this Regulation, except that the pilot-in-command may depart from these rules in circumstances that render such departure absolutely necessary in the interests of safety.

(b) Pre-flight action

Before beginning a flight, the pilot-in-command of an aircraft shall become familiar with all available information appropriate to the intended operation. Pre-flight action for flights away from the vicinity of an aerodrome, and for all IFR flights, shall include a careful study of available current weather reports and forecasts, taking into consideration fuel requirements and an alternative course of action if the flight cannot be completed as planned.

SERA.2015 Authority of pilot-in-command of an aircraft

Regulation (EU) No 923/2012

The pilot-in-command of an aircraft shall have final authority as to the disposition of the aircraft while in command.

SERA.2020 Problematic use of psychoactive substances

Regulation (EU) No 923/2012

No person whose function is critical to the safety of aviation (safety-sensitive personnel) shall undertake that function while under the influence of any psychoactive substance, by reason of which human performance is impaired. No such person shall engage in any kind of problematic use of substances.

SECTION 3 GENERAL RULES AND COLLISION AVOIDANCE

CHAPTER 1 PROTECTION OF PERSONS AND PROPERTY

SERA.3101 Negligent or reckless operation of aircraft

Regulation (EU) No 923/2012

An aircraft shall not be operated in a negligent or reckless manner so as to endanger life or property of others.

SERA.3105 Minimum heights

Regulation (EU) No 923/2012

Except when necessary for take-off or landing, or except by permission from the competent authority, aircraft shall not be flown over the congested areas of cities, towns or settlements or over an open-air assembly of persons, unless at such a height as will permit, in the event of an emergency arising, a landing to be made without undue hazard to persons or property on the surface. The minimum heights for VFR flights shall be those specified in SERA.5005(f) and minimum levels for IFR flights shall be those specified in SERA.5015(b).

GM1 SERA.3105 Minimum heights

ED Decision 2013/013/R

MINIMUM HEIGHTS ESTABLISHED BY THE COMPETENT AUTHORITY ABOVE THE REQUIRED MINIMUM HEIGHTS

In cases where it is considered that the minimum heights specified in SERA.5005 and SERA.5015 are not sufficient, the competent authority may establish appropriate structures, such as controlled, restricted or prohibited airspace, and define specific conditions through national arrangements. In all cases, the related Aeronautical Information Publication (AIP) and charts should be made easy to comprehend for airspace users.

GM2 SERA.3105 Minimum heights

ED Decision 2013/013/R

MINIMUM HEIGHTS PERMITTED BY THE COMPETENT AUTHORITY BELOW THE REQUIRED MINIMUM HEIGHTS

The permission from the competent authority to fly at lower levels than those stipulated in SERA.5005(f) and SERA.5015(b) may be granted either as a general exception for unlimited number of cases or for a specific flight upon specific request. The competent authority is responsible for ensuring that the level of safety resulting from such permission is acceptable.

SERA.3110 Cruising levels

Regulation (EU) No 923/2012

The cruising levels at which a flight or a portion of a flight is to be conducted shall be in terms of:

(a) flight levels, for flights at or above the lowest usable flight level or, where applicable, above the transition altitude;

(b) altitudes, for flights below the lowest usable flight level or, where applicable, at or below the transition altitude.

SERA.3115 Dropping or spraying

Regulation (EU) No 923/2012

Dropping or spraying from an aircraft in flight shall only be conducted in accordance with:

(a) Union legislation or, where applicable, national legislation for aircraft operations regulated by Member States; and

(b) as indicated by any relevant information, advice and/or clearance from the appropriate air traffic services unit.

SERA.3120 Towing

Regulation (EU) No 923/2012

An aircraft or other object shall only be towed by an aircraft in accordance with:

(a) Union legislation or, where applicable, national legislation for aircraft operations regulated by Member States; and

(b) as indicated by any relevant information, advice and/or clearance from the appropriate air traffic services unit.

SERA.3125 Parachute descents

Regulation (EU) No 923/2012

Parachute descents, other than emergency descents, shall only be made in accordance with:

(a) Union legislation or, where applicable, national legislation for aircraft operations regulated by Member States; and

(b) as indicated by any relevant information, advice and/or clearance from the appropriate air traffic services unit.

SERA.3130 Aerobatic flight

Regulation (EU) No 923/2012

Aerobatic flights shall only be carried out in accordance with:

(a) Union legislation or, where applicable, national legislation for aircraft operations regulated by Member States; and

(b) as indicated by any relevant information, advice and/or clearance from the appropriate air traffic services unit.

SERA.3135 Formation flights

Regulation (EU) No 923/2012

Aircraft shall not be flown in formation except by pre-arrangement among the pilots-in-command of the aircraft taking part in the flight and, for formation flight in controlled airspace, in accordance with the conditions prescribed by the competent authority. These conditions shall include the following:

(a) one of the pilots-in-command shall be designated as the flight leader;

(b) the formation operates as a single aircraft with regard to navigation and position reporting;

(c) separation between aircraft in the flight shall be the responsibility of the flight leader and the pilots-in-command of the other aircraft in the flight and shall include periods of transition when aircraft are manoeuvring to attain their own separation within the formation and during join-up and breakaway; and

(d) for State aircraft a maximum lateral, longitudinal and vertical distance between each aircraft and the flight leader in accordance with the Chicago Convention. For other than State aircraft a distance not exceeding 1 km (0,5 nm) laterally and longitudinally and 30 m (100 ft) vertically from the flight leader shall be maintained by each aircraft.

SERA.3140 Unmanned free balloons

Regulation (EU) No 923/2012

An unmanned free balloon shall be operated in such a manner as to minimise hazards to persons, property or other aircraft and in accordance with the conditions specified in Appendix 2.

SERA.3145 Prohibited areas and restricted areas

Regulation (EU) No 923/2012

Aircraft shall not be flown in a prohibited area, or in a restricted area, the particulars of which have been duly published, except in accordance with the conditions of the restrictions or by permission of the Member State over whose territory the areas are established.

CHAPTER 2 AVOIDANCE OF COLLISIONS

SERA.3201 General

Regulation (EU) No 923/2012

Nothing in this Regulation shall relieve the pilot-in-command of an aircraft from the responsibility of taking such action, including collision avoidance manoeuvres based on resolution advisories provided by ACAS equipment, as will best avert collision.

GM1 SERA.3201 General

ED Decision 2013/013/R

VIGILANCE ON BOARD AN AIRCRAFT

Regardless of the type of flight or the class of airspace in which the aircraft is operating, it is important that vigilance for the purpose of detecting potential collisions be exercised on board an aircraft. This vigilance is important at all times including while operating on the movement area of an aerodrome.

SERA.3205 Proximity

Regulation (EU) No 923/2012

An aircraft shall not be operated in such proximity to other aircraft as to create a collision hazard.

SERA.3210 Right-of-way

Regulation (EU) No 923/2012

(a) The aircraft that has the right-of-way shall maintain its heading and speed.

(b) An aircraft that is aware that the manoeuvrability of another aircraft is impaired shall give way to that aircraft.

(c) An aircraft that is obliged by the following rules to keep out of the way of another shall avoid passing over, under or in front of the other, unless it passes well clear and takes into account the effect of aircraft wake turbulence.

(1) *Approaching head-on.* When two aircraft are approaching head-on or approximately so and there is danger of collision, each shall alter its heading to the right.

(2) *Converging.* When two aircraft are converging at approximately the same level, the aircraft that has the other on its right shall give way, except as follows:

(i) power-driven heavier-than-air aircraft shall give way to airships, sailplanes and balloons;

(ii) airships shall give way to sailplanes and balloons;

(iii) sailplanes shall give way to balloons;

(iv) power-driven aircraft shall give way to aircraft which are seen to be towing other aircraft or objects.

(3) *Overtaking.* An overtaking aircraft is an aircraft that approaches another from the rear on a line forming an angle of less than 70 degrees with the plane of symmetry of the latter, i.e. is in such a position with reference to the other aircraft that at night it should be unable to see either of the aircraft's left (port) or right (starboard) navigation lights. An aircraft that is being overtaken has the right-of-way and the overtaking aircraft, whether

climbing, descending or in horizontal flight, shall keep out of the way of the other aircraft by altering its heading to the right, and no subsequent change in the relative positions of the two aircraft shall absolve the overtaking aircraft from this obligation until it is entirely past and clear.

(i) *Sailplanes overtaking*. A sailplane overtaking another sailplane may alter its course to the right or to the left.

(4) *Landing.* An aircraft in flight, or operating on the ground or water, shall give way to aircraft landing or in the final stages of an approach to land.

(i) When two or more heavier-than-air aircraft are approaching an aerodrome or an operating site for the purpose of landing, aircraft at the higher level shall give way to aircraft at the lower level, but the latter shall not take advantage of this rule to cut in front of another which is in the final stages of an approach to land, or to overtake that aircraft. Nevertheless, power-driven heavier-than-air aircraft shall give way to sailplanes.

(ii) *Emergency landing.* An aircraft that is aware that another is compelled to land shall give way to that aircraft.

(5) *Taking off.* An aircraft taxiing on the manoeuvring area of an aerodrome shall give way to aircraft taking off or about to take off.

(d) Surface movement of aircraft, persons and vehicles.

(1) In case of danger of collision between two aircraft taxiing on the movement area of an aerodrome or equivalent part of an operating site, the following shall apply:

(i) when two aircraft are approaching head on, or approximately so, each shall stop or where practicable alter its course to the right so as to keep well clear;

(ii) when two aircraft are on a converging course, the one which has the other on its right shall give way;

(iii) an aircraft which is being overtaken by another aircraft shall have the right-of-way and the overtaking aircraft shall keep well clear of the other aircraft.

(2) At a controlled aerodrome an aircraft taxiing on the manoeuvring area shall stop and hold at all runway-holding positions unless an explicit clearance to enter or cross the runway has been issued by the aerodrome control tower.

(3) An aircraft taxiing on the manoeuvring area shall stop and hold at all lighted stop bars and may proceed further in accordance with (2) when the lights are switched off.

(4) Movement of persons and vehicles at aerodromes:

(i) The movement of persons or vehicles, including towed aircraft, on the manoeuvring area of an aerodrome shall be controlled by the aerodrome control tower as necessary to avoid hazard to them or to aircraft landing, taxiing or taking off.

(ii) In conditions where low visibility procedures are in operation:

(A) persons and vehicles operating on the manoeuvring area of an aerodrome shall be restricted to the essential minimum, and particular regard shall be given to the requirements to protect the ILS/MLS sensitive area(s) when Category II or Category III precision instrument operations are in progress;

(B) subject to the provisions in (iii) the minimum separation between vehicles and taxiing aircraft shall be as specified by the Air Navigation Service Provider (ANSP) and approved by the competent authority taking into account the aids available;

(C) when mixed ILS and MLS Category II or Category III precision instrument operations are taking place to the same runway continuously, the more restrictive ILS or MLS critical and sensitive areas shall be protected.

(iii) Emergency vehicles proceeding to the assistance of an aircraft in distress shall be afforded priority over all other surface movement traffic.

(iv) Subject to the provisions in (iii), vehicles on the manoeuvring area shall be required to comply with the following rules:

(A) vehicles and vehicles towing aircraft shall give way to aircraft which are landing, taking off, taxiing or being towed;

(B) vehicles shall give way to other vehicles towing aircraft;

(C) vehicles shall give way to other vehicles in accordance with air traffic services unit instructions;

(D) notwithstanding the provisions of (A), (B) and (C), vehicles and vehicles towing aircraft shall comply with instructions issued by the aerodrome control tower.

GM1 SERA.3210(d)(3) Right-of-way

ED Decision 2016/023/R

USE OF STOP BARS — CONTINGENCY MEASURES

When considering contingency arrangements for situations where the stop bars cannot be turned off because of a technical problem, the air traffic service provider should take into account that such contingency arrangements should significantly differ from normal operations and should not undermine the principle that a lit stop bar must not be crossed. The service provider may consider, inter alia, the following:

(a) physically disconnecting the respective lit stop bar from its power supply;

(b) physically obscuring the lights of the lit stop bar; or

(c) providing for a marshaller or a follow-me vehicle to lead the aircraft to cross the lit stop bar.

GM1 SERA.3210(d)(4)(ii)(B) Right-of-way

ED Decision 2013/013/R

CONTROL OF PERSONS AND VEHICLES AT AERODROMES

In prescribing the minimum separation between vehicles and taxiing aircraft, the availability of lighting, markings, signals and signage should normally be taken into account.

SERA.3215 Lights to be displayed by aircraft

Regulation (EU) 2016/1185

(a) Except as provided by (e), at night all aircraft in flight shall display:

(1) anti-collision lights intended to attract attention to the aircraft; and

(2) except for balloons, navigation lights intended to indicate the relative path of the aircraft to an observer. Other lights shall not be displayed if they are likely to be mistaken for these lights.

(b) Except as provided by (e), at night:

(1) all aircraft moving on the movement area of an aerodrome shall display navigation lights intended to indicate the relative path of the aircraft to an observer and other lights shall not be displayed if they are likely to be mistaken for these lights;

(2) unless stationary and otherwise adequately illuminated, all aircraft on the movement area of an aerodrome shall display lights intended to indicate the extremities of their structure, as far as practicable;

(3) all aircraft taxiing or being towed on the movement area of an aerodrome shall display lights intended to attract attention to the aircraft; and

(4) all aircraft on the movement area of an aerodrome whose engines are running shall display lights which indicate that fact.

(c) Except as provided by (e), all aircraft in flight and fitted with anti-collision lights to meet the requirement of (a)(1) shall display such lights also during day.

(d) Except as provided by (e), all aircraft:

(1) taxiing or being towed on the movement area of an aerodrome and fitted with anti-collision lights, to meet the requirement of (b)(3); or

(2) on the movement area of an aerodrome and fitted with lights to meet the requirement of (b)(4);

shall display such lights also during day.

(e) A pilot shall be permitted to switch off or reduce the intensity of any flashing lights fitted to meet the requirements of (a), (b), (c) and (d) if they do or are likely to:

(1) adversely affect the satisfactory performance of duties; or

(2) subject an outside observer to harmful dazzle.

GM1 SERA.3215(a);(b) Lights to be displayed by aircraft

ED Decision 2013/013/R

GENERAL

Lights fitted for other purposes, such as landing lights and airframe floodlights, may be used in addition to the anti-collision lights to enhance aircraft conspicuity.

AMC1 SERA.3215(a)(1);(3) Lights to be displayed by aircraft

ED Decision 2013/013/R

BALLOONS LIGHTS

The anti-collision light required for free manned balloons which are certified for VFR at night in accordance with CS 31HB/GB.65 Night lighting should be considered as acceptable means to comply with SERA.3215(a)(1) and SERA.3215(a)(3).

GM1 SERA.3215(a)(1);(3) Lights to be displayed by aircraft

ED Decision 2013/013/R

BALLOONS LIGHTS

The technical specifications that such anti-collision lights specified in AMC1 SERA 3215(a)(1);(3) need to meet can be found in the special conditions 'SC D-01 31HB_GB External and Internal Lights for Free Balloon Night Flight Issue 2'[1].

SERA.3220 Simulated instrument flights

Regulation (EU) No 923/2012

An aircraft shall not be flown under simulated instrument flight conditions unless:

(a) fully functioning dual controls are installed in the aircraft; and

(b) an additional qualified pilot (in this rule called a safety pilot) occupies a control seat to act as safety pilot for the person who is flying under simulated instrument conditions. The safety pilot shall have adequate vision forward and to each side of the aircraft, or a competent observer in communication with the safety pilot shall occupy a position in the aircraft from which the observer's field of vision adequately supplements that of the safety pilot.

GM1 SERA.3220(b) Simulated instrument flights

ED Decision 2013/013/R

SAFETY PILOT

(a) For the purposes of this rule a safety pilot is a pilot who holds a licence which entitles him/her to act as pilot-in-command of the aircraft and is able and prepared to take control of the aircraft at any time during the flight. The safety pilot will maintain lookout, or a competent observer in case the safety pilot does not have full vision of each side of the aircraft, and avoid collisions on behalf of the person flying under simulated instrument conditions.

(b) A control seat is a seat which affords the person sitting in it sufficient access to the flying controls so as to enable him/her to fly the aircraft unimpeded.

SERA.3225 Operation on and in the vicinity of an aerodrome

Regulation (EU) No 923/2012

An aircraft operated on or in the vicinity of an aerodrome shall:

(a) observe other aerodrome traffic for the purpose of avoiding collision;

[1] This special condition can be found in http://easa.europa.eu/certification/docs/special-condition/SC%20D-01%2031HB_GB%20External%20and%20Internal%20Lights%20for%20Free%20Balloon%20Night%20Flight%20Issue%202.pdf

(b) conform with or avoid the pattern of traffic formed by other aircraft in operation;

(c) except for balloons, make all turns to the left, when approaching for a landing and after taking off, unless otherwise indicated, or instructed by ATC;

(d) except for balloons, land and take off into the wind unless safety, the runway configuration, or air traffic considerations determine that a different direction is preferable.

SERA.3230 Water operations

Regulation (EU) No 923/2012

(a) When two aircraft or an aircraft and a vessel are approaching one another and there is a risk of collision, the aircraft shall proceed with careful regard to existing circumstances and conditions including the limitations of the respective craft.

(1) *Converging.* An aircraft which has another aircraft or a vessel on its right shall give way so as to keep well clear.

(2) *Approaching head-on.* An aircraft approaching another aircraft or a vessel head-on, or approximately so, shall alter its heading to the right to keep well clear.

(3) *Overtaking.* The aircraft or vessel which is being overtaken has the right of way, and the one overtaking shall alter its heading to keep well clear.

(4) *Landing and taking off.* Aircraft landing on or taking off from the water shall, in so far as practicable, keep well clear of all vessels and avoid impeding their navigation.

(b) *Lights to be displayed by aircraft on the water*. At night or during any other period prescribed by the competent authority, all aircraft on the water shall display lights as required by the Convention on the International Regulations for Preventing Collisions at Sea, 1972, unless it is impractical for them to do so, in which case they shall display lights as closely similar as possible in characteristics and position to those required by the International Regulations.

GM1 SERA.3230 Water operations

ED Decision 2013/013/R

INTERNATIONAL REGULATIONS FOR PREVENTING COLLISIONS AT SEA

In addition to the provisions of SERA.3230, rules set forth in the International Regulations for Preventing Collisions at Sea, developed by the International Conference on Revision of the International Regulations for Preventing Collisions at Sea (London, 1972), may be applicable in certain cases.

GM1 SERA.3230(b) Water operations

ED Decision 2013/013/R

LIGHTS TO BE DISPLAYED BY AIRCRAFT ON THE WATER

The International Regulations for Preventing Collisions at Sea specify that the rules concerning lights shall be complied with from sunset to sunrise. Any lesser period between sunset and sunrise established in accordance with SERA.3230(b) cannot, therefore, be applied in areas where the International Regulations for Preventing Collisions at Sea apply, e.g. on the high seas.

CHAPTER 3 SIGNALS

SERA.3301 General

Regulation (EU) No 923/2012

(a) Upon observing or receiving any of the signals given in Appendix 1, aircraft shall take such action as may be required by the interpretation of the signal given in that Appendix.

(b) The signals of Appendix 1 shall, when used, have the meaning indicated therein. They shall be used only for the purpose indicated and no other signals likely to be confused with them shall be used.

(c) A signalman/marshaller shall be responsible for providing standard marshalling signals to aircraft in a clear and precise manner using the signals shown in Appendix 1.

(d) Only persons trained, qualified and approved as required by the relevant Union or national legislation shall carry out the functions of a signalman/marshaller.

(e) The signalman/marshaller shall wear a distinctive fluorescent identification vest to allow the flight crew to identify that he or she is the person responsible for the marshalling operation.

(f) Daylight-fluorescent wands, table-tennis bats or gloves shall be used for all signalling by all participating ground staff during daylight hours. Illuminated wands shall be used at night or in low visibility.

CHAPTER 4 TIME

SERA.3401 General

Regulation (EU) No 923/2012

(a) Coordinated Universal Time (UTC) shall be used and shall be expressed in hours and minutes and, when required, seconds of the 24-hour day beginning at midnight.

(b) A time check shall be obtained prior to operating a controlled flight and at such other times during the flight as may be necessary.

(c) Wherever time is utilised in the application of data link communications, it shall be accurate to within 1 second of UTC.

(d) Time in air traffic services

(1) Aerodrome control towers shall, prior to an aircraft taxiing for take-off, provide the pilot with the correct time, unless arrangements have been made for the pilot to obtain it from other sources. Air traffic services units shall, in addition, provide aircraft with the correct time on request. Time checks shall be given at least to the nearest minute.

GM1 SERA.3401(d) General

ED Decision 2013/013/R

TIME IN AIR TRAFFIC SERVICES

In most cases the correct time is obtained through alternative arrangements. The existence of such arrangements should be indicated in the State Aeronautical Information Publication (AIP).

SECTION 4 FLIGHT PLANS

SERA.4001 Submission of a flight plan

Regulation (EU) 2016/1185

(a) Information relative to an intended flight or portion of a flight, to be provided to air traffic services units, shall be in the form of a flight plan. The term 'flight plan' is used to mean variously, full information on all items comprised in the flight plan description, covering the whole route of a flight, or limited information required, inter alia, when the purpose is to obtain a clearance for a minor portion of a flight such as to cross an airway, to take off from, or to land at a controlled aerodrome.

(b) A flight plan shall be submitted prior to operating:

(1) any flight or portion thereof to be provided with air traffic control service;

(2) any IFR flight within advisory airspace;

(3) any flight within or into areas, or along routes designated by the competent authority, to facilitate the provision of flight information, alerting and search and rescue services;

(4) any flight within or into areas or along routes designated by the competent authority, to facilitate coordination with appropriate military units or with air traffic services units in adjacent States in order to avoid the possible need for interception for the purpose of identification;

(5) any flight across international borders, unless otherwise prescribed by the States concerned;

(6) any flight planned to operate at night, if leaving the vicinity of an aerodrome.

(c) A flight plan shall be submitted, before departure, to an air traffic services reporting office or, during flight, transmitted to the appropriate air traffic services unit or air-ground control radio station, unless arrangements have been made for submission of repetitive flight plans.

(d) Unless a shorter period of time has been prescribed by the competent authority for domestic VFR flights, a flight plan for any flight planned to operate across international borders or to be provided with air traffic control service or air traffic advisory service shall be submitted at least 60 minutes before departure, or, if submitted during flight, at a time which will ensure its receipt by the appropriate ATS unit at least 10 minutes before the aircraft is estimated to reach:

(1) the intended point of entry into a control area or advisory area; or

(2) the point of crossing an airway or advisory route.

GM1 SERA.4001 Submission of a flight plan

ED Decision 2013/013/R

GENERAL

(a) A flight plan may cover only part of a flight, as necessary, to describe that portion of the flight or those manoeuvres which are subject to air traffic control.

(b) The term 'submit a flight plan' refers to the action by the pilot or the operator to provide ATS with flight plan information. The term 'filed flight plan' refers to the flight plan as received and accepted by ATS whereas 'transmit a flight plan' refers to the action by a pilot to submit the flight plan, or submit abbreviated flight plan by radiotelephony to the ATS unit concerned.

AMC1 SERA.4001(c) Submission of a flight plan

ED Decision 2016/023/R

In cases where no air traffic services (ATS) reporting office has been established, the flight plan should be submitted to the ATS unit performing the functions of such an office, or via approved direct methods as indicated in the aeronautical information publication (AIP).

SERA.4005 Contents of a flight plan

Regulation (EU) No 923/2012

(a) A flight plan shall comprise information regarding such of the following items as are considered relevant by the competent authority:

(1) Aircraft identification

(2) Flight rules and type of flight

(3) Number and type(s) of aircraft and wake turbulence category

(4) Equipment

(5) Departure aerodrome or operating site

(6) Estimated off-block time

(7) Cruising speed(s)

(8) Cruising level(s)

(9) Route to be followed

(10) Destination aerodrome or operating site and total estimated elapsed time

(11) Alternate aerodrome(s) or operating site(s)

(12) Fuel endurance

(13) Total number of persons on board

(14) Emergency and survival equipment

(15) Other information.

(b) For flight plans submitted during flight, the departure aerodrome or operating site provided shall be the location from which supplementary information concerning the flight may be obtained, if required. Additionally, the information to be provided in lieu of the estimated off-block time shall be the time over the first point of the route to which the flight plan relates.

GM1 SERA.4005(a) Contents of a flight plan

ED Decision 2013/013/R

ABBREVIATED FLIGHT PLAN

An abbreviated flight plan transmitted in the air by radiotelephony for the crossing of controlled airspace, or any other areas or routes designated by the competent authority, normally contains, as a minimum: call sign, type of aircraft, point of entry, point of exit and level. Additional elements may be required by the competent authority.

GM2 SERA.4005(a) Contents of a flight plan

ED Decision 2016/023/R

INFORMATION ABOUT THE OPERATOR IN THE FLIGHT PLAN IN CASE OF PROVIDING ALERTING SERVICE

According to ICAO Annex 11, an ATS unit shall, when practicable, inform the aircraft operator when an alerting service is provided to an aircraft. In order to facilitate quick and effective coordination, it is advisable to provide in the flight plan (item 18 'Other information') information sufficient to enable the ATS unit to contact the on-duty staff of the aircraft operator if such information has not been provided to the ATS unit by other means.

SERA.4010 Completion of a flight plan

Regulation (EU) No 923/2012

(a) A flight plan shall contain information, as applicable, on relevant items up to and including 'Alternate aerodrome(s) or operating site(s)' regarding the whole route or the portion thereof for which the flight plan is submitted.

(b) It shall, in addition, contain information, as applicable, on all other items when so prescribed by the competent authority or when otherwise deemed necessary by the person submitting the flight plan.

SERA.4015 Changes to a flight plan

Regulation (EU) No 923/2012

(a) Subject to the provisions of SERA.8020(b) all changes to a flight plan submitted for an IFR flight, or a VFR flight operated as a controlled flight, shall be reported as soon as practicable to the appropriate air traffic services unit. For other VFR flights, significant changes to a flight plan shall be reported as soon as practicable to the appropriate air traffic services unit.

(b) Information submitted prior to departure regarding fuel endurance or total number of persons carried on board, if incorrect at time of departure, constitutes a significant change to the flight plan and as such shall be reported.

SERA.4020 Closing a flight plan

Regulation (EU) No 923/2012

(a) An arrival report shall be made in person, by radiotelephony, via data link or by other means as prescribed by the competent authority at the earliest possible moment after landing, to the appropriate air traffic services unit at the arrival aerodrome, by any flight for which a flight plan has been submitted covering the entire flight or the remaining portion of a flight to the destination aerodrome.

(1) Submission of an arrival report is not required after landing on an aerodrome where air traffic services are provided on condition that radio communication or visual signals indicate that the landing has been observed.

(b) When a flight plan has been submitted only in respect of a portion of a flight, other than the remaining portion of a flight to destination, it shall, when required, be closed by an appropriate report to the relevant air traffic services unit.

(c) When no air traffic services unit exists at the arrival aerodrome or operating site, the arrival report, when required, shall be made as soon as practicable after landing and by the quickest means available to the nearest air traffic services unit.

(d) When communication facilities at the arrival aerodrome or operating site are known to be inadequate and alternate arrangements for the handling of arrival reports on the ground are not available, the following action shall be taken. Immediately prior to landing the aircraft shall, if practicable, transmit to the appropriate air traffic services unit, a message comparable to an arrival report, where such a report is required. Normally, this transmission shall be made to the aeronautical station serving the air traffic services unit in charge of the flight information region in which the aircraft is operated.

(e) Arrival reports made by aircraft shall contain the following elements of information:

(1) aircraft identification;

(2) departure aerodrome or operating site;

(3) destination aerodrome or operating site (only in the case of a diversionary landing);

(4) arrival aerodrome or operating site;

(5) time of arrival.

GM1 SERA.4020 Closing a flight plan

ED Decision 2013/013/R

ARRIVAL REPORTS

Whenever an arrival report is required, failure to comply with the provisions of SERA.4020 may cause serious disruption in the air traffic services and incur great expenses in carrying out unnecessary search and rescue operations.

SECTION 5 VISUAL METEOROLOGICAL CONDITIONS, VISUAL FLIGHT RULES, SPECIAL VFR AND INSTRUMENT FLIGHT RULES

SERA.5001 VMC visibility and distance from cloud minima

Regulation (EU) 2016/1185

VMC visibility and distance from cloud minima are contained in Table S5-1.

Table S5-1 (*)

Altitude band	Airspace class	Flight visibility	Distance from cloud
At and above 3 050 m (10 000 ft) AMSL	A (**) B C D E F G	8 km	1 500 m horizontally 300 m (1 000 ft) vertically
Below 3 050 m (10 000 ft) AMSL and above 900 m (3 000 ft) AMSL, or above 300 m (1 000 ft) above terrain, whichever is the higher	A (**) B C D E F G	5 km	1500 m horizontally 300 m (1 000 ft) vertically
At and below 900 m (3 000 ft) AMSL, or 300 m (1 000 ft) above terrain, whichever is the higher	A (**) B C D E	5 km	1500 m horizontally 300 m (1 000 ft) vertically
	F G	5 km (***)	Clear of cloud and with the surface in sight

(*) When the height of the transition altitude is lower than 3 050 m (10 000 ft) AMSL, FL 100 shall be used in lieu of 10 000 ft.

(**) The VMC minima in Class A airspace are included for guidance to pilots and do not imply acceptance of VFR flights in Class A airspace.

(***) When so prescribed by the competent authority:

(a) flight visibilities reduced to not less than 1 500 m may be permitted for flights operating:

(1) at speeds of 140 kts IAS or less to give adequate opportunity to observe other traffic or any obstacles in time to avoid collision; or

(2) in circumstances in which the probability of encounters with other traffic would normally be low, e.g. in areas of low volume traffic and for aerial work at low levels;

(b) helicopters may be permitted to operate in less than 1 500 m but not less than 800 m flight visibility, if manoeuvred at a speed that will give adequate opportunity to observe other traffic or any obstacles in time to avoid collision.

SERA.5005 Visual flight rules

Regulation (EU) 2016/1185

(a) Except when operating as a special VFR flight, VFR flights shall be conducted so that the aircraft is flown in conditions of visibility and distance from clouds equal to or greater than those specified in Table S5-1.

(b) Except when a special VFR clearance is obtained from an air traffic control unit, VFR flights shall not take off or land at an aerodrome within a control zone, or enter the aerodrome traffic zone or aerodrome traffic circuit when the reported meteorological conditions at that aerodrome are below the following minima:

(1) the ceiling is less than 450 m (1 500 ft); or

(2) the ground visibility is less than 5 km.

(c) When so prescribed by the competent authority, VFR flights at night may be permitted under the following conditions:

(1) if leaving the vicinity of an aerodrome, a flight plan shall be submitted in accordance with SERA.4001(b)(6);

(2) flights shall establish and maintain two-way radio communication on the appropriate ATS communication channel, when available;

(3) the VMC visibility and distance from cloud minima as specified in Table S5-1 shall apply except that:

(i) the ceiling shall not be less than 450 m (1 500 ft);

(ii) the reduced flight visibility provisions specified in Table S5-1(a) and (b) shall not apply;

(iii) in airspace classes B, C, D, E, F and G, at and below 900 m (3 000 ft) AMSL or 300 m (1 000 ft) above terrain, whichever is the higher, the pilot shall maintain continuous sight of the surface; and

(v) for mountainous area, higher VMC visibility and distance from cloud minima may be prescribed by the competent authority;

(5) except when necessary for take-off or landing, or except when specifically authorised by the competent authority, a VFR flight at night shall be flown at a level which is not below the minimum flight altitude established by the State whose territory is overflown, or, where no such minimum flight altitude has been established:

(i) over high terrain or in mountainous areas, at a level which is at least 600 m (2 000 ft) above the highest obstacle located within 8 km of the estimated position of the aircraft;

(ii) elsewhere than as specified in i), at a level which is at least 300 m (1 000 ft) above the highest obstacle located within 8 km of the estimated position of the aircraft.

(d) VFR flights shall not be operated:

(1) at transonic and supersonic speeds unless authorised by the competent authority;

(2) above FL 195. Exceptions to this requirement are the following:

(i) an airspace reservation has been established, where practical, by the Member States, in which VFR flights may be allowed; or

(ii) airspace up to and including flight level 285, when VFR traffic in that airspace has been authorised by the responsible ATS unit in accordance with the authorisation procedures established by the Member States and published in the relevant aeronautical information publication.

(e) Authorisation for VFR flights to operate above FL 285 shall not be granted where a vertical separation minimum of 300 m (1 000 ft) is applied above FL 290.

(f) Except when necessary for take-off or landing, or except by permission from the competent authority, a VFR flight shall not be flown:

(1) over the congested areas of cities, towns or settlements or over an open-air assembly of persons at a height less than 300 m (1 000 ft) above the highest obstacle within a radius of 600 m from the aircraft;

(2) elsewhere than as specified in (1), at a height less than 150 m (500 ft) above the ground or water, or 150 m (500 ft) above the highest obstacle within a radius of 150 m (500 ft) from the aircraft.

(g) Except where otherwise indicated in air traffic control clearances or specified by the competent authority, VFR flights in level cruising flight when operated above 900 m (3000 ft) from the ground or water, or a higher datum as specified by the competent authority, shall be conducted at a cruising level appropriate to the track as specified in the table of cruising levels in Appendix 3.

(h) VFR flights shall comply with the provisions of Section 8:

(1) when operated within Classes B, C and D airspace;

(2) when forming part of aerodrome traffic at controlled aerodromes; or

(3) when operated as special VFR flights.

(i) A VFR flight operating within or into areas or along routes designated by the competent authority, in accordance with SERA.4001(b)(3) or (4), shall maintain continuous air-ground voice communication watch on the appropriate communication channel of, and report its position as necessary to, the air traffic services unit providing flight information service.

(j) An aircraft operated in accordance with the visual flight rules which wishes to change to compliance with the instrument flight rules shall:

(1) if a flight plan was submitted, communicate the necessary changes to be effected to its current flight plan; or

(2) as required by SERA.4001(b), submit a flight plan to the appropriate air traffic services unit as soon as practicable and obtain a clearance prior to proceeding IFR when in controlled airspace.

GM1 SERA.5005(c)(3)(iii) Visual flight rules

ED Decision 2016/023/R

NIGHT VFR ON TOP

When flying in airspace classes B, C, D, E, F, or G, more than 900 m (3 000 ft) above mean sea level (MSL) or 300 m (1 000 ft) above terrain, whichever is higher, the pilot may elect to fly above a cloud layer (VFR on top). When making the decision on whether to fly above or below a cloud at night, consideration should be given at least but not limited to the following:

(a) The likelihood of weather at destination allowing a descent in visual conditions;

(b) Lighting conditions below and above the cloud layer;

(c) The likelihood of the cloud base descending, if flight below cloud is chosen, thus resulting in terrain clearance being lost;

(d) The possibility of flight above the cloud leading to flight between converging cloud layers;

(e) The possibility of successfully turning back and returning to an area where continuous sight of surface can be maintained; and

(f) The possibilities for the pilot to establish their location at any point of the route to be flown, taking into consideration also the terrain elevation and geographical and man-made obstacles.

AMC1 SERA.5005(f) Visual flight rules

ED Decision 2013/013/R

VFR MINIMUM HEIGHTS — PERMISSION FROM THE COMPETENT AUTHORITY

The competent authority should specify the conditions under which the permission is or may be granted, including the minimum heights above the terrain, water or the highest obstacle within a radius of 150 m (500 ft) from an aircraft practising forced landings, a balloon or an aircraft executing ridge or hill soaring.

GM1 SERA.5005(f) Visual flight rules

ED Decision 2013/013/R

VFR MINIMUM HEIGHTS — PERMISSION FROM THE COMPETENT AUTHORITY

Subject to an appropriate safety assessment, permission from the competent authority may also be granted for cases like:

(a) aircraft operating in accordance with the procedure promulgated for the notified route being flown;

(b) helicopters operating at a height that will permit, in the event of an emergency arising, a landing to be made without undue hazard to persons or property on the surface;

(c) aircraft picking up or dropping tow ropes, banners or similar articles at an aerodrome;

(d) any other flights not specified above, where specific exemption is required to accomplish a specific task.

SERA.5010 Special VFR in control zones

Regulation (EU) 2016/1185

Special VFR flights may be authorised to operate within a control zone, subject to an ATC clearance. Except when permitted by the competent authority for helicopters in special cases such as, but not limited to, police, medical, search and rescue operations and fire-fighting flights, the following additional conditions shall be applied:

(a) such special VFR flights may be conducted during day only, unless otherwise permitted by the competent authority;

(b) by the pilot:

  (1) clear of cloud and with the surface in sight;

  (2) the flight visibility is not less than 1 500 m or, for helicopters, not less than 800 m;

  (3) fly at a speed of 140 kts IAS or less to give adequate opportunity to observe other traffic and any obstacles in time to avoid a collision; and

(c) an air traffic control unit shall not issue a special VFR clearance to aircraft to take off or land at an aerodrome within a control zone, or enter the aerodrome traffic zone or aerodrome traffic circuit when the reported meteorological conditions at that aerodrome are below the following minima:

  (1) the ground visibility is less than 1 500 m or, for helicopters, less than 800 m;

  (2) the ceiling is less than 180 m (600 ft).

GM1 SERA.5010 Special VFR in control zones

ED Decision 2016/023/R

The list of type of operations subject to permit by the competent authority to deviate from the requirements for special visual flight rules (VFR) flights is not exhaustive. The competent authority may grant a permit for other kind of helicopter operations such as power line inspections, helicopter hoist operations, etc.

AMC1 SERA.5010(a)(3) Special VFR in control zones

ED Decision 2013/013/R

SPEED LIMIT TO BE APPLIED BY HELICOPTER PILOTS

The 140 kt speed should not be used by helicopters operating at a visibility below 1 500 m. In such case, a lower speed appropriate to the actual conditions should be applied by the pilot.

GM1 SERA.5010(a)(3) Special VFR in control zones

ED Decision 2013/013/R

SPEED LIMIT TO BE APPLIED BY HELICOPTER PILOTS

The 140 kt speed is to be considered as an absolute maximum acceptable speed in order to maintain an acceptable level of safety when the visibility is 1 500 m or more. Lower speeds should be applied according to elements such as local conditions, number and experience of pilots on board, using the guidance of the table below:

Visibility (m)	Advisory speed (kt)
800	50
1 500	100
2 000	120

GM1 SERA.5010(b)(2) Special VFR in control zones

ED Decision 2016/023/R

When assessing the prevailing flight visibility, the pilots should use their best judgement. The assessment should be based, for example, on the pilot's overall flight experience, knowledge of local conditions and procedures, visible landmarks, etc. Furthermore, the pilot should possess the latest weather observations and forecasts.

AMC1 SERA.5010(b)(3) Special VFR in control zones

ED Decision 2016/023/R

SPEED LIMIT TO BE APPLIED BY HELICOPTER PILOTS

The 140 kt-speed should not be used by helicopters operating at a visibility below 1 500 m. In such case, a lower speed appropriate to the actual conditions should be applied by the pilot.

GM1 SERA.5010(c) Special VFR in control zones

ED Decision 2016/023/R

When the reported ground visibility at the aerodrome is less than 1 500 m, ATC may issue a special VFR clearance for a flight crossing the control zone and not intending to take off or land at an aerodrome within a control zone, or enter the aerodrome traffic zone or aerodrome traffic circuit when the flight visibility reported by the pilot is not less than 1 500 m, or, for helicopters, not less than 800 m.

SERA.5015 Instrument flight rules (IFR) — Rules applicable to all IFR flights

Regulation (EU) 2016/1185

(a) Aircraft equipment

Aircraft shall be equipped with suitable instruments and with navigation equipment appropriate to the route to be flown and in accordance with the applicable air operations legislation.

(b) Minimum levels

Except when necessary for take-off or landing, or except when specifically authorised by the competent authority, an IFR flight shall be flown at a level which is not below the minimum flight altitude established by the State whose territory is overflown, or, where no such minimum flight altitude has been established:

(1) over high terrain or in mountainous areas, at a level which is at least 600 m (2 000 ft) above the highest obstacle located within 8 km of the estimated position of the aircraft;

(2) elsewhere than as specified in (1), at a level which is at least 300 m (1 000 ft) above the highest obstacle located within 8 km of the estimated position of the aircraft.

(c) Change from IFR flight to VFR flight

(1) An aircraft electing to change the conduct of its flight from compliance with the instrument flight rules to compliance with the visual flight rules shall notify the appropriate air traffic services unit specifically that the IFR flight is cancelled and communicate thereto the changes to be made to its current flight plan.

(2) When an aircraft operating under the instrument flight rules is flown in or encounters visual meteorological conditions it shall not cancel its IFR flight unless it is anticipated, and intended, that the flight will be continued for a reasonable period of time in uninterrupted visual meteorological conditions.

(3) Change from IFR flight to VFR flight shall only be acceptable when a message initiated by the pilot-in-command containing the specific expression 'CANCELLING MY IFR FLIGHT', together with the changes, if any, to be made to the current flight plan, is received by an ATS unit. No invitation to change from IFR flight to VFR flight shall be made by ATS either directly or by inference.

GM1 SERA.5015(b) Instrument flight rules (IFR) — Rules applicable to all IFR flights

ED Decision 2013/013/R

MINIMUM LEVELS

When determining which are the highest obstacles within 8 km of the estimated position of the aircraft, the estimate will take account of the navigational accuracy which can be achieved on the relevant route segment, having regard to the navigational facilities available on the ground and in the aircraft.

GM1 SERA.5015(c)(3) Instrument flight rules (IFR) — Rules applicable to all IFR flights

ED Decision 2016/023/R

No reply, other than the acknowledgment 'IFR FLIGHT CANCELLED AT ... (time)', should normally be made by an ATS unit.

SERA.5020 IFR — Rules applicable to IFR flights within controlled airspace

Regulation (EU) No 923/2012

(a) IFR flights shall comply with the provisions of Section 8 when operated in controlled airspace.

(b) An IFR flight operating in cruising flight in controlled airspace shall be flown at a cruising level, or, if authorised by ATS unit to employ cruise climb techniques, between two levels or above a level, selected from the table of cruising levels in Appendix 3, except that the correlation of levels to track prescribed therein shall not apply whenever otherwise indicated in air traffic control clearances or specified by the competent authority in aeronautical information publications.

SERA.5025 IFR — Rules applicable to IFR flights outside controlled airspace

Regulation (EU) No 923/2012

(a) Cruising levels

An IFR flight operating in level cruising flight outside of controlled airspace shall be flown at a cruising level appropriate to its track as specified in the table of cruising levels in Appendix 3, except when otherwise specified by the competent authority for flight at or below 900 m (3 000 ft) above mean sea level.

(b) Communications

An IFR flight operating outside controlled airspace but within or into areas, or along routes, designated by the competent authority in accordance with SERA.4001(b)(3) or (4) shall maintain an air-ground voice communication watch on the appropriate communication channel and establish two-way communication, as necessary, with the air traffic services unit providing flight information service.

(c) Position reports

An IFR flight operating outside controlled airspace and required by the competent authority to maintain an air-ground voice communication watch on the appropriate communication channel and establish two-way communication, as necessary, with the air traffic services unit providing flight information service, shall report position, as specified in SERA.8025 for controlled flights.

GM1 SERA.5025(a) IFR — Rules applicable to IFR flights outside controlled airspace

ED Decision 2013/013/R

CRUISING LEVELS

Although an IFR flight operating in level cruising flight outside controlled airspace is to be flown at a cruising level appropriate to its track, as specified in the table of cruising levels, this does not preclude the use of cruise climb techniques.

GM1 SERA.5025(c) IFR — Rules applicable to IFR flights outside controlled airspace

ED Decision 2013/013/R

POSITION REPORTS

Aircraft electing to use the air traffic advisory service whilst operating under IFR within specified advisory airspace are expected to comply with the provisions of 'Section 8 — Air traffic Control Service', except that the flight plan and changes thereto are not subject to clearances and that two-way communication will be maintained with the unit providing the air traffic advisory service.

SECTION 6 AIRSPACE CLASSIFICATION

SERA.6001 Classification of airspaces

Regulation (EU) No 923/2012

(a) Member States shall designate airspace in accordance with the following airspace classification and in accordance with Appendix 4:

(1) *Class A*. IFR flights only are permitted. All flights are provided with air traffic control service and are separated from each other. Continuous air-ground voice communications are required for all flights. All flights shall be subject to ATC clearance.

(2) *Class B*. IFR and VFR flights are permitted. All flights are provided with air traffic control service and are separated from each other. Continuous air-ground voice communications are required for all flights. All flights shall be subject to ATC clearance.

(3) *Class C*. IFR and VFR flights are permitted. All flights are provided with air traffic control service and IFR flights are separated from other IFR flights and from VFR flights. VFR flights are separated from IFR flights and receive traffic information in respect of other VFR flights and traffic avoidance advice on request. Continuous air-ground voice communications are required for all flights. For VFR flights a speed limitation of 250 kts indicated airspeed (IAS) applies below 3 050 m (10 000 ft) AMSL, except where approved by the competent authority for aircraft types, which for technical or safety reasons, cannot maintain this speed. All flights shall be subject to ATC clearance.

(4) *Class D*. IFR and VFR flights are permitted and all flights are provided with air traffic control service. IFR flights are separated from other IFR flights, receive traffic information in respect of VFR flights and traffic avoidance advice on request. VFR flights receive traffic information in respect of all other flights and traffic avoidance advice on request. Continuous air-ground voice communications are required for all flights and a speed limitation of 250 kts IAS applies to all flights below 3 050 m (10 000 ft) AMSL, except where approved by the competent authority for aircraft types, which for technical or safety reasons, cannot maintain this speed. All flights shall be subject to ATC clearance.

(5) *Class E*. IFR and VFR flights are permitted. IFR flights are provided with air traffic control service and are separated from other IFR flights. All flights receive traffic information, as far as is practical. Continuous air-ground voice communications are required for IFR flights. A speed limitation of 250 kts IAS applies to all flights below 3 050 m (10 000 ft) AMSL, except where approved by the competent authority for aircraft types, which for technical or safety reasons cannot maintain this speed. All IFR flights shall be subject to ATC clearance. Class E shall not be used for control zones.

(6) *Class F*. IFR and VFR flights are permitted. All participating IFR flights receive an air traffic advisory service and all flights receive flight information service if requested. Continuous air-ground voice communications are required for IFR flights participating in the advisory service and all IFR flights shall be capable of establishing air-ground voice communications. A speed limitation of 250 kts IAS applies to all flights below 3 050 m (10 000 ft) AMSL, except where approved by the competent authority for aircraft types, which for technical or safety reasons cannot maintain this speed. ATC clearance is not required.

(7) *Class G*. IFR and VFR flights are permitted and receive flight information service if requested. All IFR flights shall be capable of establishing air- ground voice

communications. A speed limitation of 250 kts IAS applies to all flights below 3 050 m (10 000 ft) AMSL, except where approved by the competent authority for aircraft types, which for technical or safety reasons cannot maintain this speed. ATC clearance is not required.

(8) Implementation of Class F shall be considered as a temporary measure until such time as it can be replaced by an alternative classification.

(b) The designation of the airspace classification shall be appropriate to the needs of the Member States, except that all airspace above FL 195 shall be classified as Class C airspace.

AMC1 SERA.6001 Classification of airspaces

ED Decision 2013/013/R

GENERAL

Where ATS airspaces adjoin vertically, i.e. one above the other, flights at a common level should comply with the requirements of, and be given services applicable to, the less restrictive class of airspace.

GM1 SERA.6001 Classification of airspaces

ED Decision 2013/013/R

GENERAL

(a) Class B airspace is considered less restrictive than Class A airspace; Class C airspace less restrictive than Class B airspace, etc.

(b) The speed limitation of 250 kt for VFR flights in airspace Classes C, D, E, F, G and for IFR flights in airspace Classes D, E, F, G is intended to facilitate visual acquisition of flights which are not separated.

(c) Wherever there is a need to accommodate within a given airspace class operations compatible with a less restrictive class, the following may be used:

(1) reclassification of the airspace concerned;

(2) redesigning the volume of airspace concerned by defining airspace restrictions or reservations, or subvolumes of less restrictive classes of airspace (e.g. corridors).

AMC1 SERA.6001(a)(4);(5);(6);(7) Classification of airspaces

ED Decision 2013/013/R

SPEED LIMITATION — SAFETY ASSESSMENT AND APPROVAL BY THE COMPETENT AUTHORITY

Approval by the competent authority of an alleviation of the 250 kt speed limitation below 3 050 m (10 000 ft) should be based on a safety assessment. The conditions for granting such alleviation should be specified in the Member State Aeronautical Information Publication (AIP).

GM1 SERA.6001(a)(4);(5);(6);(7) Classification of airspaces

ED Decision 2013/013/R

SPEED LIMITATION — SAFETY ASSESSMENT AND APPROVAL BY THE COMPETENT AUTHORITY

(a) The following should, as a minimum, be considered when developing the safety assessment:

(1) air traffic, airspace classes requirements, and airspace design, the procedures designed for the airspace, and the potential use of clearances to maintain own separation as described in GM1 to SERA.8005(b);

(2) the minimum safe speed stated in the approved Aircraft Flight Manual (AFM) of the relevant aircraft types.

(b) The safety assessment should be developed in coordination with the relevant airspace users.

(c) Coordination should be ensured with the affected airspace users who should provide the data necessary for the development of the safety assessment.

(d) The competent authority should ensure that the aircraft types eligible for such alleviation are specified in the Member State Aeronautical Information Publication.

GM2 SERA.6001(a)(4);(5);(6);(7) Classification of airspaces

ED Decision 2013/013/R

SPEED LIMITATION — SAFETY ASSESSMENT AND APPROVAL BY THE COMPETENT AUTHORITY

(a) For localised alleviations from the speed limitation, the safety assessment is normally conducted by the ATS provider and is subject to approval by the competent authority.

(b) Where alleviation is applied universally across the airspace of the Member State, the competent authority should ensure that appropriate safety assessment has been conducted.

AMC1 SERA.6001(a)(8) Classification of airspaces

ED Decision 2013/013/R

GENERAL

Class F airspace should only be implemented where the air traffic services are inadequate for the provision of air traffic control, and the limited advice on collision hazards otherwise provided by flight information service will not be adequate. Where air traffic advisory service is implemented, this should be considered as a temporary measure only until such time as it can be replaced by air traffic control service or, in cases where the traffic situation changes such that advisory service is no longer required, replaced by flight information service.

GM1 SERA.6001(a)(8) Classification of airspaces

ED Decision 2013/013/R

DURATION OF TEMPORARY MEASURE

(a) When establishing Class F airspace, its intended temporary duration after which it should be replaced by an alternative classification should be specified in the AIP of the Member State.

(b) The intended temporary duration of Class F airspace should not be longer than 3 years.

EXAMPLE

(c) Certain CTR airspace may change its classification on a daily basis (e.g. from 06:00 to 20:00 the airspace is classified as Class A, and from 20:00 until 23:59 and from 00:00 until 05:59 is classified as Class F). In this case, the duration of these arrangements should not exceed 3 years.

SERA.6005 Requirements for communications and SSR transponder

Regulation (EU) No 923/2012

(a) Radio mandatory zone (RMZ)

(1) VFR flights operating in parts of Classes E, F or G airspace and IFR flights operating in parts of Classes F or G airspace designated as a radio mandatory zone (RMZ) by the competent authority shall maintain continuous air-ground voice communication watch and establish two-way communication, as necessary, on the appropriate communication channel, unless in compliance with alternative provisions prescribed for that particular airspace by the ANSP.

(2) Before entering a radio mandatory zone, an initial call containing the designation of the station being called, call sign, type of aircraft, position, level, the intentions of the flight and other information as prescribed by the competent authority, shall be made by pilots on the appropriate communication channel.

(b) Transponder mandatory zone (TMZ)

(1) All flights operating in airspace designated by the competent authority as a transponder mandatory zone (TMZ) shall carry and operate SSR transponders capable of operating on Modes A and C or on Mode S, unless in compliance with alternative provisions prescribed for that particular airspace by the ANSP.

(c) Airspaces designated as radio mandatory zone and/or transponder mandatory zone shall be duly promulgated in the aeronautical information publications.

SECTION 7 AIR TRAFFIC SERVICES

SERA.7001 General — Objectives of the air traffic services

Regulation (EU) No 923/2012

The objectives of the air traffic services shall be to:

(a) prevent collisions between aircraft;

(b) prevent collisions between aircraft on the manoeuvring area and obstructions on that area;

(c) expedite and maintain an orderly flow of air traffic;

(d) provide advice and information useful for the safe and efficient conduct of flights;

(e) notify appropriate organisations regarding aircraft in need of search and rescue aid, and assist such organisations as required.

GM1 SERA.7001 General — Objectives of the air traffic services

ED Decision 2013/013/R

GENERAL

These provisions are general statements which represent high-level safety objectives to be met when providing ATS and which are the basis of all the provisions of this Part.

SERA.7002 Collision hazard information when ATS based on surveillance are provided

Regulation (EU) 2016/1185

(a) When an identified controlled flight is observed to be on a conflicting path with an unknown aircraft, deemed to constitute a collision hazard, the pilot of the controlled flight shall, whenever practicable:

(1) be informed of the unknown aircraft, and, if the pilot so requests, or if the situation so warrants in the opinion of the controller, avoiding action shall be suggested; and

(2) be notified when the conflict no longer exists.

AMC1 SERA.7002(a)(1) Collision hazard information when ATS based on surveillance are provided

ED Decision 2016/023/R

INFORMATION REGARDING TRAFFIC ON CONFLICTING PATH

(a) Information regarding traffic on a conflicting path should be given, whenever practicable, in the following form:

(1) relative bearing of the conflicting traffic in terms of the 12-hour clock;

(2) distance from the conflicting traffic in kilometres or nautical miles;

(3) direction in which the conflicting traffic appears to be proceeding; and

(4) level and type of aircraft or, if unknown, relative speed of the conflicting traffic, e.g. slow or fast.

(b) Pressure-altitude-derived level information, even when unverified, should be used in the provision of collision hazard information because such information, particularly if available from an otherwise unknown aircraft (e.g. a VFR flight) and given to the pilot of a known aircraft, could facilitate the location of a collision hazard. If the level information has not been verified, the accuracy of the information should be considered uncertain and the pilot should be informed accordingly.

GM1 to (a)(1) of AMC1 SERA.7002(a)(1) Collision hazard information when ATS based on surveillance are provided

ED Decision 2016/023/R

In cases where using the terms of the 12-hour clock is not practicable, like when the aircraft is turning, the direction of the unknown aircraft may be given by compass points, e.g. northwest, south, etc.;

GM1 to (a)(4) of AMC1 SERA.7002(a)(1) Collision hazard information when ATS based on surveillance are provided

ED Decision 2016/023/R

The level may be described either as a flight level, altitude or height, or as a relative vertical distance from the aircraft provided with traffic information (e.g. 1 000 ft above or 1 000 ft below).

GM1 SERA.7002(a)(1) Collision hazard information when ATS based on surveillance are provided

ED Decision 2016/023/R

INFORMATION REGARDING TRAFFIC ON CONFLICTING PATH OUTSIDE CONTROLLED AIRSPACE

When an identified IFR flight operating outside controlled airspace is observed to be on a conflicting path with another aircraft, the pilot should be:

(a) informed of the traffic, and if so requested by the pilot or if, in the opinion of the controller, the situation warrants, a course of avoiding action should be suggested; and

(b) notified when the conflict no longer exists.

GM2 SERA.7002(a)(1) Collision hazard information when ATS based on surveillance are provided

ED Decision 2016/023/R

The information presented on a situation display may be used to provide identified aircraft with information regarding any aircraft observed to be on a conflicting path with the identified aircraft, and suggestions or advice regarding avoiding action.

GM3 SERA.7002(a)(1) Collision hazard information when ATS based on surveillance are provided

ED Decision 2016/023/R

The provision of collision hazard information does not absolve pilots of VFR flights from their responsibilities for avoiding terrain/obstacles and for maintaining visual meteorological conditions.

GM4 SERA.7002(a)(1) Collision hazard information when ATS based on surveillance are provided

ED Decision 2016/023/R

Collision hazard information should be provided where practicable. This should be done taking account of the priorities related to various tasks, such as provision of separation in accordance with the airspace classification, as well as equipment and workload limitations.

SERA.7005 Coordination between the aircraft operator and air traffic services

Regulation (EU) No 923/2012

(a) Air traffic services units, in carrying out their objectives, shall have due regard for the requirements of the aircraft operators consequent on their obligations as specified in the relevant Union legislation on Air Operations, and, if so required by the aircraft operators, shall make available to them or their designated representatives such information as may be available to enable them or their designated representatives to carry out their responsibilities.

(b) When so requested by an aircraft operator, messages (including position reports) received by air traffic services units and relating to the operation of the aircraft for which operational control service is provided by that aircraft operator shall, so far as practicable, be made available immediately to the aircraft operator or a designated representative in accordance with locally agreed procedures.

GM1 SERA.7005(a) Coordination between the aircraft operator and air traffic services

ED Decision 2013/013/R

GENERAL

The expression 'due regard' is meant to indicate that the air traffic services units, in their coordination with the aircraft operators, should take into account the obligations of the operators in accordance with the European Union rules on air operations, and provide them with the information they require to operate in accordance with those rules.

SECTION 8 AIR TRAFFIC CONTROL SERVICE

SERA.8001 Application

Regulation (EU) No 923/2012

Air traffic control service shall be provided:

(a) to all IFR flights in airspace Classes A, B, C, D and E;

(b) to all VFR flights in airspace Classes B, C and D;

(c) to all special VFR flights;

(d) to all aerodrome traffic at controlled aerodromes.

SERA.8005 Operation of air traffic control service

Regulation (EU) No 923/2012

(a) In order to provide air traffic control service, an air traffic control unit shall:

(1) be provided with information on the intended movement of each aircraft, or variations therefrom, and with current information on the actual progress of each aircraft;

(2) determine from the information received, the relative positions of known aircraft to each other;

(3) issue clearances and information for the purpose of preventing collision between aircraft under its control and of expediting and maintaining an orderly flow of traffic;

(4) coordinate clearances as necessary with other units:

(i) whenever an aircraft might otherwise conflict with traffic operated under the control of such other units;

(ii) before transferring control of an aircraft to such other units.

(b) Clearances issued by air traffic control units shall provide separation:

(1) between all flights in airspace Classes A and B;

(2) between IFR flights in airspace Classes C, D and E;

(3) between IFR flights and VFR flights in airspace Class C;

(4) between IFR flights and special VFR flights;

(5) between special VFR flights unless otherwise prescribed by the competent authority;

except that, when requested by the pilot of an aircraft and agreed by the pilot of the other aircraft and if so prescribed by the competent authority for the cases listed under b) above in airspace Classes D and E, a flight may be cleared subject to maintaining own separation in respect of a specific portion of the flight below 3 050 m (10 000 ft) during climb or descent, during day in visual meteorological conditions.

(c) Except for cases when a reduction in separation minima in the vicinity of aerodromes can be applied, separation by an air traffic control unit shall be obtained by at least one of the following:

(1) vertical separation, obtained by assigning different levels selected from the table of cruising levels in Appendix 3 to the Annex to this Regulation, except that the correlation

of levels to track as prescribed therein shall not apply whenever otherwise indicated in appropriate aeronautical information publications or air traffic control clearances. The vertical separation minimum shall be a nominal 300 m (1 000 ft) up to and including FL 410 and a nominal 600 m (2 000 ft) above this level;

(2) horizontal separation, obtained by providing:

(i) longitudinal separation, by maintaining an interval between aircraft operating along the same, converging or reciprocal tracks, expressed in time or distance; or

(ii) lateral separation, by maintaining aircraft on different routes or in different geographical areas.

GM1 SERA.8005(b) Operation of air traffic control service

ED Decision 2013/013/R

CLEARANCES TO MAINTAIN OWN SEPARATION

Clearances for a pilot to maintain own separation in respect of a specific portion of the flight in airspace Classes D and E below 3 050 m (10 000 ft) during climb or descent, during day in visual meteorological conditions are based on the fact that in those airspace classes a speed restriction of 250 kt is applied to all flights, allowing pilots of both aircraft to observe other flights in time to avoid collision.

SERA.8010 Separation minima

Regulation (EU) No 923/2012

(a) The selection of separation minima for application within a given portion of airspace shall be made by the ANSP responsible for the provision of air traffic services and approved by the competent authority concerned.

(b) For traffic that will pass from one into the other of neighbouring airspaces and for routes that are closer to the common boundary of the neighbouring airspaces than the separation minima applicable in the circumstances, the selection of separation minima shall be made in consultation between the ANSPs responsible for the provision of air traffic services in neighbouring airspace.

(c) Details of the selected separation minima and of their areas of application shall be notified:

(1) to the air traffic services units concerned; and

(2) to pilots and aircraft operators through aeronautical information publications, where separation is based on the use by aircraft of specified navigation aids or specified navigation techniques.

GM1 SERA.8010(b) Separation minima

ED Decision 2013/013/R

GENERAL

The purpose of this provision is to ensure, in the first case, compatibility on both sides of the line of transfer of traffic and, in the other case, adequate separation between aircraft operating on both sides of the common boundary.

SERA.8012 Application of wake turbulence separation

Regulation (EU) 2016/1185

(a) Wake turbulence separation minima shall be applied to aircraft in the approach and departure phases of flight under the following circumstances:

(1) an aircraft is operating directly behind another aircraft at the same altitude or less than 300 m (1 000 ft) below it; or

(2) both aircraft are using the same runway or parallel runways separated by less than 760 m (2 500 ft); or

(3) an aircraft is crossing behind another aircraft at the same altitude or less than 300 m (1 000 ft) below it.

SERA.8015 Air traffic control clearances

Regulation (EU) 2016/1185

(a) Air traffic control clearances shall be based solely on the following requirements for providing air traffic control service:

(1) Clearances shall be issued solely for expediting and separating air traffic and be based on known traffic conditions which affect safety in aircraft operation. Such traffic conditions include not only aircraft in the air and on the manoeuvring area over which control is being exercised, but also any vehicular traffic or other obstructions not permanently installed on the manoeuvring area in use.

(2) ATC units shall issue such ATC clearances as necessary to prevent collisions and to expedite and maintain an orderly flow of air traffic.

(3) ATC clearances shall be issued early enough to ensure that they are transmitted to the aircraft in sufficient time for it to comply with them.

(b) Operation subject to clearance

(1) An air traffic control clearance shall be obtained prior to operating a controlled flight, or a portion of a flight as a controlled flight. Such clearance shall be requested through the submission of a flight plan to an air traffic control unit.

(2) The pilot-in-command of an aircraft shall inform ATC if an air traffic control clearance is not satisfactory. In such cases, ATC will issue an amended clearance, if practicable.

(3) Whenever an aircraft has requested a clearance involving priority, a report explaining the necessity for such priority shall be submitted, if requested by the appropriate air traffic control unit.

(4) *Potential reclearance in flight.* If, prior to departure, it is anticipated that, depending on fuel endurance and subject to reclearance in flight, a decision may be taken to proceed to a revised destination aerodrome, the appropriate air traffic control units shall be so notified by the insertion in the flight plan of information concerning the revised route (where known) and the revised destination.

(5) An aircraft operated on a controlled aerodrome shall not taxi on the manoeuvring area without clearance from the aerodrome control tower and shall comply with any instructions given by that unit.

(c) Clearances for transonic flight

(1) The air traffic control clearance relating to the transonic acceleration phase of a supersonic flight shall extend at least to the end of that phase.

(2) The air traffic control clearance relating to the deceleration and descent of an aircraft from supersonic cruise to subsonic flight shall seek to provide for uninterrupted descent at least during the transonic phase.

(d) Contents of clearances

An air traffic control clearance shall indicate:

(1) aircraft identification as shown in the flight plan;

(2) clearance limit;

(3) route of flight, …

(i) the route of flight shall be detailed in each clearance when deemed necessary; and

(ii) the phrase 'cleared via flight planned route' shall not be used when granting a re-clearance;

(4) level(s) of flight for the entire route or part thereof and changes of levels if required;

(5) any necessary instructions or information on other matters such as approach or departure manoeuvres, communications and the time of expiry of the clearance.

(e) Read-back of clearances and safety-related information

(1) The flight crew shall read back to the air traffic controller safety-related parts of ATC clearances and instructions which are transmitted by voice. The following items shall always be read back:

(i) ATC route clearances;

(ii) clearances and instructions to enter, land on, take off from, hold short of, cross, taxi and backtrack on any runway; and

(iii) runway-in-use, altimeter settings, SSR codes, newly assigned communication channels, level instructions, heading and speed instructions; and

(iv) transition levels, whether issued by the controller or contained in ATIS broadcasts.

(2) Other clearances or instructions, including conditional clearances and taxi instructions, shall be read back or acknowledged in a manner to clearly indicate that they have been understood and will be complied with.

(3) The controller shall listen to the read-back to ascertain that the clearance or instruction has been correctly acknowledged by the flight crew and shall take immediate action to correct any discrepancies revealed by the read-back.

(4) Voice read-back of CPDLC messages shall not be required, unless otherwise specified by the ANSP.

(ea) Changes in clearance regarding route or level

(1) When issuing a clearance covering a requested change in route or level, the exact nature of the change shall be included in the clearance.

(2) When traffic conditions will not permit clearance of a requested change, the word 'UNABLE' shall be used. When warranted by circumstances, an alternative route or level shall be offered.

(eb) Clearance related to altimetry

(1) For flights in areas where a transition altitude is established, the vertical position of the aircraft shall, except as provided for in (5) below, be expressed in terms of altitudes at or below the transition altitude and in terms of flight levels at or above the transition level. While passing through the transition layer, the vertical position shall be expressed in terms of flight levels when climbing and in terms of altitudes when descending.

(2) The flight crew shall be provided with the transition level in due time prior to reaching it during descent.

(3) A QNH altimeter setting shall be included in the descent clearance when first cleared at an altitude below the transition level, in approach clearances or clearances to enter the traffic circuit, and in taxi clearances for departing aircraft except when it is known that the aircraft has already received the information in a directed transmission.

(4) A QFE altimeter setting shall be provided to aircraft on request or on a regular basis in accordance with local arrangements.

(5) When an aircraft which has been given clearance to land is completing its approach using atmospheric pressure at aerodrome elevation (QFE), the vertical position of the aircraft shall be expressed in terms of height above aerodrome elevation during that portion of its flight for which QFE may be used, except that it shall be expressed in terms of height above runway threshold elevation:

(i) for instrument runways if the threshold is 2 m (7 ft) or more below the aerodrome elevation; and

(ii) for precision approach runways.

(ec) Conditional clearances

Conditional phrases, such as 'behind landing aircraft' or 'after departing aircraft', shall not be used for movements affecting the active runway(s), except when the aircraft or vehicles concerned are seen by the appropriate controller and pilot. The aircraft or vehicle causing the condition in the clearance issued shall be the first aircraft/vehicle to pass in front of the other aircraft concerned. In all cases, a conditional clearance shall be given in the following order and consist of:

(1) the call sign;

(2) the condition;

(3) the clearance; and

(4) a brief reiteration of the condition.

(f) Coordination of clearances

(1) An air traffic control clearance shall be coordinated between air traffic control units to cover the entire route of an aircraft or a specified portion thereof as described in provisions (2) to (6).

(2) An aircraft shall be cleared for the entire route to the aerodrome of first intended landing:

(i) when it has been possible, prior to departure, to coordinate the clearance between all the units under whose control the aircraft will come; or

(ii) when there is reasonable assurance that prior coordination will be effected between those units under whose control the aircraft will subsequently come.

(3) When coordination as in (2) has not been achieved or is not anticipated, the aircraft shall be cleared only to that point where coordination is reasonably assured; prior to reaching such point, or at such point, the aircraft shall receive further clearance, holding instructions being issued as appropriate.

(4) When prescribed by the ATS unit, aircraft shall contact a downstream air traffic control unit, for the purpose of receiving a downstream clearance prior to the transfer of control point.

(i) Aircraft shall maintain the necessary two-way communication with the current air traffic control unit whilst obtaining a downstream clearance.

(ii) A clearance issued as a downstream clearance shall be clearly identifiable as such to the pilot.

(iii) Unless coordinated, downstream clearances shall not affect the aircraft's original flight profile in any airspace, other than that of the air traffic control unit responsible for the delivery of the downstream clearance.

(5) When an aircraft intends to depart from an aerodrome within a control area to enter another control area within a period of thirty minutes, or such other specific period of time as has been agreed between the area control centres concerned, coordination with the subsequent area control centre shall be effected prior to issuance of the departure clearance.

(6) When an aircraft intends to leave a control area for flight outside controlled airspace, and will subsequently re-enter the same or another control area, a clearance from the point of departure to the aerodrome of first intended landing may be issued. Such clearance or revisions thereto shall apply only to those portions of the flight conducted within controlled airspace.

GM1 SERA.8015(a) Air traffic control clearances

ED Decision 2016/023/R

Clearances to VFR flights in airspace classes C and D do not imply any form of separation:

(a) in Class C — between VFR flights; and

(b) in Class D — between IFR and VFR flights or between VFR flights.

For the case of special VFR flights, refer to SERA.8005(b).

GM1 SERA.8015(b)(4) Air traffic control clearances

ED Decision 2013/013/R

OPERATION SUBJECT TO CLEARANCE — POTENTIAL RECLEARANCE IN FLIGHT

The intent of the provision relating to potential reclearance is to facilitate reclearance to a revised destination, normally beyond the filed destination aerodrome.

GM1 SERA.8015(d)(5) Air traffic control clearances

ED Decision 2013/013/R

CONTENT OF THE CLEARANCES — TIME OF EXPIRY

The time of expiry of the clearance indicates the time after which the clearance will be automatically cancelled if the flight has not been commenced.

GM1 SERA.8015(e)(1) Air traffic control clearances

ED Decision 2016/023/R

The nature of the change should include a description of the route and levels to the point where it joins the previously cleared route, or, if the aircraft will not re-join the previous route, to the destination.

GM1 SERA.8015(e)(4) Air traffic control clearances

ED Decision 2013/013/R

READ-BACK OF CPDLC MESSAGES

When so indicated by local safety assessments, ANSP may require that the receipt of some of the CPDLC message types (in particular those addressing trajectory changes) be acknowledged by voice.

GM1 SERA.8015(f)(2) Air traffic control clearances

ED Decision 2016/023/R

PROVISIONS FOR CLEARANCES AND INSTRUCTIONS — ALTIMETRY

The provision of transition level may be accomplished by voice communications, ATIS broadcast or data link.

GM1 SERA.8015(f)(4) Air traffic control clearances

ED Decision 2013/013/R

COORDINATION OF CLEARANCES — DOWNSTREAM CLEARANCE

(a) In such cases it is assumed that contact of a downstream ATC unit is initiated by the pilot. Therefore, the rules require that the aircraft maintain the necessary two-way communication with the current ATC unit.

(b) In cases where an aircraft cannot maintain two-way communication whilst obtaining a downstream clearance, the pilot needs to seek the acceptance to leave momentarily the communication channel of the current ATC unit prior to contacting a downstream ATC unit.

GM1 SERA.8015(g) Air traffic control clearances

ED Decision 2016/023/R

CONDITIONAL CLEARANCES

An example of a conditional clearance is 'SCANDINAVIAN 941, BEHIND DC9 ON SHORT FINAL, LINE UP BEHIND'. This implies the need for the aircraft receiving the conditional clearance to identify the aircraft or vehicle causing the conditional clearance.

SERA.8020 Adherence to flight plan

Regulation (EU) 2016/1185

(a) Except as provided for in (b) and (d) an aircraft shall adhere to the current flight plan or the applicable portion of a current flight plan submitted for a controlled flight unless a request for a change has been made and clearance obtained from the appropriate air traffic control unit, or unless an emergency situation arises which necessitates immediate action by the aircraft, in which event as soon as circumstances permit, after such emergency authority is exercised, the appropriate air traffic services unit shall be notified of the action taken and that this action has been taken under emergency authority.

(1) Unless otherwise authorised by the competent authority, or directed by the appropriate air traffic control unit, controlled flights shall, in so far as practicable:

(i) when on an established ATS route, operate along the defined centre line of that route; or

(ii) when on any other route, operate directly between the navigation facilities and/or points defining that route.

(2) Unless otherwise authorised by the competent authority, or directed by the appropriate air traffic control unit, an aircraft operating along an ATS route segment defined by reference to very high frequency omnidirectional radio ranges shall change over for its primary navigation guidance from the facility behind the aircraft to that ahead of it at, or as close as operationally feasible to, the changeover point, where established.

(3) Deviation from the requirements in point (1) shall be notified to the appropriate ATS unit.

(b) *Inadvertent changes.* In the event that a controlled flight inadvertently deviates from its current flight plan, the following action shall be taken:

(1) Deviation from track: if the aircraft is off track, action shall be taken forthwith to adjust the heading of the aircraft to regain track as soon as practicable.

(2) Variation in true airspeed: if the average true airspeed at cruising level between reporting points varies or is expected to vary by plus or minus 5 per cent of the true airspeed, from that given in the flight plan, the appropriate air traffic services unit shall be so informed.

(3) Change in time estimate: if the time estimate for the next applicable reporting point, flight information region boundary or destination aerodrome, whichever comes first, is found to be in error in excess of 2 minutes from that notified to ATS or such other period of time as prescribed by the competent authority, a revised estimated time shall be notified as soon as possible to the appropriate ATS unit.

(4) Additionally, when an ADS-C agreement is in place, the air traffic services unit shall be informed automatically via data link whenever changes occur beyond the threshold values stipulated by the ADS-C event contract.

(c) *Intended changes.* Requests for flight plan changes shall include information as indicated hereunder:

(1) Change of cruising level: aircraft identification; requested new cruising level and cruising speed at this level, revised time estimates (when applicable) at subsequent flight information region boundaries.

(2) Change of route:

(i) *Destination unchanged:* aircraft identification; flight rules; description of new route of flight including related flight plan data beginning with the position from which requested change of route is to commence; revised time estimates; any other pertinent information.

(ii) *Destination changed:* aircraft identification; flight rules; description of revised route of flight to revised destination aerodrome including related flight plan data, beginning with the position from which requested change of route is to commence; revised time estimates; alternate aerodrome(s); any other pertinent information.

(d) *Weather deterioration below the VMC.* When it becomes evident that flight in VMC in accordance with its current flight plan will not be practicable, a VFR flight operated as a controlled flight shall:

(1) request an amended clearance enabling the aircraft to continue in VMC to destination or to an alternative aerodrome, or to leave the airspace within which an ATC clearance is required; or

(2) if no clearance in accordance with a) can be obtained, continue to operate in VMC and notify the appropriate ATC unit of the action being taken either to leave the airspace concerned or to land at the nearest suitable aerodrome; or

(3) if operated within a control zone, request authorisation to operate as a special VFR flight; or

(4) request clearance to operate in accordance with the instrument flight rules.

SERA.8025 Position reports

Regulation (EU) 2016/1185

(a) Unless exempted by the competent authority or by the appropriate air traffic services unit under conditions specified by that authority, a controlled flight shall report to the appropriate air traffic services unit, as soon as possible, the time and level of passing each designated compulsory reporting point, together with any other required information. Position reports shall similarly be made in relation to additional points when requested by the appropriate air traffic services unit. In the absence of designated reporting points, position reports shall be made at intervals prescribed by the competent authority or specified by the appropriate air traffic services unit.

(1) Controlled flights providing position information to the appropriate air traffic services unit via data link communications shall only provide voice position reports when requested.

(2) When a controlled flight has been exempted from the requirement to report at compulsory reporting points, pilots shall, unless automated position reporting is in effect, resume voice or CPDLC position reporting:

(i) when so instructed;

(ii) when advised that the ATS surveillance service has been terminated; or

(iii) when advised that the ATS surveillance identification is lost.

(3) The format of position reports shall be in accordance with Appendix 5, Point A.

GM1 SERA.8025(a)(2) Position reports

ED Decision 2016/023/R

RESUMPTION OF CPDLC POSITION REPORTING

The resumption of controller–pilot data link communications (CPDLC) position reporting can be achieved through automatic dependent surveillance — contract (ADS-C).

SERA.8030 Termination of control

Regulation (EU) No 923/2012

A controlled flight shall, except when landing at a controlled aerodrome, advise the appropriate ATC unit as soon as it ceases to be subject to air traffic control service.

SERA.8035 Communications

Regulation (EU) 2016/1185

(a) An aircraft operated as a controlled flight shall maintain continuous air-ground voice communication watch on the appropriate communication channel of, and establish two-way communication as necessary with, the appropriate air traffic control unit, except as may be prescribed by the relevant ANSP in respect of aircraft forming part of aerodrome traffic at a controlled aerodrome.

(1) The requirement for an aircraft to maintain an air-ground voice communication watch shall remain in effect when CPDLC has been established.

(b) The Member States shall comply with the appropriate provisions on communication failures as have been adopted under the Chicago Convention. The Commission shall take the necessary measures for the transposition of those provisions into Union law so as to establish common European procedures on communication failures by 31 December 2017 at the latest.

GM1 SERA.8035(a) Communications

ED Decision 2013/013/R

GENERAL

(a) In a HF environment, SELCAL or similar automatic signalling devices satisfy the requirement to maintain an air-ground voice communication watch.

(b) An aircraft may be permitted to communicate temporarily with a control unit other than the unit controlling the aircraft.

AMC1 SERA.8035 Communications

ED Decision 2016/023/R

ESTABLISHMENT OF PILOT–CONTROLLER COMMUNICATIONS

Direct pilot–controller communications should be established prior to the provision of ATS surveillance services unless special circumstances, such as emergencies, dictate otherwise.

AMC2 SERA.8035 Communications

ED Decision 2016/023/R

ACKNOWLEDGEMENT OF MESSAGES

(a) When a CPDLC emergency message is received, the controller shall acknowledge receipt of the message by the most efficient means available.

(b) Except as provided by (a), when a controller or pilot communicates via CPDLC, the response should be via CPDLC. When a controller or pilot communicates via voice, the response should be via voice.

SECTION 9 FLIGHT INFORMATION SERVICE

SERA.9001 Application

Regulation (EU) No 923/2012

(a) Flight information service shall be provided by the appropriate air traffic services units to all aircraft which are likely to be affected by the information and which are:

(1) provided with air traffic control service; or

(2) otherwise known to the relevant air traffic services units.

(b) The reception of flight information service does not relieve the pilot-in-command of an aircraft of any responsibilities and the pilot-in-command shall make the final decision regarding any suggested alteration of flight plan.

(c) Where air traffic services units provide both flight information service and air traffic control service, the provision of air traffic control service shall have precedence over the provision of flight information service whenever the provision of air traffic control service so requires.

SERA.9005 Scope of flight information service

Regulation (EU) No 923/2012

(a) Flight information service shall include the provision of pertinent:

(1) SIGMET and AIRMET information;

(2) information concerning pre-eruption volcanic activity, volcanic eruptions and volcanic ash clouds;

(3) information concerning the release into the atmosphere of radioactive materials or toxic chemicals;

(4) information on changes in the availability of radio navigation services;

(5) information on changes in condition of aerodromes and associated facilities, including information on the state of the aerodrome movement areas when they are affected by snow, ice or significant depth of water;

(6) information on unmanned free balloons;

and of any other information likely to affect safety.

(b) Flight information service provided to flights shall include, in addition to that outlined in (a), the provision of information concerning:

(1) weather conditions reported or forecast at departure, destination and alternate aerodromes;

(2) collision hazards, to aircraft operating in airspace Classes C, D, E, F and G;

(3) for flight over water areas, in so far as practicable and when requested by a pilot, any available information such as radio call sign, position, true track, speed, etc., of surface vessels in the area.

(c) Flight information service provided to VFR flights shall include, in addition to that outlined in (a), the provision of available information concerning traffic and weather conditions along the route of flight that are likely to make operation under the visual flight rules impracticable.

GM1 SERA.9005(b)(1) Scope of flight information service

ED Decision 2016/023/R

INFORMATION RELATED TO WEATHER CONDITIONS AT DEPARTURE, DESTINATION, AND ALTERNATE AERODROMES

Pilots normally obtain information on the weather conditions from the appropriate office before the flight. When available, outstanding or safety-relevant information is normally provided by radio communication within 60 minutes from the aerodrome of destination unless the information has been made available through other means.

GM1 SERA.9005(b)(2) Scope of flight information service

ED Decision 2013/013/R

INFORMATION RELATED TO COLLISION HAZARDS

Information relating to collision hazards includes only known activities that constitute risks to the aircraft concerned. The availability of such information to air traffic services may sometimes be incomplete (e.g. limitations in radar or radio coverage, optional radio contact by pilots, limitations in the accuracy of reported information by pilots, or unconfirmed level of information) and, therefore, air traffic services cannot assume responsibility for its issuance at all times or for its accuracy.

SERA.9010 Automatic terminal information service (ATIS)

Regulation (EU) 2016/1185

(a) Use of the ATIS messages in directed request/reply transmissions

(1) When requested by the pilot, the applicable ATIS message(s) shall be transmitted by the appropriate air traffic services unit.

(2) Whenever Voice-ATIS and/or D-ATIS is provided:

(i) aircraft shall acknowledge receipt of the information upon establishing communication with the ATS unit providing approach control service, the aerodrome control tower or Aerodrome Flight Information Service (AFIS), as appropriate; and

(ii) the appropriate air traffic services unit shall, when replying to an aircraft acknowledging receipt of an ATIS message or, in the case of arriving aircraft, at such other time as may be prescribed by the competent authority, provide the aircraft with the current altimeter setting.

(3) Information contained in a current ATIS, the receipt of which has been acknowledged by the aircraft concerned, need not be included in a directed transmission to the aircraft, with the exception of the altimeter setting, which shall be provided in accordance with (2).

(4) If an aircraft acknowledges receipt of an ATIS that is no longer current, any element of information that needs updating shall be transmitted to the aircraft without delay.

(b) ATIS for arriving and departing aircraft

ATIS messages containing both arrival and departure information shall contain the following elements of information in the order listed:

(1) name of aerodrome;

(2) arrival and/or departure indicator;

(3) contract type, if communication is via D-ATIS;

(4) designator;

(5) time of observation, if appropriate;

(6) type of approach(es) to be expected;

(7) the runway(s) in use; status of arresting system constituting a potential hazard, if any;

(8) significant runway surface conditions and, if appropriate, braking action;

(9) holding delay, if appropriate;

(10) transition level, if applicable;

(11) other essential operational information;

(12) surface wind direction (in degrees magnetic) and speed, including significant variations and, if surface wind sensors related specifically to the sections of runway(s) in use are available and the information is required by aircraft operators, the indication of the runway and the section of the runway to which the information refers;

(13) visibility and, when applicable, RVR[1] and, if visibility/RVR sensors related specifically to the sections of runway(s) in use are available and the information is required by operators, the indication of the runway and the section of the runway to which the information refers;

(14) present weather[1];

(15) cloud below 1 500 m (5 000 ft) or below the highest minimum sector altitude, whichever is greater; cumulonimbus; if the sky is obscured, vertical visibility when available[1];

(16) air temperature;

(17) dew point temperature;

(18) altimeter setting(s);

(19) any available information on significant meteorological phenomena in the approach and climb-out areas including wind shear, and information on recent weather of operational significance;

(20) trend forecast, when available; and

(21) specific ATIS instructions.

(c) ATIS for arriving aircraft

ATIS messages containing arrival information only shall contain the following elements of information in the order listed:

(1) name of aerodrome;

(2) arrival indicator;

(3) contract type, if communication is via D-ATIS;

(4) designator;

[1] These elements are replaced by the term 'CAVOK' when the following conditions occur simultaneously at the time of observation: (a) visibility: 10 km or more, and the lowest visibility not reported; (b) no cloud of operational significance; and (c) no weather of significance to aviation.

(5) time of observation, if appropriate;

(6) type of approach(es) to be expected;

(7) main landing runway(s); status of arresting system constituting a potential hazard, if any;

(8) significant runway surface conditions and, if appropriate, braking action;

(9) holding delay, if appropriate;

(10) transition level, if applicable;

(11) other essential operational information;

(12) surface wind direction (in degrees magnetic) and speed, including significant variations and, if surface wind sensors related specifically to the sections of runway(s) in use are available and the information is required by aircraft operators, the indication of the runway and the section of the runway to which the information refers;

(13) visibility and, when applicable, RVR[1] and, if visibility/RVR sensors related specifically to the sections of runway(s) in use are available and the information is required by operators, the indication of the runway and the section of the runway to which the information refers;

(14) present weather[1];

(15) cloud below 1 500 m (5 000 ft) or below the highest minimum sector altitude, whichever is greater; cumulonimbus; if the sky is obscured, vertical visibility when available[1];

(16) air temperature;

(17) dew point temperature;

(18) altimeter setting(s);

(19) any available information on significant meteorological phenomena in the approach area including wind shear, and information on recent weather of operational significance;

(20) trend forecast, when available; and

(21) specific ATIS instructions.

(d) ATIS for departing aircraft

ATIS messages containing departure information only shall contain the following elements of information in the order listed:

(1) name of aerodrome;

(2) departure indicator;

(3) contract type, if communication is via D-ATIS;

(4) designator;

(5) time of observation, if appropriate;

(6) runway(s) to be used for take-off; status of arresting system constituting a potential hazard, if any;

[1] These elements are replaced by the term 'CAVOK' when the following conditions occur simultaneously at the time of observation: (a) visibility: 10 km or more, and the lowest visibility not reported; (b) no cloud of operational significance; and (c) no weather of significance to aviation.

(7) significant surface conditions of runway(s) to be used for take-off and, if appropriate, braking action;

(8) departure delay, if appropriate;

(9) transition level, if applicable;

(10) other essential operational information;

(11) surface wind direction (in degrees magnetic) and speed, including significant variations and, if surface wind sensors related specifically to the sections of runway(s) in use are available and the information is required by aircraft operators, the indication of the runway and the section of the runway to which the information refers;

(12) visibility and, when applicable RVR[1] and, if visibility/RVR sensors related specifically to the sections of runway(s) in use are available and the information is required by operators, the indication of the runway and the section of the runway to which the information refers;

(13) present weather[1];

(14) cloud below 1 500 m (5 000 ft) or below the highest minimum sector altitude, whichever is greater; cumulonimbus; if the sky is obscured, vertical visibility when available[1];

(15) air temperature;

(16) dew point temperature;

(17) altimeter setting(s);

(18) any available information on significant meteorological phenomena in the climb-out area including wind shear;

(19) trend forecast, when available; and

(20) specific ATIS instructions.

[1] These elements are replaced by the term 'CAVOK' when the following conditions occur simultaneously at the time of observation: (a) visibility: 10 km or more, and the lowest visibility not reported; (b) no cloud of operational significance; and (c) no weather of significance to aviation.

SECTION 10 ALERTING SERVICE

SERA.10001 Application

Regulation (EU) 2016/1185

(a) Alerting service shall be provided by the air traffic services units:

(1) for all aircraft provided with air traffic control service;

(2) in so far as practicable, to all other aircraft having filed a flight plan or otherwise known to the air traffic services; and

(3) to any aircraft known or believed to be the subject of unlawful interference.

(b) Unless otherwise prescribed by the competent authority, aircraft equipped with suitable two-way radio-communications shall report during the period 20 to 40 minutes following the time of the last contact, whatever the purpose of such contact, merely to indicate that the flight is progressing according to plan, such report to comprise identification of the aircraft and the words 'Operations normal'.

(c) The 'Operations normal' message shall be transmitted air-ground to an appropriate ATS unit.

GM1 SERA.10001(b) Application

ED Decision 2016/023/R

The absence of an 'operations normal' message does not constitute a situation of urgency. In the absence of such a report, ATS should endeavour to contact the aircraft on available frequencies. A failure to contact the aircraft could lead to any type of measure including the declaration of 'uncertainty phase'.

SERA.10005 Information to aircraft operating in the vicinity of an aircraft in a state of emergency

Regulation (EU) No 923/2012

(a) When it has been established by an air traffic services unit that an aircraft is in a state of emergency, other aircraft known to be in the vicinity of the aircraft involved shall, except as provided in (b), be informed of the nature of the emergency as soon as practicable.

(b) When an air traffic services unit knows or believes that an aircraft is being subjected to unlawful interference, no reference shall be made in ATS air-ground communications to the nature of the emergency unless it has first been referred to in communications from the aircraft involved and it is certain that such reference will not aggravate the situation.

SECTION 11 INTERFERENCE, EMERGENCY CONTINGENCIES AND INTERCEPTION

SERA.11001 General

Regulation (EU) 2016/1185

(c) In case of an aircraft known or believed to be in a state of emergency, including being subjected to unlawful interference, ATS units shall give the aircraft maximum consideration, assistance and priority over other aircraft, as may be necessitated by the circumstances.

(d) Subsequent ATC actions shall be based on the intentions of the pilot, the overall air traffic situation and the real-time dynamics of the contingency.

GM1 SERA.11001 General

ED Decision 2016/023/R

EMERGENCY DESCENT PROCEDURES

(a) When an aircraft operated as a controlled flight experiences sudden decompression or a malfunction requiring an emergency descent, the aircraft should, if able:

(1) initiate a turn away from the assigned route or track before commencing the emergency descent;

(2) advise the appropriate ATC unit as soon as possible of the emergency descent;

(3) set transponder to Code 7700 and select the emergency mode on the automatic dependent surveillance/controller–pilot data link communications (ADS/CPDLC) system, if applicable;

(4) turn on aircraft exterior lights;

(5) watch for conflicting traffic both visually and by reference to airborne collision avoidance system (ACAS) (if equipped); and

(6) coordinate its further intentions with the appropriate ATC unit.

(b) The aircraft is not to descend below the lowest published minimum altitude that will provide a minimum vertical clearance of 300 m (1 000 ft) or, in designated mountainous terrain, of 600 m (2 000 ft) above all obstacles located in the area specified.

(c) Immediately upon recognising that an emergency descent is in progress, ATC units are to acknowledge the emergency on radiotelephony.

In particular, when recognising that an emergency descent is in progress, ATC may, as required by the situation:

(1) suggest a heading to be flown, if able, by the aircraft carrying out the emergency descent in order to achieve separation from other aircraft concerned;

(2) state the minimum altitude for the area of operation, only if the level-off altitude stated by the pilot is below such minimum altitude, together with the applicable QNH altimeter setting; and

(3) as soon as possible, provide separation from conflicting traffic, or issue essential traffic information, as appropriate.

When deemed necessary, ATC will broadcast an emergency message, or cause such message to be broadcast, to other aircraft concerned to warn them of the emergency descent.

SERA.11005 Unlawful interference

Regulation (EU) 2016/1185

(aa) An aircraft which is being subjected to unlawful interference shall endeavour to set the transponder to Code 7500 and notify the appropriate ATS unit of any significant circumstances associated therewith and any deviation from the current flight plan necessitated by the circumstances, in order to enable the ATS unit to give priority to the aircraft and to minimise conflict with other aircraft.

(ab) If an aircraft is subjected to unlawful interference, the pilot-in-command shall attempt to land as soon as practicable at the nearest suitable aerodrome or at a dedicated aerodrome assigned by the competent authority, unless considerations aboard the aircraft dictate otherwise.

(b) When an occurrence of unlawful interference with an aircraft takes place or is suspected, air traffic services units shall attend promptly to requests by the aircraft. Information pertinent to the safe conduct of the flight shall continue to be transmitted and necessary action shall be taken to expedite the conduct of all phases of the flight, especially the safe landing of the aircraft.

(c) When an occurrence of unlawful interference with an aircraft takes place or is suspected, ATS units shall, in accordance with locally agreed procedures, immediately inform the appropriate authority designated by the State and exchange necessary information with the aircraft operator or its designated representative.

AMC1 SERA.11005 Unlawful interference

ED Decision 2016/023/R

(a) Whenever unlawful interference with an aircraft is known or suspected or a bomb threat warning has been received, ATS units should promptly attend to requests by, or to anticipated needs of, the aircraft, including requests for relevant information relating to air navigation facilities, procedures and services along the route of flight and at any aerodrome of intended landing, and should take such action as is necessary to expedite the conduct of all phases of the flight.

ATS units should also:

(1) transmit, and continue to transmit, information pertinent to the safe conduct of the flight, without expecting a reply from the aircraft;

(2) monitor and plot the progress of the flight with the means available, and coordinate transfer of control with adjacent ATS units without requiring transmissions or other responses from the aircraft, unless communication with the aircraft remains normal;

(3) inform, and continue to keep informed, appropriate ATS units, including those in adjacent flight information regions (FIRs), which may be concerned with the progress of the flight;

(4) notify:

(i) the operator or its designated representative;

(ii) the appropriate rescue coordination centre in accordance with appropriate alerting procedures; and

(iii) the appropriate authority designated by the State; and

(5) relay appropriate messages, relating to the circumstances associated with the unlawful interference, between the aircraft and designated authorities.

(b) The following additional procedures should apply if a threat is received indicating that a bomb or other explosive device has been placed on board a known aircraft. The ATS unit receiving the threat information should:

(1) if in direct communication with the aircraft, advise the flight crew without delay of the threat and the circumstances surrounding the threat; or

(2) if not in direct communication with the aircraft, advise the flight crew by the most expeditious means through other ATS units or other channels.

(c) The ATS unit in communication with the aircraft should ascertain the intentions of the flight crew and report those intentions to other ATS units which may be concerned with the flight.

(d) The aircraft should be handled in the most expeditious manner while ensuring, to the extent possible, the safety of other aircraft and that personnel and ground installations are not put at risk.

(e) Aircraft in flight should be given re-clearance to a requested new destination without delay. Any request by the flight crew to climb or descend for the purpose of equalising or reducing the differential between the outside air pressure and the cabin air pressure should be approved as soon as possible.

(f) An aircraft on the ground should be advised to remain as far away from other aircraft and installations as possible and, if appropriate, to vacate the runway. The aircraft should be instructed to taxi to a designated or isolated parking area in accordance with local instructions. Should the flight crew disembark passengers and crew immediately, other aircraft, vehicles and personnel should be kept at a safe distance from the threatened aircraft.

(g) ATS units should not provide any advice or suggestions concerning action to be taken by the flight crew in relation to an explosive device.

(h) An aircraft known or believed to be the subject of unlawful interference or which for other reasons needs isolation from normal aerodrome activities should be cleared to the designated isolated parking position. Where such an isolated parking position has not been designated, or if the designated position is not available, the aircraft should be cleared to a position within the area or areas selected by prior agreement with the aerodrome authority. The taxi clearance should specify the taxi route to be followed to the parking position. This route should be selected with a view to minimising any security risks to the public, other aircraft and installations at the aerodrome.

GM1 to AMC1 SERA.11005(a)(1) Unlawful interference

ED Decision 2016/023/R

Verbal reference to unlawful interference should not be made by the controller unless it is first made by the pilot in a radio communication transmission, since it might attract the attention of the hijacker (or of other aircraft) and have detrimental consequences.

GM1 SERA.11005 Unlawful interference

ED Decision 2016/023/R

The following procedures are intended as guidance for use by aircraft when unlawful interference occurs and the aircraft is unable to notify an ATS unit of this fact.

(a) If the pilot-in-command cannot proceed to an aerodrome, they should attempt to continue flying on the assigned track and at the assigned cruising level at least until able to notify an ATS unit or until within radar or ADS-B coverage.

(b) When an aircraft subjected to an act of unlawful interference must depart from its assigned track or its assigned cruising level without being able to make radiotelephony contact with ATS, the pilot-in-command should, whenever possible:

(1) attempt to broadcast warnings on the VHF channel in use or the VHF emergency frequency, and other appropriate channels, unless considerations aboard the aircraft dictate otherwise. Other equipment such as on-board transponders and data links should also be used when it is advantageous to do so and circumstances permit; and

(2) proceed in accordance with applicable special procedures for in-flight contingencies, where such procedures have been established and promulgated in the Regional Supplementary Procedures (Doc 7030); or

(3) if no applicable regional procedures have been established, proceed at a level which differs from the cruising levels normally used for an IFR flight by:

(i) 150 m (500 ft) in an area where a vertical separation minimum of 300 m (1 000 ft) is applied; or

(ii) 300 m (1 000 ft) in an area where a vertical separation minimum of 600 m (2 000 ft) is applied.

SERA.11010 Strayed or unidentified aircraft

Regulation (EU) 2016/1185

(a) As soon as an air traffic services unit becomes aware of a strayed aircraft it shall take all necessary steps as outlined in (1) and (3) to assist the aircraft and to safeguard its flight.

(1) If the aircraft's position is not known, the air traffic services unit shall:

(i) attempt to establish two-way communication with the aircraft, unless such communication already exists;

(ii) use all available means to determine its position;

(iii) inform other air traffic services units into whose area the aircraft may have strayed or may stray, taking into account all the factors which may have affected the navigation of the aircraft in the circumstances;

(iv) inform, in accordance with locally agreed procedures, appropriate military units and provide them with pertinent flight plan and other data concerning strayed aircraft;

(v) request from the units referred to in (iii) and (iv) and from other aircraft in flight every assistance in establishing communication with the aircraft and determining its position.

(2) The requirements in (1)(iv) and (1)(v) shall apply also to air traffic services units informed in accordance with (1)(iii).

(3) When the aircraft's position is established, the air traffic services unit shall:

(i) advise the aircraft of its position and the corrective action to be taken. This advice shall be immediately provided when the ATS unit is aware that there is a possibility of interception or other hazard to the safety of the aircraft; and

(ii) provide, as necessary, other air traffic services units and appropriate military units with relevant information concerning the strayed aircraft and any advice given to that aircraft.

(b) As soon as an air traffic services unit becomes aware of an unidentified aircraft in its area, it shall endeavour to establish the identity of the aircraft whenever this is necessary for the provision of air traffic services or required by the appropriate military authorities in accordance with locally agreed procedures. To this end, the air traffic services unit shall take such of the following steps as are appropriate in the circumstances:

(1) attempt to establish two-way communication with the aircraft;

(2) inquire of other air traffic services units within the flight information region about the flight and request their assistance in establishing two-way communication with the aircraft;

(3) inquire of air traffic services units serving the adjacent flight information regions about the flight and request their assistance in establishing two-way communication with the aircraft;

(4) attempt to obtain information from other aircraft in the area;

(5) the air traffic services unit shall, as necessary, inform the appropriate military unit as soon as the identity of the aircraft has been established.

(c) In the case of a strayed or unidentified aircraft, the possibility of the aircraft being subject of unlawful interference shall be taken into account. Should the air traffic services unit consider that a strayed or unidentified aircraft may be the subject of unlawful interference, the appropriate authority designated by the State shall immediately be informed, in accordance with locally agreed procedures.

GM1 SERA.11010 Strayed or unidentified aircraft

ED Decision 2013/013/R

GENERAL

(a) An aircraft may be considered, at the same time, as a 'strayed aircraft' by one unit and as an 'unidentified aircraft' by another unit. This possibility should be taken into account when complying with the provisions of SERA.11010(a)(1)(iii) and SERA.11010(b)(2) and (b)(3).

(b) Navigational assistance by an air traffic services unit is particularly important if the unit becomes aware of an aircraft straying, or about to stray, into an area where there is a risk of interception or other hazard to its safety.

SERA.11012 Minimum Fuel and Fuel Emergency

Regulation (EU) 2016/1185

(a) When a pilot reports a state of minimum fuel, the controller shall inform the pilot as soon as practicable of any anticipated delays or that no delays are expected.

(b) When the level of fuel renders declaring a situation of distress necessary, the pilot, in accordance with SERA.14095, shall indicate that by using the radiotelephony distress signal (MAYDAY), preferably spoken three times, followed by the nature of the distress condition (FUEL).

GM1 SERA.11012 Minimum fuel and fuel emergency

ED Decision 2016/023/R

The declaration of MINIMUM FUEL informs ATC that all planned aerodrome options have been reduced to a specific aerodrome of intended landing, and any change to the existing clearance may result in landing with less than planned final reserve fuel. This is not an emergency situation but an indication that an emergency situation is possible should any additional delay occur.

SERA.11013 Degraded aircraft performance

Regulation (EU) 2016/1185

(a) Whenever, as a result of failure or degradation of navigation, communications, altimetry, flight control or other systems, aircraft performance is degraded below the level required for the airspace in which it is operating, the flight crew shall advise the ATC unit concerned without delay. Where the failure or degradation affects the separation minimum currently being employed, the controller shall take action to establish another appropriate type of separation or separation minimum.

(b) Degradation or failure of the RNAV system

When an aircraft cannot meet the specifications as required by the RNAV route or procedure, as a result of a failure or degradation of the RNAV system, a revised clearance shall be requested by the pilot.

(c) Loss of vertical navigation performance required for reduced vertical separation minima (RVSM) airspace

(1) The pilot shall inform ATC as soon as possible of any circumstances where the vertical navigation performance requirements for RVSM airspace cannot be maintained. In such cases, the pilot shall obtain a revised ATC clearance prior to initiating any deviation from the cleared route and/or flight level, whenever possible. When a revised ATC clearance cannot be obtained prior to such a deviation, the pilot shall obtain a revised clearance as soon as possible thereafter.

(2) During operations in, or vertical transit through, RVSM airspace with aircraft not approved for RVSM operations, pilots shall report non-approved status as follows:

(i) at initial call on any channel within RVSM airspace;

(ii) in all requests for level changes; and

(iii) in all read-backs of level clearances.

(3) Air traffic controllers shall explicitly acknowledge receipt of messages from aircraft reporting RVSM non-approved status.

(4) Degradation of aircraft equipment — pilot-reported:

(i) When informed by the pilot of an RVSM-approved aircraft operating in RVSM airspace that the aircraft's equipment no longer meets the RVSM requirements, ATC shall consider the aircraft as non-RVSM-approved.

(ii) ATC shall take action immediately to provide a minimum vertical separation of 600 m (2 000 ft) or an appropriate horizontal separation from all other aircraft concerned that are operating in RVSM airspace. An aircraft rendered non-RVSM-approved shall normally be cleared out of RVSM airspace by ATC when it is possible to do so.

(iii) Pilots shall inform ATC, as soon as practicable, of any restoration of the proper functioning of equipment required to meet the RVSM requirements.

(iv) The first ACC to become aware of a change in an aircraft's RVSM status shall coordinate with adjacent ACCs, as appropriate.

(5) Severe turbulence — not forecast:

(i) When an aircraft operating in RVSM airspace encounters severe turbulence due to weather or wake vortex that the pilot believes will impact the aircraft's capability to maintain its cleared flight level, the pilot shall inform ATC. ATC shall establish either an appropriate horizontal separation or an increased minimum vertical separation.

(ii) ATC shall, to the extent possible, accommodate pilot requests for flight level and/or route changes and shall pass on traffic information, as required.

(iii) ATC shall solicit reports from other aircraft to determine whether RVSM should be suspended entirely or within a specific flight level band and/or area.

(iv) The ACC suspending RVSM shall coordinate with adjacent ACCs such suspension(s) and any required adjustments to sector capacities, as appropriate, to ensure an orderly progression of the transfer of traffic.

(6) Severe turbulence — forecast:

(i) When a meteorological forecast is predicting severe turbulence within RVSM airspace, ATC shall determine whether RVSM should be suspended and, if so, for how long and for which specific flight level(s) and/or area.

(ii) In cases where RVSM will be suspended, the ACC suspending RVSM shall coordinate with adjacent ACCs with regard to the flight levels appropriate for the transfer of traffic, unless a contingency flight level allocation scheme has been determined by letter of agreement. The ACC suspending RVSM shall also coordinate applicable sector capacities with adjacent ACCs, as appropriate.

GM1 SERA.11013(b) Degraded aircraft performance

ED Decision 2016/023/R

DEGRADATION OR FAILURE OF THE RNAV SYSTEM

(a) If an aircraft cannot meet the requirements due to a failure or degradation of the RNAV system that is detected before departure from an aerodrome where it is not practicable to effect a repair, the aircraft concerned should be permitted to proceed to the nearest suitable aerodrome where the repair can be made. When granting clearance to such aircraft, ATC should

take into consideration the existing or anticipated traffic situation and may have to modify the time of departure, flight level or route of the intended flight. Subsequent adjustments may become necessary during the course of the flight.

With respect to the degradation/failure in flight of an RNAV system, while the aircraft is operating on an ATS route requiring the use of RNAV 5:

(1) aircraft should be routed via VOR/DME-defined ATS routes; or

(2) if no such routes are available, aircraft should be routed via conventional navigation aids, i.e. VOR/DME; or

When the above procedures are not feasible, the ATC unit should, where practicable, provide the aircraft with radar vectors until the aircraft is capable of resuming its own navigation.

With respect to the degradation/failure in flight of an RNAV system, while the aircraft is operating on an arrival or departure procedure requiring the use of RNAV:

(1) the aircraft should be provided with radar vectors until the aircraft is capable of resuming its own navigation; or

(2) the aircraft should be routed by conventional navigation aids, i.e. VOR/DME.

Subsequent ATC action in respect of an aircraft that cannot meet the specified requirements due to a failure or degradation of the RNAV system, will be dependent upon the nature of the reported failure and the overall traffic situation. Continued operation in accordance with the current ATC clearance may be possible in many situations. When this cannot be achieved, a revised clearance may be required to revert to VOR/DME navigation.

GM1 SERA.11013(c) Degraded aircraft performance

ED Decision 2016/023/R

LOSS OF VERTICAL NAVIGATION PERFORMANCE REQUIRED FOR RVSM

An in-flight contingency affecting flight in RVSM airspace pertains to unforeseen circumstances that directly impact on the ability of one or more aircraft to operate in accordance with the vertical navigation performance requirements of RVSM airspace.

SERA.11014 ACAS resolution advisory (RA)

Regulation (EU) 2016/1185

(a) ACAS II shall be used during flight, except as provided in the minimum equipment list specified in Commission Regulation (EU) No 965/2012[1] in a mode that enables RA indications to be produced for the flight crew when undue proximity to another aircraft is detected. This shall not apply if inhibition of RA indication mode (using traffic advisory (TA) indication only or equivalent) is called for by an abnormal procedure or due to performance-limiting conditions.

(b) In the event of an ACAS RA, pilots shall:

(1) respond immediately by following the RA, as indicated, unless doing so would jeopardise the safety of the aircraft;

(2) follow the RA even if there is a conflict between the RA and an ATC instruction to manoeuvre;

[1] Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1).

(3) not manoeuvre in the opposite sense to an RA;

(4) as soon as possible, as permitted by flight crew workload, notify the appropriate ATC unit of any RA which requires a deviation from the current ATC instruction or clearance;

(5) promptly comply with any modified RAs;

(6) limit the alterations of the flight path to the minimum extent necessary to comply with the RAs;

(7) promptly return to the terms of the ATC instruction or clearance when the conflict is resolved; and

(8) notify ATC when returning to the current clearance.

(c) When a pilot reports an ACAS RA, the controller shall not attempt to modify the aircraft flight path until the pilot reports 'CLEAR OF CONFLICT'.

(d) Once an aircraft departs from its ATC clearance or instruction in compliance with an RA, or a pilot reports an RA, the controller ceases to be responsible for providing separation between that aircraft and any other aircraft affected as a direct consequence of the manoeuvre induced by the RA. The controller shall resume responsibility for providing separation to all the affected aircraft when:

(1) the controller acknowledges a report from the flight crew that the aircraft has resumed the current clearance; or

(2) the controller acknowledges a report from the flight crew that the aircraft is resuming the current clearance and issues an alternative clearance which is acknowledged by the flight crew.

GM1 SERA.11014 ACAS resolution advisory (RA)

ED Decision 2016/023/R

Nothing in the procedures specified in SERA.11014 should prevent pilots-in-command from exercising their best judgement and full authority in the choice of the best course of action to resolve a traffic conflict or avert a potential collision.

GM2 SERA.11014 ACAS resolution advisory (RA)

ED Decision 2016/023/R

The ability of ACAS to fulfil its role of assisting pilots in the avoidance of potential collisions is dependent on the correct and timely response by pilots to ACAS indications. Operational experience has shown that the correct response by pilots is dependent on the effectiveness of the initial and recurrent training in ACAS procedures.

GM3 SERA.11014 ACAS resolution advisory (RA)

ED Decision 2016/023/R

Pilots should not manoeuvre their aircraft in response to traffic advisories (TAs) only.

GM4 SERA.11014 ACAS resolution advisory (RA)

ED Decision 2016/023/R

Visually acquired traffic may not be the same traffic causing an RA. The visual perception of an encounter may be misleading, particularly at night.

GM5 SERA.11014 ACAS resolution advisory (RA)

ED Decision 2016/023/R

In the case of an ACAS–ACAS coordinated encounter, the RAs complement each other in order to reduce the potential for a collision. Manoeuvres, or lack of manoeuvres, that result in vertical rates opposite to the sense of an RA could result in a collision with the intruder aircraft.

GM6 SERA.11014 ACAS resolution advisory (RA)

ED Decision 2016/023/R

Unless informed by the pilot, ATC does not know when ACAS issues RAs. It is possible for ATC to issue instructions that are unknowingly contrary to ACAS RA indications. Therefore, it is important that ATC be notified when an ATC instruction or clearance is not being followed because it conflicts with an RA.

GM7 SERA.11014 ACAS resolution advisory (RA)

ED Decision 2016/023/R

Pilots should use appropriate procedures by which an aeroplane climbing or descending to an assigned altitude or flight level may do so at a rate less than 8 m/s (or 1 500 ft/min) throughout the last 300 m (or 1 000 ft) of climb or descent to the assigned altitude or flight level when the pilot is made aware of another aircraft at or approaching an adjacent altitude or flight level, unless otherwise instructed by ATC. These procedures are intended to avoid unnecessary ACAS II RAs in aircraft at or approaching adjacent altitudes or flight levels. For commercial operations, these procedures should be specified by the operator.

SERA.11015 Interception

Regulation (EU) 2016/1185

(a) Except for intercept and escort service provided on request to an aircraft, interception of civil aircraft shall be governed by appropriate regulations and administrative directives issued by Member States in compliance with the Convention on International Civil Aviation, and in particular Article 3(d) under which ICAO Contracting States undertake, when issuing regulations for their State aircraft, to have due regard for the safety of navigation of civil aircraft.

(b) The pilot-in-command of a civil aircraft, when intercepted, shall:

(1) immediately follow the instructions given by the intercepting aircraft, interpreting and responding to visual signals in accordance with the specifications in Tables S11-1 and S11-2;

(2) notify, if possible, the appropriate air traffic services unit;

(3) attempt to establish radio-communication with the intercepting aircraft or with the appropriate intercept control unit, by making a general call on the emergency frequency 121,5 MHz, giving the identity of the intercepted aircraft and the nature of the flight; and if no contact has been established and if practicable, repeating this call on the emergency frequency 243 MHz;

(4) if equipped with SSR transponder, select Mode A, Code 7700, unless otherwise instructed by the appropriate air traffic services unit;

(5) if equipped with ADS-B or ADS-C, select the appropriate emergency functionality, if available, unless otherwise instructed by the appropriate air traffic services unit.

Table S11-1

Signals initiated by intercepting aircraft and responses by intercepted aircraft

Series	INTERCEPTING Aircraft Signals	Meaning	INTERCEPTED Aircraft Responds	Meaning
1	DAY or NIGHT — Rocking aircraft and flashing navigational lights at irregular intervals (and landing lights in the case of a helicopter) from a position slightly above and ahead of, and normally to the left of, the intercepted aircraft (or to the right if the intercepted aircraft is a helicopter) and, after acknowledgement, a slow level turn, normally to the left (or to the right in the case of a helicopter) on the desired heading. Note 1 Meteorological conditions or terrain may require the intercepting aircraft to reverse the positions and direction of turn given above in Series 1. Note 2 If the intercepted aircraft is not able to keep pace with the intercepting aircraft, the latter is expected to fly a series of race-track patterns and to rock the aircraft each time it passes the intercepted aircraft.	You have been intercepted. Follow me.	DAY or NIGHT — Rocking aircraft, flashing navigational lights at irregular intervals and following.	Understood, will comply.
2	DAY or NIGHT — An abrupt breakaway manoeuvre from the intercepted aircraft consisting of a climbing turn of 90 degrees or more without crossing the line of flight of the intercepted aircraft.	You may proceed.	DAY or NIGHT — Rocking the aircraft.	Understood, will comply.
3	DAY or NIGHT — Lowering landing gear (if fitted), showing steady landing lights and overflying runway in use or, if the intercepted aircraft is a helicopter, overflying the helicopter landing area. In the case of helicopters, the intercepting helicopter makes a landing approach, coming to hover near to the landing area.	Land at this aerodrome.	DAY or NIGHT — Lowering landing gear, (if fitted), showing steady landing lights and following the intercepting aircraft and, if, after overflying the runway in use or helicopter landing area, landing is considered safe, proceeding to land.	Understood, will comply.

Table S11-2				
Signals initiated by intercepted aircraft and responses by intercepting aircraft				
Series	INTERCEPTED Aircraft Signals	Meaning	INTERCEPTING Aircraft Responds	Meaning
4	DAY or NIGHT — Raising landing gear (if fitted) and flashing landing lights while passing over runway in use or helicopter landing area at a height exceeding 300 m (1 000 ft) but not exceeding 600 m (2 000 ft) (in the case of a helicopter, at a height exceeding 50 m (170 ft) but not exceeding 100 m (330 ft)) above the aerodrome level, and continuing to circle runway in use or helicopter landing area. If unable to flash landing lights, flash any other lights available.	Aerodrome you have designated is inadequate.	DAY or NIGHT — If it is desired that the intercepted aircraft follow the intercepting aircraft to an alternate aerodrome, the intercepting aircraft raises its landing gear (if fitted) and uses the Series 1 signals prescribed for intercepting aircraft. If it is decided to release the intercepted aircraft, the intercepting aircraft uses the Series 2 signals prescribed for intercepting aircraft.	Understood, follow me. Understood, you may proceed.
5	DAY or NIGHT — Regular switching on and off of all available lights but in such a manner as to be distinct from flashing lights.	Cannot comply.	DAY or NIGHT — Use Series 2 signals prescribed for intercepting aircraft.	Understood.
6	DAY or NIGHT — Irregular flashing of all available lights.	In distress.	DAY or NIGHT — Use Series 2 signals prescribed for intercepting aircraft.	Understood.

(c) If any instructions received by radio from any sources conflict with those given by the intercepting aircraft by visual signals, the intercepted aircraft shall request immediate clarification while continuing to comply with the visual instructions given by the intercepting aircraft.

(d) If any instructions received by radio from any sources conflict with those given by the intercepting aircraft by radio, the intercepted aircraft shall request immediate clarification while continuing to comply with the radio instructions given by the intercepting aircraft.

(e) If radio contact is established during interception but communication in a common language is not possible, attempts shall be made to convey instructions, acknowledgement of instructions and essential information by using the phrases and pronunciations in Table S11-3 and transmitting each phrase twice:

Table S11-3					
Phrases for use by INTERCEPTING aircraft			Phrases for use by INTERCEPTED aircraft		
Phrase	Pronunciation[1]	Meaning	Phrase	Pronunciation[1]	Meaning
CALL SIGN	KOL SA-IN	What is your call sign?	CALL SIGN (call sign)[2]	KOL SA-IN (call sign)	My call sign is (call sign)
FOLLOW	FOL-LO	Follow me	WILCO	VILL-KO	Understood, will comply
DESCEND	DEE-SEND	Descend for landing	---		
			CAN NOT	KANN NOTT	Unable to comply
YOU LAND	YOU LAAND	Land at this aerodrome	REPEAT	REE-PEET	Repeat your instruction
			AM LOST	AM LOSST	Position unknown
PROCEED	PRO-SEED	You may proceed			
			MAYDAY	MAYDAY	I am in distress
			HIJACK[3]	HI-JACK	I have been hijacked
			LAND (place name)	LAAND (place name)	I request to land at (place name)
			DESCEND	DEE-SEND	I require descent

(f) As soon as an air traffic services unit learns that an aircraft is being intercepted in its area of responsibility, it shall take such of the following steps as are appropriate in the circumstances:

(1) attempt to establish two-way communication with the intercepted aircraft via any means available, including the emergency radio frequency 121,5 MHz, unless such communication already exists,

(2) inform the pilot of the intercepted aircraft of the interception;

(3) establish contact with the intercept control unit maintaining two-way communication with the intercepting aircraft and provide it with available information concerning the aircraft;

(4) relay messages between the intercepting aircraft or the intercept control unit and the intercepted aircraft, as necessary;

(5) in close coordination with the intercept control unit take all necessary steps to ensure the safety of the intercepted aircraft;

(6) inform air traffic services units serving adjacent flight information regions if it appears that the aircraft has strayed from such adjacent flight information regions.

[1] In the second column, syllables to be emphasised are underlined.

[2] The call sign required to be given is that used in radiotelephony communications with air traffic services units and corresponding to the aircraft identification in the flight plan.

[3] Circumstances may not always permit, nor make desirable, the use of the phrase 'HIJACK'.

(g) As soon as an air traffic services unit learns that an aircraft is being intercepted outside its area of responsibility, it shall take such of the following steps as are appropriate in the circumstances:

(1) inform the air traffic services unit serving the airspace in which the interception is taking place, providing this unit with available information that will assist in identifying the aircraft and requesting it to take action in accordance with (f);

(2) relay messages between the intercepted aircraft and the appropriate air traffic services unit, the intercept control unit or the intercepting aircraft.

GM2 SERA.11015 Interception

ED Decision 2016/023/R

1. General

1.1 Interception of civil aircraft should be avoided and should be undertaken only as a last resort. If undertaken, the interception should be limited to determining the identity of the aircraft, unless it is necessary to return the aircraft to its planned track, direct it beyond the boundaries of national airspace, guide it away from a prohibited, restricted or danger area or instruct it to effect a landing at a designated aerodrome. Practice interception of civil aircraft is not to be undertaken unless prior agreement has been reached to conduct such activity with the pilot and operator of the civil aircraft concerned.

1.2 To eliminate or reduce the need for interception of civil aircraft, it is important that:

(a) all possible efforts be made by intercept control units to secure identification of any aircraft which may be a civil aircraft, and to issue any necessary instructions or advice to such aircraft, through the appropriate ATS units. To this end, it is essential that means of rapid and reliable communications between intercept control units and ATS units be established and that agreements be formulated concerning exchanges of information between such units on the movements of civil aircraft, in accordance with the provisions of SERA.4001(b)(4), SERA.11010(a)(1)(iv), SERA.11010(a)(3)(ii), SERA.11010(b), and SERA.11010(b)(5);

(b) areas prohibited to all civil flights and areas in which civil flight is not permitted without special authorisation by the State be clearly promulgated in the AIP together with the risk, if any, of interception in the event of penetration of such areas. When delineating such areas in close proximity to promulgated ATS routes, or other frequently used tracks, account should be taken of the availability and overall systems accuracy of the navigation systems to be used by civil aircraft and their ability to remain clear of the delineated areas;

(c) the establishment of additional navigation aids be considered where necessary to ensure that civil aircraft are able to safely circumnavigate prohibited or, as required, restricted areas.

1.3 To eliminate or reduce the hazards inherent in interceptions undertaken as a last resort, all possible efforts should be made to ensure coordinated actions by the pilots and ground units concerned. To this end, it is essential that steps be taken to ensure that:

(a) all pilots of civil aircraft are made fully aware of the actions to be taken by them and the visual signals to be used;

(b) operators or pilots-in-command of civil aircraft implement the capability of aircraft to communicate on 121,5 MHz and the availability of interception procedures and visual signals on board aircraft,

(c) all ATS personnel are made fully aware of the actions to be taken by them in accordance with the provisions of SERA.4001(b)(4), SERA.11010(a)(1)(iv), SERA.11010(a)(3)(ii), SERA.11010(b) and SERA.11010(b)(5);

(d) all pilots-in-command of intercepting aircraft are made aware of the general performance limitations of civil aircraft and of the possibility that intercepted civil aircraft may be in a state of emergency due to technical difficulties or unlawful interference;

(e) clear and unambiguous instructions are issued to intercept control units and to pilots-in-command of potential intercepting aircraft, covering interception manoeuvres, guidance of intercepted aircraft, action by intercepted aircraft, air-to-air visual signals, radio-communication with intercepted aircraft, and the need to refrain from resorting to the use of weapons;

Note. See paragraphs 2 to 6.

(f) intercept control units and intercepting aircraft are provided with radiotelephony equipment so as to enable them to communicate with intercepted aircraft on the emergency frequency 121,5 MHz,

(g) secondary surveillance radar and/or ADS-B facilities are made available to the extent possible to permit intercept control units to identify civil aircraft in areas where they might otherwise be intercepted. Such facilities should permit recognition of aircraft identity and immediate recognition of any emergency or urgency conditions.

2. Interception manoeuvres

2.1 A standard method should be established for the manoeuvring of aircraft intercepting a civil aircraft in order to avoid any hazard for the intercepted aircraft. Such method should take due account of the performance limitations of civil aircraft, the need to avoid flying in such proximity to the intercepted aircraft that a collision hazard may be created, and the need to avoid crossing the aircraft's flight path or to perform any other manoeuvre in such a manner that the wake turbulence may be hazardous, particularly if the intercepted aircraft is a light aircraft.

2.2 An aircraft equipped with an ACAS, which is being intercepted, may perceive the interceptor as a collision threat and thus initiate an avoidance manoeuvre in response to an ACAS RA. Such a manoeuvre might be misinterpreted by the interceptor as an indication of unfriendly intentions. It is important therefore that pilots of intercepting aircraft equipped with a secondary surveillance radar (SSR) transponder suppress the transmission of pressure-altitude information (in Mode C replies or in the AC field of Mode S replies) within a range of at least 37 km (20 NM) of the aircraft being intercepted. This prevents the ACAS in the intercepted aircraft from using RAs in respect of the interceptor, while the ACAS traffic advisory information will remain available.

2.3 Manoeuvres for visual identification

The following method is recommended for the manoeuvring of intercepting aircraft for the purpose of visually identifying a civil aircraft:

Phase I

The intercepting aircraft should approach the intercepted aircraft from astern. The element leader, or the single intercepting aircraft, should normally take up a position on the left (port) side, slightly above and ahead of the intercepted aircraft, within the field of view of the pilot of the intercepted aircraft, and initially not closer to the aircraft than 300 m. Any other participating aircraft should stay well clear of the intercepted aircraft, preferably above and behind. After speed and position have been established, the aircraft should, if necessary, proceed with Phase II of the procedure.

Phase II

The element leader, or the single intercepting aircraft, should begin closing in gently on the intercepted aircraft, at the same level, until no closer than absolutely necessary to obtain the information needed. The element leader, or the single intercepting aircraft, should use caution to avoid startling the flight crew or the passengers of the intercepted aircraft, keeping constantly in mind the fact that manoeuvres considered normal to an intercepting aircraft may be considered hazardous to passengers and crews of civil aircraft. Any other participating aircraft should continue to stay well clear of the intercepted aircraft. Upon completion of identification, the intercepting aircraft should withdraw from the vicinity of the intercepted aircraft as outlined in Phase III.

Phase III

The element leader, or the single intercepting aircraft, should break gently away from the intercepted aircraft in a shallow dive. Any other participating aircraft should stay well clear of the intercepted aircraft and re-join their leader.

2.4 Manoeuvres for navigational guidance

2.4.1 If, following the identification manoeuvres in Phase I and Phase II above, it is considered necessary to intervene in the navigation of the intercepted aircraft, the element leader, or the single intercepting aircraft, should normally take up a position on the left (port) side, slightly above and ahead of the intercepted aircraft, to enable the pilot-in-command of the latter aircraft to see the visual signals given.

2.4.2 It is indispensable that the pilot-in-command of the intercepting aircraft be satisfied that the pilot-in-command of the intercepted aircraft is aware of the interception and acknowledges the signals given. If repeated attempts to attract the attention of the pilot-in-command of the intercepted aircraft by use of the Series 1 signal in Table S11-1, are unsuccessful, other methods of signalling may be used for this purpose, including as a last resort the visual effect of the reheat/afterburner, provided that no hazard is created for the intercepted aircraft.

2.5 It is recognised that meteorological conditions or terrain may occasionally make it necessary for the element leader, or the single intercepting aircraft, to take up a position on the right (starboard) side, slightly above and ahead of the intercepted aircraft. In such case, the pilot-in-command of the intercepting aircraft must take particular care that the intercepting aircraft is clearly visible at all times to the pilot-in-command of the intercepted aircraft.

3. Guidance of an intercepted aircraft

3.1 Navigational guidance and related information should be given to an intercepted aircraft by radiotelephony, whenever radio contact can be established.

3.2 When navigational guidance is given to an intercepted aircraft, care must be taken that the aircraft is not led into conditions where the visibility may be reduced below that required to maintain flight in visual meteorological conditions and that the manoeuvres demanded of the intercepted aircraft do not add to already existing hazards in the event that the operating efficiency of the aircraft is impaired.

3.3 In the exceptional case where an intercepted civil aircraft is required to land in the territory overflown, care must also be taken that:

(a) the designated aerodrome is suitable for the safe landing of the aircraft type concerned, especially if the aerodrome is not normally used for civil air transport operations;

(b) the surrounding terrain is suitable for circling, approach and missed approach manoeuvres;

(c) the intercepted aircraft has sufficient fuel remaining to reach the aerodrome;

(d) if the intercepted aircraft is a civil transport aircraft, the designated aerodrome has a runway with a length equivalent to at least 2 500 m at MSL and a bearing strength sufficient to support the aircraft; and

(e) whenever possible, the designated aerodrome is one that is described in detail in the relevant AIP.

3.4 When requiring a civil aircraft to land at an unfamiliar aerodrome, it is essential that sufficient time be allowed for it to prepare for a landing, bearing in mind that only the pilot-in-command of the civil aircraft can judge the safety of the landing operation in relation to runway length and aircraft mass at the time.

3.5 It is particularly important that all information necessary to facilitate a safe approach and landing be given to the intercepted aircraft by radiotelephony.

4. Air-to-air visual signals

The visual signals to be used by intercepting and intercepted aircraft are those set forth in Tables S11-1 and S11-2. It is essential that intercepting and intercepted aircraft adhere strictly to those signals and interpret correctly the signals given by the other aircraft, and that the intercepting aircraft pay particular attention to any signals given by the intercepted aircraft to indicate that it is in a state of distress or urgency.

5. Radio communication between the intercept control unit or the intercepting aircraft and the intercepted aircraft

5.1 When an interception is being made, the intercept control unit and the intercepting aircraft should:

(a) first attempt to establish two-way communication with the intercepted aircraft in a common language on the emergency frequency 121,5 MHz, using the call signs 'INTERCEPT CONTROL', 'INTERCEPTOR (call sign)' and 'INTERCEPTED AIRCRAFT' respectively, and

(b) failing this, attempt to establish two-way communication with the intercepted aircraft on such other frequency or frequencies as may have been prescribed by the competent authority, or to establish contact through the appropriate ATS unit(s).

5.2 If radio contact is established during interception, but communication in a common language is not possible, attempts must be made to convey instructions, acknowledgement of instructions and essential information by using the phrases and pronunciations in Table S11-3 and transmitting each phrase twice.

6. Refraining from the use of weapons

The use of tracer bullets to attract attention is hazardous, and it is expected that measures will be taken to avoid their use so that the lives of persons on board and the safety of aircraft will not be endangered.

7. Coordination between intercept control units and ATS units

It is essential that close coordination be maintained between an intercept control unit and the appropriate ATS unit during all phases of an interception of an aircraft which is, or might be, a civil aircraft, in order for the ATS unit to be kept fully informed of the developments and of the action required of the intercepted aircraft.

AMC1 SERA.11015(a) Interception

ED Decision 2013/013/R

REGULATIONS AND ADMINISTRATIVE DIRECTIVES ISSUED BY MEMBER STATES GOVERNING INTERCEPTION OF CIVIL AIRCRAFT

(a) In accordance with the provisions on interception of civil aircraft in Annex 2 to the Convention on the International Civil Aviation, the national provisions put in place under SERA.11015(a) should ensure that:

(1) interception of civil aircraft is undertaken only as a last resort;

(2) an interception is limited to determining the identity of the aircraft, unless it is necessary to return the aircraft to its planned track, direct it beyond the boundaries of national airspace, guide it away from a prohibited, restricted or danger area or congested areas, or instruct it to effect a landing at a designated aerodrome;

(3) practice interception of civil aircraft is not undertaken, unless it has been previously agreed with the pilot-in-command of the aircraft to be intercepted and ATC has been informed accordingly that the interception is to take place;

(4) navigational guidance and related information is given to an intercepted aircraft by radiotelephony, whenever radio contact can be established; and

(5) in the case where an intercepted civil aircraft is required to land in the territory overflown, the aerodrome designated for the landing is suitable for the safe landing of the aircraft type concerned.

(b) Member States should publish a standard method that has been established for the manoeuvring of aircraft intercepting a civil aircraft. Such method should be designed to avoid any hazard for the intercepted aircraft.

(c) Member States should ensure that provision is made for the use of secondary surveillance radar or ADS-B, where available, to identify civil aircraft in areas where they may be subject to interception.

GM1 SERA.11015(a) Interception

ED Decision 2013/013/R

REGULATIONS AND ADMINISTRATIVE DIRECTIVES ISSUED BY MEMBER STATES GOVERNING INTERCEPTION OF CIVIL AIRCRAFT

Member States that comply with an alternative means of compliance different from AMC1 SERA.11015(a) Interception over the territory and territorial waters of the State are required to notify ICAO of a difference to ICAO Annex 2. Over the high seas ICAO Annex 2 is to be applied without exception in accordance with the Chicago Convention and SERA.1001(a).

SECTION 12 SERVICES RELATED TO METEOROLOGY — AIRCRAFT OBSERVATIONS AND REPORTS BY VOICE COMMUNICATIONS

SERA.12001 Types of aircraft observations

Regulation (EU) No 923/2012

(a) The following aircraft observations shall be made during any phase of the flight:

(1) special aircraft observations; and

(2) other non-routine aircraft observations.

SERA.12005 Special aircraft observations

Regulation (EU) 2016/1185

(a) Special observations shall be made and reported by all aircraft whenever the following conditions are encountered or observed:

(1) moderate or severe turbulence; or

(2) moderate or severe icing; or

(3) severe mountain wave; or

(4) thunderstorms, without hail, that are obscured, embedded, widespread or in squall lines; or

(5) thunderstorms, with hail, that are obscured, embedded, widespread or in squall lines; or

(6) heavy dust storm or heavy sandstorm; or

(7) volcanic ash cloud; or

(8) pre-eruption volcanic activity or a volcanic eruption.

(b) Competent authorities shall prescribe as necessary other conditions which shall be reported by all aircraft when encountered or observed.

(c) Flight crews shall compile the reports using forms based on the model AIREP SPECIAL form as set out in point A of Appendix 5. Those reports shall comply with the detailed instructions for reporting, as provided in point 2 of Appendix 5.

(1) The detailed instructions, including the formats of messages and the phraseologies provided in Appendix 5, shall be used by flight crews when transmitting air-reports and by ATS units when retransmitting such reports.

(2) Special air-reports containing observations of volcanic activity shall be recorded on the special air-report of volcanic activity form. Forms based on the model form for special air-reports of volcanic activity set out in point B of Appendix 5 shall be provided for flight crews operating on routes which could be affected by volcanic ash clouds.

GM1 SERA.12005(c) Special aircraft observations

ED Decision 2016/023/R

In a busy environment where the transmission of complete special aircraft observations would have a negative impact on the frequency occupancy, ATC may instruct the aircraft to make the complete report on an alternative frequency.

SERA.12010 Other non-routine aircraft observations

Regulation (EU) No 923/2012

When other meteorological conditions not listed under SERA.12005(a), e.g. wind shear, are encountered and which, in the opinion of the pilot-in-command, may affect the safety or markedly affect the efficiency of other aircraft operations, the pilot-in-command shall advise the appropriate air traffic services unit as soon as practicable.

SERA.12015 Reporting of aircraft observations by voice communication

Regulation (EU) No 923/2012

(a) Aircraft observations shall be reported during flight at the time the observation is made or as soon thereafter as is practicable.

(b) Aircraft observations shall be reported as air-reports and shall comply with the technical specifications in Appendix 5.

SERA.12020 Exchange of air-reports

Regulation (EU) No 923/2012

(a) ATS units shall transmit, as soon as practicable, special and non-routine air-reports to:

(1) other aircraft concerned;

(2) the associated meteorological watch office (MWO) in accordance with point 3 of Appendix 5; and

(3) other ATS units concerned.

(b) Transmissions to aircraft shall be repeated at a frequency and continued for a period of time which shall be determined by the ATS unit concerned.

AMC1 SERA.12020 Exchange of air-reports

ED Decision 2016/023/R

SPECIAL AIR-REPORTS

Special air-reports should be transmitted with the least possible delay to aircraft likely to be affected and should cover the portion of the route up to one hour's flying time ahead of the aircraft.

GM1 SERA.12020(a)(3) Exchange of air-reports

ED Decision 2013/013/R

OTHER ATS UNITS CONCERNED

Other ATS units concerned are those that have flights under their jurisdiction which are expected to enter the airspace concerned at a later stage of flight. Those flights could, for instance, require rerouting before entering the airspace concerned. As an example, a special air-report concerning volcanic ash or volcanic eruption could be necessary to transmit to aircraft by ATS units in the FIR adjacent to that affected by the air-report.

SECTION 13 SSR TRANSPONDER

SERA.13001 Operation of an SSR transponder

Regulation (EU) 2016/1185

(a) When an aircraft carries a serviceable SSR transponder, the pilot shall operate the transponder at all times during flight, regardless of whether the aircraft is within or outside airspace where SSR is used for ATS purposes.

(b) Pilots shall not operate the IDENT feature unless requested by ATS.

(c) Except for flight in airspace designated by the competent authority for mandatory operation of transponder, aircraft without sufficient electrical power supply are exempted from the requirement to operate the transponder at all times.

GM1 SERA.13001 Operation of an SSR transponder

ED Decision 2016/023/R

Pilots of aircraft engaged in formation join-ups are expected to continue operating the transponder until established in formation. Once established in formation, all except the lead aircraft should be instructed to 'squawk standby'.

GM1 SERA.13001(c) Operation of an SSR transponder

ED Decision 2016/023/R

Pilots of non-powered aircraft are also encouraged to operate the transponder during flight outside airspace where carriage and operation of SSR transponder is mandatory.

SERA.13005 SSR transponder Mode A code setting

Regulation (EU) 2016/1185

(a) To indicate that it is in a specific contingency situation, the pilot of an aircraft equipped with SSR shall:

(1) select Code 7700 to indicate a state of emergency unless ATC has previously directed the pilot to operate the transponder on a specified code. In the latter case, a pilot may nevertheless select Code 7700 whenever there is a specific reason to believe that this would be the best course of action;

(2) select Code 7600 to indicate a state of radio-communication failure;

(3) attempt to select Code 7500 to indicate a state of unlawful interference. If circumstances so warrant, Code 7700 should be used instead.

(b) Except in the cases described in (a) above, the pilot shall:

(1) select codes as instructed by the ATS unit; or

(2) in the absence of ATS instructions related to code setting, select code 2000 or another code as prescribed by the competent authority; or

(3) when not receiving air traffic services, select code 7000 in order to improve the detection of suitably equipped aircraft unless otherwise prescribed by the competent authority.

(c) When it is observed that the code shown on the situation display is different from what has been assigned to the aircraft:

(1) the pilot shall be requested to confirm the code selected and, if the situation warrants, to reselect the correct code; and

(2) if the discrepancy between assigned and displayed codes still persists, the pilot may be requested to stop the operation of the aircraft's transponder. The next control position and any other affected unit using SSR and/or multilateration (MLAT) in the provision of ATS shall be informed accordingly.

GM1 SERA.13005(a) SSR transponder Mode A code setting

ED Decision 2016/023/R

If a pilot has selected Mode A Code 7500 and has been requested to confirm this code by ATC, the pilot should, according to circumstances, either confirm this or not reply at all. If the pilot does not reply, ATC should take this as confirmation that the use of Code 7500 is not an inadvertent false code selection.

AMC1 SERA.13005(c) SSR transponder Mode A code setting

ED Decision 2016/023/R

When requested by ATC to confirm the code selected, the pilot should:

(a) verify the Mode A code setting on the transponder;

(b) reselect the assigned code if necessary; and

(c) confirm to ATC the setting displayed on the controls of the transponder.

SERA.13010 Pressure-altitude-derived information

Regulation (EU) 2016/1185

(a) When the aircraft carries serviceable Mode C equipment, the pilot shall continuously operate this mode unless otherwise dictated by ATC.

(b) Unless otherwise prescribed by the competent authority, verification of the pressure-altitude-derived level information displayed to the controller shall be effected at least once by each suitably equipped ATC unit on initial contact with the aircraft concerned or, if this is not feasible, as soon as possible thereafter.

GM1 SERA.13010(b) Pressure-altitude-derived information

ED Decision 2016/023/R

ERRONEOUS LEVEL INFORMATION

(a) If the displayed level information is not within the approved tolerance value or when a discrepancy in excess of the approved tolerance value is detected subsequent to verification, the pilot should be advised accordingly and requested to check the pressure setting and confirm the aircraft's level.

(b) If, following confirmation of the correct pressure setting, the discrepancy continues to exist, the following action should be taken by ATC according to circumstances:

(1) request the pilot to select and operate an alternative transponder, if available, and re-verify that the displayed level information is within the approved tolerance; or

(2) request the pilot to stop Mode C or ADS-B altitude data transmission, provided this does not cause the loss of position and identity information, and notify the next control positions or ATC unit concerned with the aircraft of the action taken; or

(3) inform the pilot of the discrepancy and request that the relevant operation continue in order to prevent loss of position and identity information of the aircraft and, when so prescribed by the local instructions, override the label-displayed level information with the reported level. In addition, the ATC unit should notify the next control position or ATC unit concerned with the aircraft of the action taken.

(c) It should be highlighted that ACAS will accept mode C replies that are erroneous, and it is possible to issue an RA based on these inputs. When the measures described in (b)(1) cannot be implemented, the controller should take into account the likelihood of generating ACAS RA in the provision of ATS.

SERA.13015 SSR transponder Mode S aircraft identification setting

Regulation (EU) 2016/1185

(a) Aircraft equipped with Mode S having an aircraft identification feature shall transmit the aircraft identification as specified in Item 7 of the ICAO flight plan or, when no flight plan has been filed, the aircraft registration.

(b) Whenever it is observed on the situation display that the aircraft identification transmitted by a Mode S-equipped aircraft is different from that expected from the aircraft, the pilot shall be requested to confirm and, if necessary, re-enter the correct aircraft identification.

(c) If, following confirmation by the pilot that the correct aircraft identification has been set on the Mode S identification feature, the discrepancy continues to exist, the controller shall take the following actions:

(1) inform the pilot of the persistent discrepancy;

(2) where possible, correct the label showing the aircraft identification on the situation display; and

(3) notify the next control position and any other unit concerned using Mode S for identification purposes that the aircraft identification transmitted by the aircraft is erroneous.

SERA.13020 SSR transponder failure when the carriage of a functioning transponder is mandatory

Regulation (EU) 2016/1185

(a) In case of a transponder failure after departure, ATC units shall attempt to provide for continuation of the flight to the destination aerodrome in accordance with the flight plan. Pilots may, however, be expected to comply with specific restrictions.

(b) In the case of a transponder which has failed and cannot be restored before departure, pilots shall:

(1) inform ATS as soon as possible, preferably before submission of a flight plan;

(2) insert in Item 10 of the ICAO flight plan form under SSR the character 'N' for complete unserviceability of the transponder or, in case of partial transponder failure, insert the character corresponding to the remaining transponder capability; and

(3) comply with any published procedures for requesting an exemption from the requirements to carry a functioning SSR transponder.

GM1 SERA.13020(a) SSR transponder failure when the carriage of a functioning transponder is mandatory

ED Decision 2016/023/R

TRANSPONDER FAILURE AFTER DEPARTURE

When an aircraft experiencing transponder failure after departure is operating or expected to operate in an area where the carriage of a functioning transponder with specified capabilities is mandatory, the ATC units concerned should endeavour to provide for continuation of the flight to the aerodrome of first intended landing in accordance with the flight plan. However, in certain traffic situations, either in terminal areas or en-route, continuation of the flight may not be possible, particularly when failure is detected shortly after take-off. The aircraft may then be required to return to the departure aerodrome or to land at the nearest suitable aerodrome acceptable to the operator concerned and to ATC.

GM1 SERA.13020(b) SSR transponder failure when the carriage of a functioning transponder is mandatory

ED Decision 2016/023/R

TRANSPONDER FAILURE BEFORE DEPARTURE

In case of a transponder failure which is detected before departure from an aerodrome where it is not practicable to effect a repair, the aircraft concerned should be permitted to proceed, as directly as possible, to the nearest suitable aerodrome where repair can be made. When granting clearance to such aircraft, ATC should take into consideration the existing or anticipated traffic situation and may have to modify the time of departure, flight level or route of the intended flight. Subsequent adjustments may become necessary during the course of the flight. Note that Article 4(4) of Commission Implementing Regulation (EU) No 1207/2011[1] also addresses this issue.

[1] Commission Implementing Regulation (EU) No 1207/2011 of 22 November 2011 laying down requirements for the performance and the interoperability of surveillance for the single European sky (OJ L 305, 23.11.2011, p. 35).

SECTION 14 VOICE COMMUNICATION PROCEDURES

SERA.14001 General

Regulation (EU) 2016/1185

Standardised phraseology shall be used in all situations for which it has been specified. Only when standardised phraseology cannot serve an intended transmission, plain language shall be used.

AMC1 SERA.14001 General

ED Decision 2016/023/R

For standardised phraseology, refer to the Appendix I.

GM1 SERA.14001 for Appendix 1 General

ED Decision 2016/023/R

The phraseology in AMC1 SERA.14001 does not include phrases and regular radiotelephony procedure words contained in SERA Section 14.

Words in parentheses indicate that specific information, such as a level, a place or a time, etc. must be inserted to complete the phrase, or alternatively that optional phrases may be used. Words in square parentheses indicate optional additional words or information that may be necessary in specific instances.

Appendix 1 to AMC1 SERA.14001 General

ED Decision 2016/023/R

1. ATC PHRASEOLOGIES

1.1 General

	Circumstances	*Phraseologies*
1.1.1	Description of levels (subsequently referred to as '(*level*)')	a) FLIGHT LEVEL *(number)*; *or* b) [HEIGHT] *(number)* METRES; *or* c) [ALTITUDE] *(number)* FEET.
	Note.– In circumstances where clarification is required, the word 'ALTITUDE' or 'HEIGHT' may be included, e.g. 'DESCEND TO ALTITUDE TWO THOUSAND FEET'.	
	when passing level information in form of vertical distance from the other traffic	d) *(number)* FEET/METRES ABOVE (*or* BELOW)
1.1.2	Level changes, reports and rates	a) CLIMB (*or* DESCEND); *followed as necessary by:* 1) TO *(level)* 2) TO AND MAINTAIN BLOCK *(level)* TO *(level)*;
	… instruction that a climb (or descent) to a level within the	

vertical range defined is to commence	
	3) TO REACH *(level)* AT (*or* BY) *(time or significant point)*;
	4) REPORT LEAVING (*or* REACHING, *or* PASSING) *(level)*;
	5) AT *(number)* METRES PER SECOND (*or* FEET PER MINUTE) [OR GREATER (*or* OR LESS)];
... for SST aircraft only	6) REPORT STARTING ACCELERATION (*or* DECELERATION).
	b) MAINTAIN AT LEAST *(number)* METRES (*or* FEET) ABOVE (*or* BELOW)*(aircraft call sign)*;
	c) REQUEST LEVEL (*or* FLIGHT LEVEL *or* ALTITUDE) CHANGE FROM *(name of unit)* [AT *(time or significant point)*];
	d) STOP CLIMB (*or* DESCENT) AT *(level)*;
	e) CONTINUE CLIMB (*or* DESCENT) TO *(level)*;
	f) EXPEDITE CLIMB (*or* DESCENT) [UNTIL PASSING *(level)*];
	g) WHEN READY, CLIMB (*or* DESCEND) TO *(level)*;
	h) EXPECT CLIMB (*or* DESCENT) AT *(time or significant point)*;
	*i) REQUEST DESCENT AT *(time)*;
... to require action at a specific time or place	j) IMMEDIATELY;
	k) AFTER PASSING *(significant point)*;
	l) AT *(time or significant point)*;
... to require action when convenient	m) WHEN READY *(instruction)*;
... to require an aircraft to climb or descend maintaining own separation and VMC	n) MAINTAIN OWN SEPARATION AND VMC [FROM *(level)*] [TO *(level)*];
	o) MAINTAIN OWN SEPARATION AND VMC ABOVE (*or* BELOW, *or* TO) *(level)*;
... when there is doubt that an aircraft can comply with a clearance or instruction	p) IF UNABLE, *(alternative instructions)* AND ADVISE;
... when a pilot is unable to comply with a clearance or instruction	*q) UNABLE;
... after a flight crew starts to deviate from any ATC clearance or instruction to comply with an ACAS resolution advisory (RA) (Pilot and controller interchange)	*r) TCAS RA; s)ROGER;
... after the response to an ACAS RA is completed and a return to the ATC clearance or instruction is initiated (Pilot and controller interchange)	*t) CLEAR OF CONFLICT, RETURNING TO *(assigned clearance)*; u) ROGER *(or alternative instructions)*;
... after the response to an ACAS RA is completed and the assigned ATC clearance or instruction has been resumed	*v) CLEAR OF CONFLICT (*assigned clearance*) RESUMED; w) ROGER *(or alternative instructions)*;

	(Pilot and controller interchange) … after an ATC clearance or instruction contradictory to the ACAS RA is received, the flight crew will follow the RA and inform ATC directly (Pilot and controller interchange) … clearance to cancel level restriction(s) of the vertical profile of a SID during climb … clearance to cancel level restriction(s) of the vertical profile of a STAR during descent	*x UNABLE, TCAS RA; y) ROGER; z) CLIMB TO *(level)* [LEVEL RESTRICTION(S) (*SID designator*) CANCELLED *(or)* LEVEL RESTRICTION(S) *(SID designator)* AT *(point)* CANCELLED]; aa) DESCEND TO *(level)* [LEVEL RESTRICTION(S) *(STAR designator)* CANCELLED *(or)* LEVEL RESTRICTION(S) *(STAR designator)* AT *(point)* CANCELLED]. '*' denotes pilot transmission.
1.1.3	Minimum fuel … indication of minimum fuel	*a) MINIMUM FUEL: b) ROGER [NO DELAY EXPECTED or EXPECT *(delay information)*]. '*' denotes pilot transmission.
1.1.4	Transfer of control and/or frequency change *Note.— An aircraft may be requested to 'STAND BY' on a frequency when it is intended that the ATS unit will initiate communications soon and to 'MONITOR' a frequency when information is being broadcast thereon.*	a) CONTACT *(unit call sign) (frequency)* [NOW]; b) AT (*or* OVER) *(time or place)* [*or* WHEN] [PASSING/LEAVING/REACHING *(level)*] CONTACT *(unit call sign) (frequency)*; c) IF NO CONTACT *(instructions)*; d) STAND BY FOR *(unit call sign) (frequency)*; *e) REQUEST CHANGE TO *(frequency)*; f) FREQUENCY CHANGE APPROVED; g) MONITOR *(unit call sign) (frequency)*; *h) MONITORING *(frequency)*; i) WHEN READY, CONTACT *(unit call sign) (frequency)*; j) REMAIN THIS FREQUENCY. '*' denotes pilot transmission.
1.1.5	8.33 kHz channel spacing *Note.— In this paragraph, the term 'point' is used only in the context of naming the 8.33 kHz channel spacing concept and does not constitute any change to existing ICAO provisions or phraseology regarding the use of the term 'decimal'.* … to request confirmation of 8.33 kHz capability … to indicate 8.33 kHz capability … to indicate lack of 8.33 kHz capability … to request UHF capability	a) CONFIRM EIGHT POINT THREE THREE; *b) AFFIRM EIGHT POINT THREE THREE; *c) NEGATIVE EIGHT POINT THREE THREE; d) CONFIRM UHF;

	… to indicate UHF capability … to indicate lack of UHF capability … to request status in respect of 8.33 kHz exemption … to indicate 8.33 kHz exempted status … to indicate 8.33 kHz non-exempted status … to indicate that a certain clearance is given because otherwise a non-equipped and/or non-exempted aircraft would enter airspace of mandatory carriage	*e) AFFIRM UHF; *f) NEGATIVE UHF; g) CONFIRM EIGHT POINT THREE THREE EXEMPTED; *h) AFFIRM EIGHT POINT THREE THREE EXEMPTED; *i) NEGATIVE EIGHT POINT THREE THREE EXEMPTED; j) DUE EIGHT POINT THREE THREE REQUIREMENT. '*' denotes pilot transmission.
1.1.6	Change of call sign … to instruct an aircraft to change its type of call sign … to advise an aircraft to revert to the call sign indicated in the flight plan	a) CHANGE YOUR CALL SIGN TO *(new call sign)* [UNTIL FURTHER ADVISED]; b) REVERT TO FLIGHT PLAN CALL SIGN *(call sign)* [AT *(significant point)*].
1.1.7	Traffic information … to pass traffic information … to acknowledge traffic information	a) TRAFFIC *(information)*; b) NO REPORTED TRAFFIC; *c) LOOKING OUT; *d) TRAFFIC IN SIGHT; *e) NEGATIVE CONTACT *[reasons]*;
		f) [ADDITIONAL] TRAFFIC *(direction)* BOUND *(type of aircraft) (level)* ESTIMATED (*or* OVER) *(significant point)* AT *(time)*; g) TRAFFIC IS *(classification)* UNMANNED FREE BALLOON(S) WAS [*or* ESTIMATED] OVER (*place*) AT (*time*) REPORTED *level(s)*) [*or* LEVEL UNKNOWN] MOVING *(direction) (other pertinent information, if any).* '*' denotes pilot transmission.
1.1.8	Meteorological conditions	a) [SURFACE] WIND *(number)* DEGREES *(speed) (units)*; b) WIND AT *(level) (number)* DEGREES *(number)* KILOMETRES PER HOUR (*or* KNOTS); *Note.— Wind is always expressed by giving the mean direction and speed and any significant variations thereof.* c) VISIBILITY *(distance) (units) [direction]*; d) RUNWAY VISUAL RANGE (*or* RVR) [RUNWAY *(number)*] *(distance) (units)*; e) RUNWAY VISUAL RANGE (*or* RVR) RUNWAY *(number)* NOT AVAILABLE (*or* NOT REPORTED);
	… for multiple RVR observations	f) RUNWAY VISUAL RANGE (*or* RVR) [RUNWAY *(number)*] *(first position) (distance) (units), (second position) (distance) (units), (third position) (distance) (units)*; *Note 1. — Multiple RVR observations are always representative of the touchdown zone, midpoint zone and the roll-out/stop-end zone respectively.*

		Note 2. — Where reports for three locations are given, the indication of these locations may be omitted, provided that the reports are passed in the order of touchdown zone, followed by the midpoint zone and ending with the roll-out/stop-end zone report.
	… in the event that RVR information on any one position is not available, this information will be included in the appropriate sequence	g) RUNWAY VISUAL RANGE (*or* RVR) [RUNWAY *(number)*] *(first position) (distance) (units), (second position)* NOT AVAILABLE, *(third position) (distance) (units)*; h) PRESENT WEATHER (details); i) CLOUD *(amount*, [*(type)] and height of base) (units)* (*or* SKY CLEAR); j) CAVOK; *Note.— 'CAVOK' pronounced 'CAV-O-KAY'.* k) TEMPERATURE [MINUS] *(number)* (*and/or* DEW POINT [MINUS] *(number)*); l) QNH (number)*[units]*; m) QFE *(number)* [(units)]; n) *(aircraft type)* REPORTED *(description)* ICING (*or* TURBULENCE) [IN CLOUD] *(area) (time)*; o) REPORT FLIGHT CONDITIONS.
	… information to a pilot changing from IFR flight to VFR flight where it is likely that flight in VMC cannot be maintained	p) INSTRUMENT METEOROLOGICAL CONDITIONS REPORTED (*or forecast*) IN THE VICINITY OF (*location*)
1.1.9	Position reporting … to omit position reports until a specified position	a) NEXT REPORT AT *(significant point)*; b) OMIT POSITION REPORTS [UNTIL *(specify)*]; c) RESUME POSITION REPORTING.
1.1.10	Additional reports … to request a report at a specified place or distance … to report at a specified place or distance … to request a report of present position … to report present position	a) REPORT PASSING *(significant point)*; b) REPORT *(distance)* MILES (GNSS *or* DME) FROM *(name of DME station) (or significant point)*; *c) *(distance)* MILES (GNSS *or* DME) FROM *(name of DME station) (or significant point)*; d) REPORT PASSING *(three digits)* RADIAL *(name of VOR)* VOR; e) REPORT (GNSS *or* DME) DISTANCE FROM *(significant point) or (name of DME station)*; *f) *(distance)* MILES (GNSS *or* DME) FROM *(name of DME station) (or significant point)*. '*' denotes pilot transmission.
1.1.11	Aerodrome information	a) [*(location)*] RUNWAY SURFACE CONDITION RUNWAY *(number) (condition)*; b) [*(location)*] RUNWAY SURFACE CONDITION RUNWAY *(number)* NOT CURRENT; c) LANDING SURFACE *(condition)*; d) CAUTION CONSTRUCTION WORK *(location)*; e) CAUTION *(specify reasons)* RIGHT (*or* LEFT), (*or* BOTH SIDES) OF RUNWAY *[number]*; f) CAUTION WORK IN PROGRESS (*or* OBSTRUCTION) *(position and any necessary advice)*;

		g) RUNWAY REPORT AT *(observation time)* RUNWAY *(number) (type of precipitant)* UP TO *(depth of deposit)* MILLIMETRES. ESTIMATED SURFACE FRICTION GOOD (*or* MEDIUM TO GOOD, *or* MEDIUM, *or* MEDIUM TO POOR, *or* POOR; h) BRAKING ACTION REPORTED BY *(aircraft type)* AT *(time)* GOOD (*or* MEDIUM to GOOD, *or* MEDIUM, *or* MEDIUM to POOR, *or* POOR); i) RUNWAY (*or* TAXIWAY) *(number)* WET [*or* STANDING WATER, *or* SNOW REMOVED *(length and width as applicable)*, *or* TREATED, *or* COVERED WITH PATCHES OF DRY SNOW (*or* WET SNOW, *or* COMPACTED SNOW, *or* SLUSH, *or* FROZEN SLUSH, *or* ICE, *or* WET ICE, *or* ICE UNDERNEATH, *or* ICE AND SNOW, *or* SNOW DRIFTS, *or* FROZEN RUTS AND RIDGES)]; j) TOWER OBSERVES (weather information); k) PILOT REPORTS *(weather information)*.
1.1.12	Operational status of visual and non-visual aids	a) *(specify visual or non-visual aid)* RUNWAY *(number) (description of deficiency)*; b) *(type)* LIGHTING *(unserviceability)*; c) GBAS/SBAS/MLS/ILS CATEGORY *(category) (serviceability state)*; d) TAXIWAY LIGHTING *(description of deficiency)*; e) *(type of visual approach slope indicator)* RUNWAY *(number) (description of deficiency)*.
1.1.13	Reduced vertical separation minimum (RVSM) operations ... to ascertain RVSM approval status of an aircraft ... to report RVSM approved status ... to report RVSM non-approved status followed by supplementary information ... to deny ATC clearance into RVSM airspace ... to report when severe turbulence affects the capability of an aircraft to maintain height-keeping requirements for RVSM ... to report that the equipment of an aircraft has degraded below minimum aviation system performance standards ...to request an aircraft to provide information as soon as RVSM-approved status has been regained or the pilot is ready to resume RVSM operations ... to request confirmation that an aircraft has regained	a) CONFIRM RVSM APPROVED; *b) AFFIRM RVSM; *c) NEGATIVE RVSM *[(supplementary information, e.g. State aircraft)]*; d) UNABLE ISSUE CLEARANCE INTO RVSM AIRSPACE, MAINTAIN [*or* DESCEND TO, *or* CLIMB TO] *(level)*; *e) UNABLE RVSM DUE TURBULENCE; *f) UNABLE RVSM DUE EQUIPMENT; g) REPORT WHEN ABLE TO RESUME RVSM; h) CONFIRM ABLE TO RESUME RVSM;

	RVSM-approved status or a pilot is ready to resume RVSM operations … to report ability to resume RVSM operations after an equipment or weather-related contingency	*i) READY TO RESUME RVSM. '*' denotes pilot transmission.
1.1.14	GNSS service status	a) GNSS REPORTED UNRELIABLE (*or* GNSS MAY NOT BE AVAILABLE [DUE TO INTERFERENCE]); 1) IN THE VICINITY OF *(location) (radius)* [BETWEEN *(levels)*]; or 2) IN THE AREA OF *(description)* (*or* IN (name) FIR) [BETWEEN *(levels)*]; b) BASIC GNSS (*or* SBAS, *or* GBAS) UNAVAILABLE FOR *(specify operation)* [FROM (time) TO *(time)* (*or* UNTIL FURTHER NOTICE)]; *c) BASIC GNSS UNAVAILABLE [DUE TO (*reason, e.g.* LOSS OF RAIM *or* RAIM ALERT)]; *d) GBAS (*or* SBAS) UNAVAILABLE. e) CONFIRM GNSS NAVIGATION : and *f) AFFIRM GNSS NAVIGATION. '*' denotes pilot transmission.
1.1.15	RNAV …RNAV arrival or departure procedure cannot be accepted by the pilot …pilot is unable to comply with an assigned terminal area procedure	*UNABLE (*designator*) DEPARTURE [*or* ARRIVAL] DUE RNAV TYPE *UNABLE (*designator*) DEPARTURE [*or* ARRIVAL] (*reasons*)
	…ATC unable to assign an RNAV arrival or departure procedure requested by a pilot due to the type of on-board RNAV equipment …ATC unable to assign an arrival or departure procedure requested by the pilot …confirmation whether a specific RNAV arrival or departure procedure can be accepted …informing ATC of RNAV degradation or failure …informing ATC of no RNAV capability	UNABLE TO ISSUE (*designator*) DEPARTURE [*or* ARRIVAL] DUE RNAV TYPE UNABLE TO ISSUE (*designator*) DEPARTURE [*or* ARRIVAL] (*reasons*) ADVISE IF ABLE (*designator*) DEPARTURE [*or* ARRIVAL] *(aircraft call sign) UNABLE RNAV DUE EQUIPMENT *(aircraft call sign) NEGATIVE RNAV '*' denotes pilot transmission
1.1.16	Degradation of aircraft navigation performance	UNABLE RNP *(specify type)* (*or* RNAV) [DUE TO (*reason, e.g.* LOSS OF RAIM *or* RAIM ALERT)].

1.2 Area control services

	Circumstances	*Phraseologies*
1.2.1	Issuance of a clearance	a) *(name of unit)* CLEARS *(aircraft call sign)*; b) *(aircraft call sign)* CLEARED TO; c) RECLEARED *(amended clearance details)* [REST OF CLEARANCE UNCHANGED]; d) RECLEARED *(amended route portion)* TO *(significant point of original route)* [REST OF CLEARANCE UNCHANGED]; e) ENTER CONTROLLED AIRSPACE (*or* CONTROL ZONE) [VIA *(significant point or route)*] AT *(level)* [AT *(time)*]; f) LEAVE CONTROLLED AIRSPACE (*or* CONTROL ZONE) [VIA *(significant point or route)*] AT *(level)* (*or* CLIMBING, *or* DESCENDING); g) JOIN (specify) AT *(significant point)* AT *(level)* [AT *(time)*].
1.2.2	Indication of route and clearance limit	a) FROM *(location)* TO *(location)*; b) TO *(location)*, *followed as necessary by:* 1) DIRECT; 2) VIA *(route and/or significant points)*; 3) VIA FLIGHT PLANNED ROUTE; 4) VIA *(distance)* DME ARC *(direction)* OF *(name of DME station)*; c) *(route)* NOT AVAILABLE DUE *(reason)* ALTERNATIVE[S] IS/ARE *(routes)* ADVISE.
1.2.3	Maintenance of specified levels	a) MAINTAIN *(level)* [TO *(significant point)*]; b) MAINTAIN *(level)* UNTIL PASSING *(significant point)*; c) MAINTAIN *(level)* UNTIL *(minutes)* AFTER PASSING *(significant point)*; d) MAINTAIN *(level)* UNTIL *(time)*; e) MAINTAIN *(level)* UNTIL ADVISED BY *(name of unit)*;
		f) MAINTAIN *(level)* UNTIL FURTHER ADVISED; g) MAINTAIN *(level)* WHILE IN CONTROLLED AIRSPACE; h) MAINTAIN BLOCK *(level)* TO *(level)*. *Note. — The term 'MAINTAIN' is not to be used in lieu of 'DESCEND' or 'CLIMB' when instructing an aircraft to change level.*
1.2.4	Specification of cruising levels	a) CROSS *(significant point)* AT (*or* ABOVE, *or* BELOW) *(level)*; b) CROSS *(significant point)* AT *(time)* OR LATER (*or* BEFORE) AT *(level)*; c) CRUISE CLIMB BETWEEN *(levels)* (*or* ABOVE *(level)*); d) CROSS *(distance)* MILES, (GNSS *or* DME) *[(direction)]* OF *(name of DME station)* OR *(distance)* *[(direction)]* OF *(significant point)* AT (*or* ABOVE *or* BELOW) *(level)*.
1.2.5	Emergency descent	*a) EMERGENCY DESCENT *(intentions)*; b) ATTENTION ALL AIRCRAFT IN THE VICINITY OF [*or* AT] *(significant point or location)* EMERGENCY

		DESCENT IN PROGRESS FROM *(level)* (followed as necessary by specific instructions, clearances, traffic information, etc.). '*' denotes pilot transmission.
1.2.6	If clearance cannot be issued immediately upon request	EXPECT CLEARANCE type of clearance) AT *(time)*.
1.2.7	When clearance for deviation cannot be issued	UNABLE, TRAFFIC *(direction)* BOUND *(type of aircraft)* *(level)* ESTIMATED (*or* OVER) *(significant point)* AT *(time)* CALL SIGN *(call sign)* ADVISE INTENTIONS.
1.2.8	Separation instructions *Note. When used to apply a lateral VOR/GNSS separation confirmation of zero offset is required.*	a) CROSS *(significant point)* AT *(time)* [OR LATER (*or* OR BEFORE)]; b) ADVISE IF ABLE TO CROSS *(significant point)* AT *(time or level)*; c) MAINTAIN MACH *(number)* [OR GREATER (*or* OR LESS)] [UNTIL *(significant point)*]; d) DO NOT EXCEED MACH *(number)*; e) CONFIRM ESTABLISHED ON THE TRACK BETWEEN *(significant point)* AND *(significant point)* [WITH ZERO OFFSET]; *f) ESTABLISHED ON THE TRACK BETWEEN *(significant point)* AND *(significant point)* [WITH ZERO OFFSET]; g) MAINTAIN TRACK BETWEEN *(significant point)* AND *(significant point)*. REPORT ESTABLISHED ON THE TRACK; *h) ESTABLISHED ON THE TRACK; i) CONFIRM ZERO OFFSET; *j) AFFIRM ZERO OFFSET. '*' denotes pilot transmission
1.2.9	Instructions associated with flying a track (offset), parallel to the cleared route	a) ADVISE IF ABLE TO PROCEED PARALLEL OFFSET; b) PROCEED OFFSET *(distance)* RIGHT/LEFT OF *(route)* *(track)* [CENTRE LINE] [AT *(significant point or time)*] [UNTIL (*significant point or time)*]; c) CANCEL OFFSET *(instructions to rejoin cleared flight route or other information)*.

1.3 Approach control services

	Circumstances	Phraseologies
1.3.1	Departure instructions	a) [AFTER DEPARTURE] TURN RIGHT (or LEFT) HEADING *(three digits)* (or CONTINUE RUNWAY HEADING) (or TRACK EXTENDED CENTRE LINE) TO *(level or significant point)* [*(other instructions as required)*]; b) AFTER REACHING (or PASSING) *(level or significant point)* *(instructions)*; c) TURN RIGHT (or LEFT) HEADING *(three digits)* TO level) [TO INTERCEPT *(track, route, airway, etc.)*]; d) *(standard departure name and number)* DEPARTURE; e) TRACK *(three digits)* DEGREES [MAGNETIC (or TRUE)] TO (or FROM) *(significant point)* UNTIL (*time*, or REACHING *(fix or significant point or level)*) [BEFORE PROCEEDING ON COURSE];

		f) CLEARED VIA *(designation)*.
1.3.2	Approach instructions	a) CLEARED (or PROCEED) VIA *(designation)*; b) CLEARED TO *(clearance limit)* VIA *(designation)*; c) CLEARED (or PROCEED) VIA *(details of route to be followed)*; d) CLEARED *(type of approach)* APPROACH [RUNWAY *(number)*]; e) CLEARED *(type of approach)* RUNWAY *(number)* FOLLOWED BY CIRCLING TO RUNWAY *(number)*; f) CLEARED APPROACH [RUNWAY *(number)*]; g) COMMENCE APPROACH AT *(time)*; *h) REQUEST STRAIGHT-IN [(type of approach)] APPROACH [RUNWAY *(number)*]; i) CLEARED STRAIGHT-IN [*(type of approach)*] APPROACH [RUNWAY *(number)*]; j) REPORT VISUAL; k) REPORT RUNWAY [LIGHTS] IN SIGHT; *l) REQUEST VISUAL APPROACH; m) CLEARED VISUAL APPROACH RUNWAY *(number)*; n) ADVISE ABLE TO ACCEPT VISUAL APPROACH RUNWAY *(number)*; o) CLEARED VISUAL APPROACH RUNWAY (number), MAINTAIN OWN SEPARATION FROM PRECEDING *(aircraft type and wake turbulence category as appropriate)* [CAUTION WAKE TURBULENCE]; p) REPORT *(significant point)*; [OUTBOUND, or INBOUND]; q) REPORT COMMENCING PROCEDURE TURN; *r) REQUEST VMC DESCENT; s) MAINTAIN OWN SEPARATION; t) MAINTAIN VMC; u) ARE YOU FAMILIAR WITH *(name)* APPROACH PROCEDURE; *v) REQUEST *(type of approach)* APPROACH [RUNWAY number)]; *w) REQUEST S/RNAV *plain-language designator*); x) CLEARED S/RNAV *plain-language designator*). '*' denotes pilot transmission.
	… when a pilot requests a visual approach … to request if a pilot is able to accept a visual approach … in case of successive visual approaches when the pilot of a succeeding aircraft has reported having the preceding aircraft in sight	
1.3.3	Holding clearances … visual … published holding procedure over a facility or fix … when a detailed holding clearance is required	a) HOLD VISUAL [OVER] (*position*), (*or* BETWEEN *(two prominent landmarks)*); b) CLEARED (or PROCEED) TO *(significant point, name of facility or fix)*[MAINTAIN (or CLIMB or DESCEND TO) *(level)*] HOLD [*(direction)*] AS PUBLISHED EXPECT APPROACH CLEARANCE (or FURTHER CLEARANCE) AT *(time)*; *c) REQUEST HOLDING INSTRUCTIONS; d) CLEARED (or PROCEED) TO *(significant point, name of facility or fix)* [MAINTAIN (*or* CLIMB or DESCEND TO) *(level)*] HOLD [*(direction)*] [*(specified)* RADIAL, COURSE, INBOUND TRACK *(three digits)* DEGREES] [RIGHT (*or* LEFT) HAND PATTERN] [OUTBOUND TIME *(number)* MINUTES] EXPECT APPROACH CLEARANCE

		(*or* FURTHER CLEARANCE) AT *(time) (additional instructions, if necessary)*; e) CLEARED TO THE *(three digits)* RADIAL OF THE *(name)* VOR AT *(distance)* DME FIX [MAINTAIN (*or* CLIMB *or* DESCEND TO) *(level)*] HOLD [*(direction)*] [RIGHT (or LEFT) HAND PATTERN] [OUTBOUND TIME *(number)* MINUTES] EXPECT APPROACH CLEARANCE (*or* FURTHER CLEARANCE) AT *(time) (additional instructions, if necessary)*; f) CLEARED TO THE *(three digits)* RADIAL OF THE *(name)* VOR AT *(distance)* DME FIX [MAINTAIN (*or* CLIMB *or* DESCEND TO) *(level)*] HOLD BETWEEN *(distance)* AND *(distance)* DME [RIGHT (*or* LEFT) HAND PATTERN] EXPECT APPROACH CLEARANCE (*or* FURTHER CLEARANCE) AT *(time) (additional instructions, if necessary)*. '*' denotes pilot transmission.
1.3.4	Expected approach time	a) NO DELAY EXPECTED; b) EXPECTED APPROACH TIME *(time)*; c) REVISED EXPECTED APPROACH TIME *(time)*; d) DELAY NOT DETERMINED *(reasons)*.

1.4 Phraseologies for use on and in the vicinity of the aerodrome

	Circumstances	Phraseologies
1.4.1	Identification of aircraft	SHOW LANDING LIGHTS.
1.4.2	Acknowledgement by visual means	a) ACKNOWLEDGE BY MOVING AILERONS (*or* RUDDER); b) ACKNOWLEDGE BY ROCKING WINGS; c) ACKNOWLEDGE BY FLASHING LANDING LIGHTS.
1.4.3	Starting procedures ... to request permission to start engines ... ATC replies	*a) [*aircraft location*] REQUEST START-UP; *b) [*aircraft location*] REQUEST START-UP, INFORMATION IS *identification*); c) START-UP APPROVED; d) START-UP AT *(time)*; e) EXPECT START-UP AT *(time)*; f) START-UP AT OWN DISCRETION; g) EXPECT DEPARTURE *(time)* START-UP AT OWN DISCRETION. '*' denotes pilot transmission.
1.4.4	Pushback procedures ... aircraft/ATC	*a) [*aircraft location*] REQUEST PUSHBACK; b) PUSHBACK APPROVED; c) STAND BY; d) PUSHBACK AT OWN DISCRETION; e) EXPECT *(number)* MINUTES DELAY DUE *(reason)*. '*' denotes pilot transmission.
1.4.5	Towing procedures ... ATC response	†a) REQUEST TOW [*company name*] *(aircraft type)* FROM *(location)* TO *(location)*; b) TOW APPROVED VIA *(specific routing to be followed)*; c) HOLD POSITION; d) STAND BY.

		‘†’ denotes transmission from aircraft/tow vehicle combination.
1.4.6	To request time check and/or aerodrome data for departure … when no ATIS broadcast is available	*a) REQUEST TIME CHECK; b) TIME *(time)*; *c) REQUEST DEPARTURE INFORMATION; d) RUNWAY *(number)*, WIND *(direction and speed) (units)* QNH QFE) *(number)* [*(units)*] TEMPERATURE [MINUS] *(number)*, [VISIBILITY *(distance) (units)* (*or* RUNWAY VISUAL RANGE RVR) *(distance) (units))*] [TIME *(time)*]. *Note. If multiple visibility and RVR observations are available, those that represent the roll-out/stop end zone should be used for take-off.* ‘*’ denotes pilot transmission.
1.4.7	Taxi procedures … for departure … where detailed taxi instructions are required … where aerodrome information is not available from an alternative source such as ATIS … for helicopter operations … after landing … general	*a) *[aircraft type] [wake turbulence category if ‘heavy’] [aircraft location]* REQUEST TAXI *[intentions]*; *b) *[aircraft type] [wake turbulence category if ‘heavy’] [aircraft location] (flight rules)* TO *(aerodrome of destination)* REQUEST TAXI *[intentions]*; c) TAXI TO HOLDING POINT *[number]* [RUNWAY *(number)*] [HOLD SHORT OF RUNWAY *(number) (*or CROSS RUNWAY *(number))*] [TIME *(time)*]; *d) *[aircraft type] [wake turbulence category if ‘heavy’]* REQUEST DETAILED TAXI INSTRUCTIONS; e) TAXI TO HOLDING POINT [number] [RUNWAY (number)] VIA (specific route to be followed) [TIME (time)] [HOLD SHORT OF RUNWAY number) (or CROSS RUNWAY number))]; f) TAXI TO HOLDING POINT *[number] (followed by aerodrome information as applicable)* [TIME *(time)*]; g) TAKE (*or* TURN) FIRST *or* SECOND) LEFT *or* RIGHT); h) TAXI VIA *(identification of taxiway)*; i) TAXI VIA RUNWAY *(number)*; j) TAXI TO TERMINAL *(or other location, e.g.* GENERAL AVIATION AREA)[STAND *(number)*]; *k) REQUEST AIR-TAXIING FROM (or VIA) TO *(location or routing as appropriate)*; l) AIR-TAXI TO (*or* VIA) *(location or routing as appropriate)* [CAUTION *(dust, blowing snow, loose debris, taxiing light aircraft, personnel, etc.)*]; m) AIR TAXI VIA *(direct, as requested, or specified route)* TO *(location, heliport, operating or movement area, active or inactive runway)*. AVOID *(aircraft or vehicles or personnel)*; *n) REQUEST BACKTRACK; o) BACKTRACK APPROVED; p) BACKTRACK RUNWAY *(number)*; *q) [*(aircraft location)*]REQUEST TAXI TO *(destination on aerodrome)*; r) TAXI STRAIGHT AHEAD;

		s) TAXI WITH CAUTION; t) GIVE WAY TO *(description and position of other aircraft)*; *u) GIVING WAY TO *(traffic)*; *v) TRAFFIC *(or type of aircraft)* IN SIGHT; w) TAXI INTO HOLDING BAY; x) FOLLOW *(description of other aircraft or vehicle)*; y) VACATE RUNWAY; *z) RUNWAY VACATED; aa) EXPEDITE TAXI [*(reason)*]; *bb) EXPEDITING; cc) [CAUTION] TAXI SLOWER [*reason*]; *dd) SLOWING DOWN. '*' denotes pilot transmission.
1.4.8	Holding … to hold not closer to a runway than specified	‡a) HOLD *(direction)* OF *(position, runway number, etc.)*; ‡b) HOLD POSITION; ‡c) HOLD *(distance)* FROM *(position)*; ‡d) HOLD SHORT OF (position); *e) HOLDING; *f) HOLDING SHORT. '‡' requires specific acknowledgement from the pilot. '*' denotes pilot transmission. The procedure words 'ROGER' and 'WILCO' are insufficient acknowledgement of the instructions 'HOLD, HOLD POSITION and HOLD SHORT OF (position)'. In each case the acknowledgement is to be by the phraseology 'HOLDING' or 'HOLDING SHORT', as appropriate.
1.4.9	To cross a runway Note. The pilot will, when requested, report 'RUNWAY VACATED' when the entire aircraft is beyond the relevant runway-holding position.	*a)REQUEST CROSS RUNWAY *(number)*; *Note. If the control tower is unable to see the crossing aircraft (e.g. night, low visibility), the instruction should always be accompanied by a request to report when the aircraft has vacated the runway.* b) CROSS RUNWAY *(number)* [REPORT VACATED]; c) EXPEDITE CROSSING RUNWAY *(number)* TRAFFIC *(aircraft type) (distance)* KILOMETRES *or* MILES) FINAL; d) TAXI TO HOLDING POINT *[number]* [RUNWAY *(number)*] VIA *(specific route to be followed)*, [HOLD SHORT OF RUNWAY *(number)*] or [CROSS RUNWAY *(number)*]; *e) RUNWAY VACATED. '*' denotes pilot transmission.
1.4.10	Preparation for take-off	a) UNABLE TO ISSUE *(designator)* DEPARTURE *(reasons)*; b) REPORT WHEN READY [FOR DEPARTURE]; c) ARE YOU READY [FOR DEPARTURE]?; d) ARE YOU READY FOR IMMEDIATE DEPARTURE?; *e) READY;

	… clearance to enter runway and await take-off clearance	f) LINE UP [AND WAIT]; †g) LINE UP RUNWAY *(number)*; h) LINE UP. BE READY FOR IMMEDIATE DEPARTURE;
	… conditional clearances	‡i) *(condition)* LINE UP *(brief reiteration of the condition)*;
	… acknowledgement of a conditional clearance	*j) *(condition)* LINING UP *(brief reiteration of the condition)*;
	… confirmation or otherwise of the readback of conditional clearance	k) [THAT IS] CORRECT (*or* NEGATIVE) [I SAY AGAIN]. *(as appropriate)*.
	…request for departure from an intersection take-off position	*l) REQUEST DEPARTURE FROM RUNWAY *(number)*, INTERSECTION *(designation or name of intersection)*
	…approval of requested departure from an intersection take-off position	m) APPROVED, TAXI TO HOLDING POINT RUNWAY *(number)*, INTERSECTION *(designation or name of intersection)*
	…denial of requested departure from an intersection take-off position	n) NEGATIVE, TAXI TO HOLDING POINT RUNWAY *(number)*, INTERSECTION *(designation or name of intersection)*
	…ATC-initiated intersection take-off	o) ADVISE ABLE TO DEPART FROM RUNWAY *(number)*, INTERSECTION *(designation or name of intersection)*
	…advising take-off run available from an intersection take-off position	p) TORA RUNWAY *(number)*, FROM INTERSECTION *(designation or name of intersection)*, *(distance)* METRES
	…issuing multiple line-up instruction	q) LINE UP AND WAIT RUNWAY *(number)*, INTERSECTION *(name of intersection), (essential local traffic information)*
	…request for a visual departure	*r) REQUEST VISUAL DEPARTURE [DIRECT] TO/UNTIL *(navaid, waypoint, altitude)*
	…ATS initiated visual departure	s) ADVISE ABLE TO ACCEPT VISUAL DEPARTURE [DIRECT] TO/UNTIL *(navaid, waypoint/altitude)*
	…clearance for visual departure	t) VISUAL DEPARTURE RUNWAY *(number)* APPROVED, TURN LEFT/RIGHT [DIRECT] TO *(navaid, heading, waypoint)* [MAINTAIN VISUAL REFERENCE UNTIL *(altitude)*]
	…read-back of visual departure clearance	*u) VISUAL DEPARTURE TO/UNTIL *(navaid, waypoint/altitude)* '*' denotes pilot transmission. '†' When there is the possibility of confusion during multiple runway operations. '‡' Provisions concerning the use of conditional clearances are contained in SERA.8015 (g) and (h)(2). *Note. 'TORA' is pronounced 'TOR-AH'.*
1.4.11	Take-off clearance	a) RUNWAY *(number)* CLEARED FOR TAKE-OFF [REPORT AIRBORNE];
	… when reduced runway separation is used	b) *(traffic information)*RUNWAY *(number)* CLEARED FOR TAKE-OFF;
	… when take-off clearance has not been complied with	c) TAKE OFF IMMEDIATELY OR VACATE RUNWAY [*(instructions)*]; d) TAKE OFF IMMEDIATELY OR HOLD SHORT OF RUNWAY;
	… to cancel a take-off clearance	e) HOLD POSITION, CANCEL TAKE-OFF I SAY AGAIN CANCEL TAKE-OFF *(reasons)*; *f) HOLDING;

	… to stop a take-off after an aircraft has commenced take-off roll	g) STOP IMMEDIATELY [*(repeat aircraft call sign)* STOP IMMEDIATELY];
	… for helicopter operations	*h) STOPPING; i) CLEARED FOR TAKE-OFF [FROM *(location)*] *(present position, taxiway, final approach and take-off area, runway and number)*; *j) REQUEST DEPARTURE INSTRUCTIONS; k) AFTER DEPARTURE TURN RIGHT (*or* LEFT, *or* CLIMB) *(instructions as appropriate)*.
		'*' denotes pilot transmission. HOLDING and STOPPING are the procedural responses to e) and g) respectively.
1.4.12	Turn or climb instructions after take-off	*a) REQUEST RIGHT (*or* LEFT) TURN; b) RIGHT (*or* LEFT) TURN APPROVED; c) WILL ADVISE LATER FOR RIGHT (*or* LEFT) TURN;
	… to request airborne time	d) REPORT AIRBORNE; e) AIRBORNE *(time)*;
	… heading to be followed	f) AFTER PASSING *(level) (instructions)*; g) CONTINUE RUNWAY HEADING *(instructions)*;
	… when a specific track is to be followed	h) TRACK EXTENDED CENTRE LINE *(instructions)*; i) CLIMB STRAIGHT AHEAD *(instructions)*. '*' denotes pilot transmission.
1.4.13	Entering an aerodrome traffic circuit	*a) *[aircraft type] (position) (level)* FOR LANDING; b) JOIN [*(direction of circuit)*] *(position in circuit) (runway number)* [SURFACE] WIND *(direction and speed) (units)* [TEMPERATURE [MINUS] *(number)*] QNH (or QFE) *(number) [units)*] [TRAFFIC *(detail)*]; c) MAKE STRAIGHT-IN APPROACH, RUNWAY *(number)*[SURFACE] WIND *(direction and speed) (units)*[TEMPERATURE [MINUS] *(number)*]QNH (*or* QFE) *(number)* [*(units)*][TRAFFIC *(detail)*];
	… when ATIS information is available	*d) *(aircraft type) (position) (level)* INFORMATION *(ATIS identification)* FOR LANDING; e) JOIN *(position in circuit)* [RUNWAY *(number)*] QNH (*or* QFE) *(number)* [*(units)*] [TRAFFIC *(detail)*]. '*' denotes pilot transmission.
1.4.14	In the circuit	*a) *(position in circuit, e.g.* DOWNWIND/FINAL); b) NUMBER … FOLLOW *(aircraft type and position) [additional instructions if required]*. '*' denotes pilot transmission.
1.4.15	Approach instructions Note. The report 'LONG FINAL' is made when aircraft turn on to final approach at a distance greater than 7 km (4 NM) from touchdown or when an aircraft on a straight-in approach is 15 km (8 NM) from touchdown. In both cases, a report 'FINAL' is required at 7 km (4 NM) from touchdown.	a) MAKE SHORT APPROACH; b) MAKE LONG APPROACH (*or* EXTEND DOWNWIND); c) REPORT BASE (*or* FINAL, *or* LONG FINAL); d) CONTINUE APPROACH [PREPARE FOR POSSIBLE GO AROUND].

1.4.16	Landing clearance ... when reduced runway separation is used ... special operations ... to make an approach along, or parallel to a runway, descending to an agreed minimum level ... to fly past the control tower or other observation point for the purpose of visual inspection by persons on the ground ... for helicopter operations	a) RUNWAY *(number)* CLEARED TO LAND; b) *(traffic information)* RUNWAY *(number)* CLEARED TO LAND; c) CLEARED TOUCH AND GO; d) MAKE FULL STOP; *e) REQUEST LOW APPROACH *(reasons)*; f) CLEARED LOW APPROACH [RUNWAY *(number)*] [*(altitude restriction if required) (go around instructions)*]; *g) REQUEST LOW PASS *(reasons)*; h) CLEARED LOW PASS [*as in f)*]; *i) REQUEST STRAIGHT-IN (*or* CIRCLING APPROACH, LEFT *or* RIGHT) TURN TO *(location)*); j) MAKE STRAIGHT-IN (*or* CIRCLING APPROACH, LEFT (*or* RIGHT) TURN TO *(location, runway, taxiway, final approach and take-off area)*) [ARRIVAL *or* ARRIVAL ROUTE) *(number, name, or code)*]. [HOLD SHORT OF *(active runway, extended runway centre line, other)*]. [REMAIN *(direction or distance)* FROM *(runway, runway centre line, other helicopter or aircraft)*]. [CAUTION *(power lines, unlighted obstructions, wake turbulence, etc.)*]. CLEARED TO LAND. '*' denotes pilot transmission.
1.4.17	Delaying aircraft	a) CIRCLE THE AERODROME; b) ORBIT (RIGHT, *or* LEFT) [FROM PRESENT POSITION]; c) MAKE ANOTHER CIRCUIT.
1.4.18	Missed approach	a) GO AROUND; *b) GOING AROUND. '*' denotes pilot transmission.
1.4.19	Information to aircraft ... when pilot requested visual inspection of landing gear ... wake turbulence ... jet blast on apron or taxiway ... propeller-driven aircraft slipstream	a) LANDING GEAR APPEARS DOWN; b) RIGHT (*or* LEFT, *or* NOSE) WHEEL APPEARS UP (or DOWN); c) WHEELS APPEAR UP; d) RIGHT (*or* LEFT, *or* NOSE) WHEEL DOES NOT APPEAR UP (*or* DOWN); e) CAUTION WAKE TURBULENCE [FROM ARRIVING (*or* DEPARTING) (type of aircraft)] *[additional information as required]*; f) CAUTION JET BLAST; g) CAUTION SLIPSTREAM.
1.4.20	Runway vacating and communications after landing	a) CONTACT GROUND *(frequency)*; b) WHEN VACATED CONTACT GROUND *(frequency)*; c) EXPEDITE VACATING; d) YOUR STAND (*or* GATE) *(designation)*; e) TAKE (*or* TURN) FIRST (*or* SECOND, *or* CONVENIENT) LEFT (*or* RIGHT) AND CONTACT GROUND *(frequency)*;

... for helicopter operations	f) AIR-TAXI TO HELICOPTER STAND *(or)* HELICOPTER PARKING POSITION *(area)*; g) AIR-TAXI TO (*or* VIA) *(location or routing as appropriate)* [CAUTION *(dust, blowing snow, loose debris, taxiing light aircraft, personnel, etc.)*]; h) AIR-TAXI VIA *(direct, as requested, or specified route)* TO *(location, heliport, operating or movement area, active or inactive runway)*. AVOID *(aircraft or vehicles or personnel)*.

1.5 Phraseologies to be used related to CPDLC

	Circumstances	Phraseologies
1.5.1	Operational status ... failure of CPDLC ... failure of a single CPDLC message ... to correct CPDLC clearances, instructions, information or requests ... to instruct all stations or a specific flight to avoid sending CPDLC requests for a limited period of time ... to resume normal use of CPDLC	a) [ALL STATIONS] CPDLC FAILURE *(instructions)*; B)CPDLC MESSAGE FAILURE *(appropriate clearance, instruction, information or request)*; c) DISREGARD CPDLC *(message type)* MESSAGE, BREAK *(correct clearance, instruction, information or request)*; d) [ALL STATIONS] STOP SENDING CPDLC REQUESTS [UNTIL ADVISED] [*(reason)*]; e) [ALL STATIONS] RESUME NORMAL CPDLC OPERATIONS.

2. ATS SURVEILLANCE SERVICE PHRASEOLOGIES

Note. The following comprise phraseologies specifically applicable when an ATS surveillance system is used in the provision of air traffic services. The phraseologies detailed in the sections above for use in the provision of air traffic services are also applicable, as appropriate, when an ATS surveillance system is used.

2.1 General ATS surveillance service phraseologies

	Circumstances	*Phraseologies*
2.1.1	Identification of aircraft	a) REPORT HEADING [AND FLIGHT LEVEL (*or* ALTITUDE)]; b) FOR IDENTIFICATION TURN LEFT (*or* RIGHT) HEADING *(three digits)*; c) TRANSMIT FOR IDENTIFICATION AND REPORT HEADING; d) RADAR CONTACT *[position]*; e) IDENTIFIED *[position]*; f) NOT IDENTIFIED *[reason]*, [RESUME (*or* CONTINUE) OWN NAVIGATION].
2.1.2	Position information	POSITION *(distance) (direction)* OF *(significant point)* (*or* OVER *or* ABEAM *(significant point)*).
2.1.3	Vectoring instructions	a) LEAVE *(significant point)* HEADING *(three digits)*; b) CONTINUE HEADING *(three digits)*; c) CONTINUE PRESENT HEADING; d) FLY HEADING *(three digits)*; e) TURN LEFT (*or* RIGHT) HEADING *(three digits)[reason]*; f) TURN LEFT (*or* RIGHT) *(number of degrees)* DEGREES *[reason]*;

	g) STOP TURN HEADING *(three digits)*; h) FLY HEADING *(three digits)*, WHEN ABLE PROCEED DIRECT *(name) (significant point)*; i) HEADING IS GOOD.
2.1.4 Termination of vectoring	a) RESUME OWN NAVIGATION *(position of aircraft) (specific instructions)*; b) RESUME OWN NAVIGATION [DIRECT] *(significant point)* [MAGNETIC TRACK *(three digits)* DISTANCE *(number)* KILOMETRES (*or* MILES)].
2.1.5 Manoeuvres … (in case of unreliable directional instruments on board aircraft) *Note. When it is necessary to specify a reason for vectoring or for the above manoeuvres, the following phraseologies should be used:* *a) DUE TRAFFIC;* *b) FOR SPACING;* *c) FOR DELAY;* *d) FOR DOWNWIND (or BASE, or FINAL).*	a) MAKE A THREE SIXTY TURN LEFT (*or* RIGHT) *[reason]*; b) ORBIT LEFT (*or* RIGHT) *[reason]*; c) MAKE ALL TURNS RATE ONE (*or* RATE HALF, *or (number)* DEGREES PER SECOND) START AND STOP ALL TURNS ON THE COMMAND 'NOW'; d) TURN LEFT (*or* RIGHT) NOW; e) STOP TURN NOW.
2.1.6 Speed control	a) REPORT SPEED; *b) SPEED *(number)* KILOMETRES PER HOUR (*or* KNOTS); c) MAINTAIN *(number)* KILOMETRES PER HOUR (*or* KNOTS) [OR GREATER (*or* OR LESS)] [UNTIL *(significant point)*]; d) DO NOT EXCEED *(number)* KILOMETRES PER HOUR (*or* KNOTS); e) MAINTAIN PRESENT SPEED; f) INCREASE (*or* REDUCE) SPEED TO *(number)* KILOMETRES PER HOUR (*or* KNOTS) [OR GREATER (*or* OR LESS)]; g) INCREASE (*or* REDUCE) SPEED BY *(number)* KILOMETRES PER HOUR (*or* KNOTS); h) RESUME NORMAL SPEED; i) REDUCE TO MINIMUM APPROACH SPEED; j) REDUCE TO MINIMUM CLEAN SPEED; k) NO [ATC] SPEED RESTRICTIONS. '*' denotes pilot transmission. *Note. An arriving aircraft may be instructed to maintain its 'maximum speed', 'minimum clean speed', 'minimum speed', or a specified speed. 'Minimum clean speed' signifies the minimum speed at which an aircraft can be flown in a clean configuration, i.e. without deployment of lift-augmentation devices, speed brakes or landing gear.*
2.1.7 Position reporting … to omit position reports	a) OMIT POSITION REPORTS [UNTIL *(specify)*]; b) NEXT REPORT AT *(significant point)*; c) REPORTS REQUIRED ONLY AT *(significant point(s))*; d) RESUME POSITION REPORTING.

2.1.8	Traffic information and avoiding action … (if known) …when passing level information to aircraft climbing or descending, in form of vertical distance from the other traffic … to request avoiding action … when passing unknown traffic … for avoiding action	a) TRAFFIC *(number)* O'CLOCK *(distance) (direction of flight) [any other pertinent information]*: 1) UNKNOWN; 2) SLOW MOVING; 3) FAST MOVING; 4) CLOSING; 5) OPPOSITE (*or* SAME) DIRECTION; 6) OVERTAKING; 7) CROSSING LEFT TO RIGHT (*or* RIGHT TO LEFT); 8) *(aircraft type)*; 9) *(level)*; 10) [YOUR CLEARED LEVEL] 11) CLIMBING (*or* DESCENDING); *b) REQUEST VECTORS; c) DO YOU WANT VECTORS?; d) CLEAR OF TRAFFIC *[appropriate instructions]*; e) TURN LEFT (*or* RIGHT) IMMEDIATELY HEADING *(three digits)* TO AVOID [UNIDENTIFIED] TRAFFIC *(bearing by clock-reference and distance)*; f) TURN LEFT (*or* RIGHT) *(number of degrees)* DEGREES IMMEDIATELY TO AVOID [UNIDENTIFIED] TRAFFIC AT *(bearing by clock-reference and distance)*. '*' denotes pilot transmission.
2.1.9	Communications and loss of communications … if loss of communications suspected	a) [IF] RADIO CONTACT LOST *(instructions)*; b) IF NO TRANSMISSIONS RECEIVED FOR *(number)* MINUTES (*or* SECONDS) *(instructions)*; c) REPLY NOT RECEIVED *(instructions)*; d) IF YOU READ *[manoeuvre instructions or SQUAWK (code or IDENT)]*; e) (*manoeuvre,* SQUAWK *or* IDENT) OBSERVED. POSITION *(position of aircraft). [(instructions)]*.
2.1.10	Termination of radar and/or ADS-B service	a) RADAR SERVICE (*or* IDENTIFICATION) TERMINATED [DUE *(reason)*] *(instructions)*; b) WILL SHORTLY LOSE IDENTIFICATION *(appropriate instructions or information)*; c) IDENTIFICATION LOST *[reasons] (instructions)*.
2.1.11	Radar and/or ADS-B equipment degradation	a) SECONDARY RADAR OUT OF SERVICE *(appropriate information as necessary)*; b) PRIMARY RADAR OUT OF SERVICE *(appropriate information as necessary)*; c) ADS-B OUT OF SERVICE *(appropriate information as necessary)*.

2.2 Radar in approach control service

	Circumstances	*Phraseologies*
2.2.1	Vectoring for approach	a) VECTORING FOR *(type of pilot-interpreted aid)* APPROACH RUNWAY *(number)*; b) VECTORING FOR VISUAL APPROACH RUNWAY *(number)* REPORT FIELD (*or* RUNWAY) IN SIGHT; c) VECTORING FOR *(positioning in the circuit)*; d) VECTORING FOR SURVEILLANCE RADAR APPROACH RUNWAY *(number)*; e) VECTORING FOR PRECISION APPROACH RUNWAY *(number)*; f) (type) APPROACH NOT AVAILABLE DUE *(reason)(alternative instructions)*.
2.2.2	Vectoring for ILS and other pilot-interpreted aids ... when a pilot wishes to be positioned at a specific distance from touchdown ... instructions and information	a) POSITION (number) KILOMETRES (*or* MILES) from x). TURN LEFT (*or* RIGHT) HEADING *(three digits)*; b) YOU WILL INTERCEPT *(radio aid or track) (distance)* FROM (*significant point or* TOUCHDOWN); *c) REQUEST *(distance)* FINAL; d) CLEARED FOR *(type of approach)* APPROACH RUNWAY *(number)*; e) REPORT ESTABLISHED ON [ILS] LOCALISER (*or* ON GBAS/SBAS/MLS APPROACH COURSE); f) CLOSING FROM LEFT (*or* RIGHT) [REPORT ESTABLISHED]; g) TURN LEFT (*or* RIGHT) HEADING *(three digits)* [TO INTERCEPT] *or* [REPORT ESTABLISHED]; h) EXPECT VECTOR ACROSS *(localiser course or radio aid) (reason)*; i) THIS TURN WILL TAKE YOU THROUGH *(localiser course or radio aid)[reason]*; j) TAKING YOU THROUGH *(localiser course or radio aid)[reason]*; k) MAINTAIN (*altitude)* UNTIL GLIDE PATH INTERCEPTION; l) REPORT ESTABLISHED ON GLIDE PATH; m) INTERCEPT *(localiser course or radio aid)* [REPORT ESTABLISHED]. '*' denotes pilot transmission.
2.2.3	Manoeuvre during independent and dependent parallel approaches ... for avoidance action when an aircraft is observed penetrating the NTZ	a) CLEARED FOR *(type of approach)* APPROACH RUNWAY *(number)* LEFT (*or* RIGHT); b) YOU HAVE CROSSED THE LOCALISER (*or* GBAS/SBAS/MLS FINAL APPROACH COURSE). TURN LEFT (*or* RIGHT) IMMEDIATELY AND RETURN TO THE LOCALISER (*or* GBAS/SBAS/MLS FINAL APPROACH COURSE); c) ILS (*or* MLS) RUNWAY *(number)* LEFT (*or* RIGHT) LOCALISER (*or* MLS) FREQUENCY IS *(frequency)*; d) TURN LEFT (*or* RIGHT) *(number)* DEGREES (*or* HEADING) *(three digits)* IMMEDIATELY TO AVOID TRAFFIC [DEVIATING FROM ADJACENT APPROACH], CLIMB TO *(altitude)*;

	... for avoidance action below 120 m (400 ft) above the runway threshold elevation where parallel approach obstacle assessment surfaces (PAOAS) criteria are being applied	e) CLIMB TO *(altitude)* IMMEDIATELY TO AVOID TRAFFIC [DEVIATING FROM ADJACENT APPROACH] (further instructions).
2.2.4	Surveillance radar approach	
2.2.4.1	Provision of service	a) THIS WILL BE A SURVEILLANCE RADAR APPROACH RUNWAY *(number)* TERMINATING AT *(distance)* FROM TOUCHDOWN, OBSTACLE CLEARANCE ALTITUDE (*or* HEIGHT) *(number)* METRES (*or* FEET) CHECK YOUR MINIMA [IN CASE OF GO AROUND *(instructions)*]; b) APPROACH INSTRUCTIONS WILL BE TERMINATED AT *(distance)* FROM TOUCHDOWN.
2.2.4.2	Elevation	a)COMMENCE DESCENT NOW [TO MAINTAIN A *(number)* DEGREE GLIDE PATH]; b) *(distance)* FROM TOUCHDOWN ALTITUDE (*or* HEIGHT) SHOULD BE *(numbers and units)*.
2.2.4.3	Position	*(distance)* FROM TOUCHDOWN.
2.2.4.4	Checks	a) CHECK GEAR DOWN [AND LOCKED]; b) OVER THRESHOLD.
2.2.4.5	Completion of approach	a) REPORT VISUAL; b) REPORT RUNWAY [LIGHTS] IN SIGHT; c) APPROACH COMPLETED [CONTACT *(unit)*].
2.2.5	PAR approach	
2.2.5.1	Provision of service	a) THIS WILL BE A PRECISION RADAR APPROACH RUNWAY *(number)*; b) PRECISION APPROACH NOT AVAILABLE DUE *(reason)(alternative instructions)*; c) IN CASE OF GO AROUND *(instructions)*.
2.2.5.2	Communications	a) DO NOT ACKNOWLEDGE FURTHER TRANSMISSIONS; b) REPLY NOT RECEIVED. WILL CONTINUE INSTRUCTIONS.
2.2.5.3	Azimuth	a) CLOSING [SLOWLY (*or* QUICKLY)] [FROM THE LEFT (*or* FROM THE RIGHT)]; b) HEADING IS GOOD; c) ON TRACK; d) SLIGHTLY (*or* WELL, *or* GOING) LEFT (*or* RIGHT) OF TRACK; e) *(number)* METRES LEFT (*or* RIGHT) OF TRACK.
2.2.5.4	Elevation	a) APPROACHING GLIDE PATH; b) COMMENCE DESCENT NOW [AT *(number)* METRES PER SECOND OR *(number)* FEET PER MINUTE (*or* ESTABLISH A *(number)* DEGREE GLIDE PATH)]; c) RATE OF DESCENT IS GOOD; d) ON GLIDE PATH; e) SLIGHTLY (*or* WELL, *or* GOING) ABOVE (*or* BELOW) GLIDE PATH; f) [STILL] *(number)* METRES (*or* FEET) TOO HIGH (*or* TOO LOW); g) ADJUST RATE OF DESCENT;

		h) COMING BACK [SLOWLY (*or* QUICKLY)] TO THE GLIDE PATH;
		i) RESUME NORMAL RATE OF DESCENT; j) ELEVATION ELEMENT UNSERVICEABLE *(to be followed by appropriate instructions)*; k) *(distance)* FROM TOUCHDOWN. ALTITUDE (*or* HEIGHT) SHOULD BE *(numbers and units)*.
2.2.5.5	Position	a) *(distance)* FROM TOUCHDOWN; b) OVER APPROACH LIGHTS; c) OVER THRESHOLD.
2.2.5.6	Checks	a) CHECK GEAR DOWN AND LOCKED; b) CHECK DECISION ALTITUDE (*or* HEIGHT).
2.2.5.7	Completion of approach	a) REPORT VISUAL; b) REPORT RUNWAY [LIGHTS] IN SIGHT; c) APPROACH COMPLETED [CONTACT (unit)].
2.2.5.8	Missed approach	a) CONTINUE VISUALLY OR GO AROUND *[missed approach instructions]*; b) GO AROUND IMMEDIATELY *[missed approach instructions] (reason)*; c) ARE YOU GOING AROUND?; d) IF GOING AROUND *(appropriate instructions)*; *e) GOING AROUND. '*' denotes pilot transmission.

2.3 Secondary surveillance radar (SSR) and ADS-B phraseologies

	Circumstances	*Phraseologies*
2.3.1	To request the capability of the SSR equipment	a) ADVISE TRANSPONDER CAPABILITY; *b) TRANSPONDER *(as shown in the flight plan)*; *c) NEGATIVE TRANSPONDER. '*' denotes pilot transmission.
2.3.2	To request the capability of the ADS-B equipment	a) ADVISE ADS-B CAPABILITY; *b) ADS-B TRANSMITTER *(data link)*; *c) ADS-B RECEIVER *(data link)*; *d) NEGATIVE ADS-B. '*' denotes pilot transmission.
2.3.3	To instruct setting of transponder	a) FOR DEPARTURE SQUAWK *(code)*; b) SQUAWK *(code)*.
2.3.4	To request the pilot to reselect the assigned mode and code	a) RESET SQUAWK *[(mode)](code)*; *b) RESETTING *(mode) (code)*. '*' denotes pilot transmission.
2.3.5	To request reselection of aircraft identification	RE-ENTER [ADS-B *or* MODE S] AIRCRAFT IDENTIFICATION.
2.3.6	To request the pilot to confirm the code selected on the aircraft's transponder	a) CONFIRM SQUAWK *(code)*; *b) SQUAWKING *(code)*. '*' denotes pilot transmission.
2.3.7	To request the operation of the IDENT feature	a) SQUAWK *[(code)]* [AND] IDENT; b) SQUAWK LOW; c) SQUAWK NORMAL; d) TRANSMIT ADS-B IDENT.

2.3.8	To request temporary suspension of transponder operation	SQUAWK STANDBY.
2.3.9	To request emergency code	SQUAWK MAYDAY [CODE SEVEN-SEVEN-ZERO-ZERO].
2.3.10	To request termination of transponder and/or ADS-B transmitter operation *Note. Independent operations of Mode S transponder and ADS-B may not be possible in all aircraft (e.g. where ADS-B is solely provided by 1 090 MHz extended squitter emitted from the transponder). In such cases, aircraft may not be able to comply with ATC instructions related to ADS-B operation.*	a) STOP SQUAWK [TRANSMIT ADS-B ONLY]; b) STOP ADS-B TRANSMISSION [SQUAWK *(code)* ONLY].
2.3.11	To request transmission of pressure-altitude	a) SQUAWK CHARLIE; b) TRANSMIT ADS-B ALTITUDE.
2.3.12	To request pressure setting check and confirmation of level	CHECK ALTIMETER SETTING AND CONFIRM *(level)*.
2.3.13	To request termination of pressure-altitude transmission because of faulty operation	a) STOP SQUAWK CHARLIE WRONG INDICATION; b) STOP ADS-B ALTITUDE TRANSMISSION [(WRONG INDICATION, *or reason*)].
2.3.14	To request level check	CONFIRM *(level)*.
2.3.15	Controller queries a discrepancy between the displayed 'Selected Level' and the cleared level *Note: The controller will not state on radiotelephony the value of the 'Selected Level' observed on the situation display*	CHECK SELECTED LEVEL. CLEARED LEVEL IS (*level*) CHECK SELECTED LEVEL. CONFIRM CLIMBING (*or* DESCENDING) TO (*or* MAINTAINING) (*level*) *CLIMBING (*or* DESCENDING) TO (*or* MAINTAINING) (*level*) (*appropriate information on selected level)* '*' denotes pilot transmission.

3. AUTOMATIC DEPENDENT SURVEILLANCE — CONTRACT (ADS-C) PHRASEOLOGIES

3.1 General ADS-C phraseologies

	Circumstances	*Phraseologies*
3.1.1	ADS-C degradation	ADS-C (*or* ADS-CONTRACT) OUT OF SERVICE *(appropriate information as necessary)*.

4. ALERTING PHRASEOLOGIES

4.1 Alerting phraseologies

	Circumstances	*Phraseologies*
4.1.1	Low altitude warning	*(aircraft call sign)* LOW ALTITUDE WARNING, CHECK YOUR ALTITUDE IMMEDIATELY, QNH IS *(number) [(units)]*. [THE MINIMUM FLIGHT ALTITUDE IS *(altitude)*].
4.1.2	Terrain alert	*(aircraft call sign)* TERRAIN ALERT, *(suggested pilot action, if possible)*.

5. GROUND CREW/FLIGHT CREW PHRASEOLOGIES

5.1 Ground crew/flight crew phraseologies

	Circumstances	*Phraseologies*
5.1.1	Starting procedures (ground crew/cockpit)	a) [ARE YOU] READY TO START UP?; *b) STARTING NUMBER *(engine number*(s)). *Note 1. The ground crew should follow this exchange by either a reply on the intercom or a distinct visual signal to indicate that all is clear and that the start-up as indicated may proceed.* *Note 2. Unambiguous identification of the parties concerned is essential in any communications between ground crew and pilots.* '*' denotes pilot transmission.
5.1.2	Pushback procedures … (ground crew/cockpit)	a) ARE YOU READY FOR PUSHBACK?; *b) READY FOR PUSHBACK; c) CONFIRM BRAKES RELEASED; *d) BRAKES RELEASED; e) COMMENCING PUSHBACK; f) PUSHBACK COMPLETED; *g) STOP PUSHBACK; h) CONFIRM BRAKES SET; *i) BRAKES SET; *j) DISCONNECT; k) DISCONNECTING STAND BY FOR VISUAL AT YOUR LEFT (*or* RIGHT). *Note.— This exchange is followed by a visual signal to the pilot to indicate that disconnect is completed and all is clear for taxiing.* '*' denotes pilot transmission.

6. AIR TRAFFIC FLOW MANAGEMENT (ATFM)

6.1	ATFM *Calculated take-off time (CTOT) delivery resulting from a slot allocation message (SAM).*	SLOT *(time)*
	Change to CTOT resulting from a slot revision message (SRM).	REVISED SLOT *(time)*
	CTOT cancellation resulting from a slot cancellation message (SLC).	SLOT CANCELLED, REPORT READY
	Flight suspension until further notice (resulting from flight suspension message (FLS)).	FLIGHT SUSPENDED UNTIL FURTHER NOTICE, DUE *(reason)*
	Flight de-suspension resulting from a de-suspension message (DES).	SUSPENSION CANCELLED, REPORT READY
	Denial of start-up when requested too late to comply with the given CTOT.	UNABLE TO APPROVE START-UP CLEARANCE DUE SLOT EXPIRED, REQUEST A NEW SLOT

Denial of start-up when requested too early to comply with the given CTOT.	UNABLE TO APPROVE START-UP CLEARANCE DUE SLOT *(time)*, REQUEST START-UP AT *(time)*

GM1 SERA.14001 General

ED Decision 2016/023/R

Messages concerning acts of unlawful interference constitute a case of exceptional circumstances which may preclude the use of recognised communication procedures used to determine message category and priority.

GM2 SERA.14001 General

ED Decision 2016/023/R

When a general call 'ALL STATIONS' has been made, meaning that the call is addressed to all stations likely to intercept, no reply is expected unless individual stations are subsequently called to acknowledge receipt.

SERA.14005 Categories of messages

Regulation (EU) 2016/1185

(a) The categories of messages handled by the aeronautical mobile service, and the order of priority in the establishment of communications and the transmission of messages shall be in accordance with Table S14-1.

Table S14-1	
Message category and radiotelephony order of priority signal	Radiotelephony signal
(a) Distress calls, distress messages and distress traffic	MAYDAY
(b) Urgency messages, including messages preceded by the medical transports signal	PAN PAN or PAN PAN MEDICAL
(c) Communications relating to direction finding	—
(d) Flight safety messages	—
(e) Meteorological messages	—
(f) Flight regularity messages	—

(b) Distress messages and distress traffic shall be handled in accordance with the provisions of point SERA.14095.

(c) Urgency messages and urgency traffic, including messages preceded by the medical transports signal, shall be handled in accordance with the provisions of point SERA.14095.

SERA.14010 Flight safety messages

Regulation (EU) 2016/1185

Flight safety messages shall comprise the following:

(a) movement and control messages;

(b) messages originated by an aircraft operator or by an aircraft, of immediate concern to an aircraft in flight;

(c) meteorological advice of immediate concern to an aircraft in flight or about to depart (individually communicated or for broadcast);

(d) other messages concerning aircraft in flight or about to depart.

SERA.14015 Language to be used in air-ground communication

Regulation (EU) 2016/1185

(a) The air-ground radiotelephony communications shall be conducted in the English language or in the language normally used by the station on the ground.

(b) The English language shall be available, on request of any aircraft, at all stations on the ground serving designated aerodromes and routes used by international air services. Unless otherwise prescribed by the competent authority for specific cases, the English language shall be used for communications between the ATS unit and aircraft, at aerodromes with more than 50000 international IFR movements per year. Member States, where at the date of entry into force of this Regulation, the English language is not the only language used for communications between the ATS unit and aircraft at such aerodromes, may decide not to apply the requirement to use the English language and inform the Commission accordingly. In that case, those Member States shall, by 31 December 2017 at the latest, conduct a study on the possibility to require the use of the English language for communications between the ATS unit and aircraft at those aerodromes for reasons of safety, so as to avoid incursions of aircraft on an occupied runway or other safety risks, while taking into account the applicable provisions of Union and national law on the use of languages. They shall make that study public and communicate its conclusions to the Agency and the Commission.

(c) The languages available at a given station on the ground shall form part of the Aeronautical Information Publications and other published aeronautical information concerning such facilities.

AMC1 SERA.14015 Language to be used in air-ground communication

ED Decision 2016/023/R

The competent authority should only prescribe other conditions for the use of English language at aerodromes with more than 50 000 international IFR movements per year for specific cases, based on an individual assessment of the local arrangements. In any case, deviation from the requirement should be limited to exceptional cases and should be accompanied with a safety assessment.

In States which decide not to apply the requirement to use the English language, the study referred to in SERA.14015 should include an independent and comprehensive assessment of the impact of not using English for air-ground radio communications. Such an assessment should in particular take into account:

(a) Any available accident and incident investigation reports at least at EU level, where the use of language has been identified as a contributing factor. For this purpose, the central repository created in accordance with Commission Regulations (EC) Nos 1321/2007 and 996/2010 for such reports should also be consulted.

(b) The proportion of pilots frequenting that airport, with English language proficiency endorsement.

(c) The proportion of pilots frequenting that airport, lacking language proficiency endorsement in the alternative language to be used.

(d) A consultation of flight crews operating at the airport in question, on their preferences and ability to use the languages in question.

(e) A consultation of the safety investigation authority.

GM1 SERA.14015 Language to be used in air-ground communication

ED Decision 2016/023/R

In addition to the requirement in SERA.14015, positive consideration should be given by competent authorities to the benefits of situational awareness which could improve safety on airports and relevant surrounding airspace sectors by extending the use of the English language on some safety critical frequencies at aerodromes and relevant surrounding airspace sectors also with less than 50 000 commercial IFR movements per year, but with international traffic, and a large majority of qualified pilots with acceptable level of English. This consideration would in particular encompass:

(a) use of a single frequency for all the safety-critical operations on a runway or a set of runways;

(b) the need to and feasibility of applying the requirement for English-only communications also to communications with vehicles in order to enhance situational awareness.

where this consideration could lead to a change in current communication arrangements, it should be based on the outcome of a local safety assessment;

GM2 SERA.14015 Language to be used in air-ground communication

ED Decision 2016/023/R

The competent authority should also consider extending the requirement for the use of English language to aerodromes with less than 50 000 international IFR movements per year based on local needs, such as seasonally high levels of international air traffic.

SERA.14020 Word spelling in radiotelephony

Regulation (EU) 2016/1185

When proper names, service abbreviations and words of which the spelling is doubtful are spelled out in radiotelephony, the alphabet in the Table S14-2 shall be used.

Table S14-2		
The radiotelephony spelling alphabet		
Letter	**Word**	**Approximate pronunciation (Latin alphabet representation)**
A	Alfa	AL FAH
B	Bravo	BRAH VOH
C	Charlie	CHAR LEE *or* SHAR LEE
D	Delta	DELL TAH
E	Echo	ECK OH
F	Foxtrot	FOKS TROT
G	Golf	GOLF
H	Hotel	HO TELL
I	India	IN DEE AH
J	Juliett	JEW LEE ETT
K	Kilo	KEY LOH
L	Lima	LEE MAH
M	Mike	MIKE
N	November	NO VEM BER
O	Oscar	OSS CAH
P	Papa	PAH PAH
Q	Quebec	KEH BECK
R	Romeo	ROW ME OH
S	Sierra	SEE AIR RAH
T	Tango	TANG GO
U	Uniform	YOU NEE FORM *or* OO NEE FORM
V	Victor	VIK TAH
W	Whiskey	WISS KEY
X	X-ray	ECKS RAY
Y	Yankee	YANG KEY
Z	Zulu	ZOO LOO

In the approximate representation using the Latin alphabet, syllables to be emphasised are underlined.

SERA.14025 Principles governing the identification of ATS routes other than standard departure and arrival routes

Regulation (EU) 2016/1185

(a) Use of ATS route designators in communications

(1) In voice communications, the basic letter of a designator shall be spoken in accordance with the spelling alphabet as defined in Table S14-2.

(2) Where the prefixes K, U or S are used, they shall, in voice communications, be spoken as follows:

(i) K — KOPTER

(ii) U — UPPER

(iii) S — SUPERSONIC

(b) The word 'kopter' shall be pronounced as in the word 'helicopter' and the words 'upper' and 'supersonic' as in the English language.

AMC1 SERA.14025 Principles governing the identification of ATS routes other than standard departure and arrival routes

ED Decision 2016/023/R

LETTERS 'F' AND 'G'

Where letters 'F' or 'G' are added after the basic designator of the ATS route in question, in order to indicate the type of service provided:

(a) letter 'F' indicates that on the route or portion thereof advisory service only is provided; and

(b) letter 'G' indicates that on the route or portion thereof flight information service only is provided,

(c) the flight crew are not required to use them in voice communications.

SERA.14026 Significant points

Regulation (EU) 2016/1185

Normally the plain language name for significant points marked by the site of a radio navigation aid, or the unique five-letter pronounceable 'name-code' for significant points not marked by the site of a radio navigation aid, shall be used to refer to the significant point in voice communications. If the plain language name for the site of a radio navigation aid is not used, it shall be replaced by the coded designator which, in voice communications, shall be spoken in accordance with the spelling alphabet.

SERA.14030 Use of designators for standard instrument departure and arrival routes

Regulation (EU) 2016/1185

The plain language designator for standard instrument departure or arrival routes shall be used in voice communications.

GM1 SERA.14030 Use of designators for standard instrument departure and arrival routes

ED Decision 2016/023/R

For the purpose of identification of routes, the words 'departure', 'arrival', and 'visual' are considered to be an integral element of the plain language designator.

SERA.14035 Transmission of numbers in radiotelephony

Regulation (EU) 2016/1185

(a) Transmission of numbers

(1) All numbers used in the transmission of aircraft call sign, headings, runway, wind direction and speed shall be transmitted by pronouncing each digit separately.

(i) Flight levels shall be transmitted by pronouncing each digit separately, except for the case of flight levels in whole hundreds.

(ii) The altimeter setting shall be transmitted by pronouncing each digit separately, except for the case of a setting of 1000 hPa, which shall be transmitted as 'ONE THOUSAND'.

(iii) All numbers used in the transmission of transponder codes shall be transmitted by pronouncing each digit separately except that, when the transponder codes contain whole thousands only, the information shall be transmitted by pronouncing the digit in the number of thousands followed by the word 'THOUSAND'.

(2) All numbers used in transmission of other information than those described in point (a)(1) shall be transmitted by pronouncing each digit separately, except that all numbers containing whole hundreds and whole thousands shall be transmitted by pronouncing each digit in the number of hundreds or thousands followed by the word 'HUNDRED' or 'THOUSAND', as appropriate. Combinations of thousands and whole hundreds shall be transmitted by pronouncing each digit in the number of thousands followed by the word 'THOUSAND', followed by the number of hundreds followed by the word 'HUNDRED'.

(3) In cases where there is a need to clarify the number transmitted as whole thousands and/or whole hundreds, the number shall be transmitted by pronouncing each digit separately.

(4) When providing information regarding the relative bearing to an object or to conflicting traffic in terms of the 12-hour clock, the information shall be given pronouncing the digits together such as 'TEN O'CLOCK' or 'ELEVEN O'CLOCK'.

(5) Numbers containing a decimal point shall be transmitted as prescribed in point (a)(1) with the decimal point in appropriate sequence, indicated by the word 'DECIMAL'.

(6) All six digits of the numerical designator shall be used to identify the transmitting channel in very high frequency (VHF) radiotelephony communications, except in the case of both the fifth and sixth digits being zeros, in which case only the first four digits shall be used.

GM1 SERA.14035(a)(1) Transmission of numbers in radiotelephony

ED Decision 2016/023/R

CALL SIGN, HEADING, RUNWAY AND WIND

The following examples illustrate the application.

aircraft call signs	transmitted as
CCA 238	Air China **two three eight**
OAL 242	Olympic **two four two**

headings	transmitted as
100 degrees	heading **one zero zero**
080 degrees	heading **zero eight zero**

runway	transmitted as
27	runway **two seven**
30	runway **three zero**
wind direction and speed	**transmitted as**
200 degrees 70 knots	wind **two zero zero** degrees **seven zero** knots
160 degrees 18 knots gusting 30 knots	wind **one six zero** degrees **one eight** knots gusting **three zero knots**

GM2 SERA.14035(a)(1)(i) Transmission of numbers in radiotelephony

ED Decision 2016/023/R

FLIGHT LEVELS

The following examples illustrate the application.

flight levels	transmitted as
FL 180	flight level one eight zero
FL 200	flight level two hundred

GM3 SERA.14035(a)(1)(ii) Transmission of numbers in radiotelephony

ED Decision 2016/023/R

ALTIMETER SETTING

The following examples illustrate the application.

altimeter setting	transmitted as
1009 hPa	QNH one zero zero nine
1000 hPa	QNH one thousand
993 hPa	QNH nine nine three

GM4 SERA.14035(a)(1)(iii) Transmission of numbers in radiotelephony

ED Decision 2016/023/R

TRANSPONDER CODES

The following examples illustrate the application.

transponder codes	transmitted as
2400	squawk two four zero zero
1000	squawk one thousand
2000	squawk two thousand

GM1 SERA.14035(a)(2) Transmission of numbers in radiotelephony

ED Decision 2016/023/R

ALTITUDE

The following examples illustrate the application.

altitude	transmitted as
800	eight hundred
3 400	three thousand four hundred
12 000	one two thousand

GM2 SERA.14035(a)(2) Transmission of numbers in radiotelephony

ED Decision 2016/023/R

CLOUD HEIGHT

The following examples illustrate the application.

cloud height	transmitted as
2 200	two thousand two hundred
4 300	four thousand three hundred

GM3 SERA.14035(a)(2) Transmission of numbers in radiotelephony

ED Decision 2016/023/R

VISIBILITY

The following examples illustrate the application.

visibility	transmitted as
1 000	visibility one thousand
700	visibility seven hundred

GM4 SERA.14035(a)(2) Transmission of numbers in radiotelephony

ED Decision 2016/023/R

RUNWAY VISUAL RANGE

The following examples illustrate the application.

runway visual range	transmitted as
600	RVR six hundred
1 700	RVR one thousand seven hundred

GM5 SERA.14035(a)(5) Transmission of numbers in radiotelephony

ED Decision 2016/023/R

DECIMALS

The following examples illustrate the application.

number	transmitted as
100.3	ONE ZERO ZERO DECIMAL THREE
38 143.9	THREE EIGHT ONE FOUR THREE DECIMAL NINE

GM1 SERA.14035(a)(6) Transmission of numbers in radiotelephony

ED Decision 2016/023/R

TRANSMISSION OF NUMBERS FOR RADIOTELEPHONY CHANNEL FREQUENCIES

(a) The following examples illustrate the application of the procedure.

Channel	Transmitted as
118.000	ONE ONE EIGHT DECIMAL ZERO
118.005	ONE ONE EIGHT DECIMAL ZERO ZERO FIVE
118.010	ONE ONE EIGHT DECIMAL ZERO ONE ZERO
118.025	ONE ONE EIGHT DECIMAL ZERO TWO FIVE
118.050	ONE ONE EIGHT DECIMAL ZERO FIVE ZERO
118.100	ONE ONE EIGHT DECIMAL ONE

(b) Caution must be exercised with respect to the indication of transmitting channels in VHF radiotelephony communications when all six digits of the numerical designator are used in airspace where communication channels are separated by 25 kHz, because on aircraft installations with a channel separation capability of 25 kHz or more, it is only possible to select the first five digits of the numerical designator on the radio management panel.

SERA.14040 Pronunciation of numbers

Regulation (EU) 2016/1185

When the language used for communication is English, numbers shall be transmitted using the pronunciation shown in Table S14-3:

Table S14-3	
Numeral or numeral element	**Pronunciation**
0	ZE-RO
1	WUN
2	TOO
3	TREE
4	FOW-er
5	FIFE
6	SIX
7	SEV-en
8	AIT
9	NIN-er
10	TEN
11	EE-LE-VEN
12	TWELF
Decimal	DAY-SEE-MAL
Hundred	HUN-dred
Thousand	TOU-SAND

SERA.14045 Transmitting technique

Regulation (EU) 2016/1185

(a) Transmissions shall be conducted concisely in a normal conversational tone.

(b) The following words and phrases shall be used in radiotelephony communications as appropriate and shall have the meaning ascribed in Table S14-4:

Table S14-4

Phrase	Meaning
ACKNOWLEDGE	'Let me know that you have received and understood this message.'
AFFIRM	'Yes.'
APPROVED	'Permission for proposed action granted.'
BREAK	'I hereby indicate the separation between portions of the message.'
BREAK BREAK	'I hereby indicate the separation between messages transmitted to different aircraft in a very busy environment.'
CANCEL	'Annul the previously transmitted clearance.'
CHECK	'Examine a system or procedure.'
CLEARED	'Authorised to proceed under the conditions specified.'
CONFIRM	'I request verification of: (clearance, instruction, action, information).'
CONTACT	'Establish communications with...'
CORRECT	'True' or 'Accurate'.
CORRECTION	'An error has been made in this transmission (or message indicated). The correct version is...'
DISREGARD	'Ignore.'
HOW DO YOU READ	'What is the readability of my transmission?' (see point SERA.14070(c))
I SAY AGAIN	'I repeat for clarity or emphasis.'
MAINTAIN	'Continue in accordance with the condition(s) specified' or in its literal sense.
MONITOR	'Listen out on (frequency).'
NEGATIVE	'No' or 'Permission not granted' or 'That is not correct' or 'Not capable'.
OVER	'My transmission is ended, and I expect a response from you.'
OUT	'This exchange of transmissions is ended and no response is expected.'
READ BACK	'Repeat all, or the specified part, of this message back to me exactly as received.'
RECLEARED	'A change has been made to your last clearance and this new clearance supersedes your previous clearance or part thereof.'
REPORT	'Pass me the following information...'
REQUEST	'I should like to know...' or 'I wish to obtain...'
ROGER	'I have received all of your last transmission.'
SAY AGAIN	'Repeat all, or the following part, of your last transmission.'
SPEAK SLOWER	'Reduce your rate of speech.'
STANDBY	'Wait and I will call you.'
UNABLE	'I cannot comply with your request, instruction, or clearance.'
WILCO	(Abbreviation for 'will comply') 'I understand your message and will comply with it.'
WORDS TWICE	(a) As a request: 'Communication is difficult. Please send every word, or group of words, twice.' (b) As information: 'Since communication is difficult, every word, or group of words, in this message will be sent twice.'

GM1 SERA.14045 Transmitting technique

ED Decision 2016/023/R

BREAK

'BREAK' is to be used where there is no clear distinction between the text and other portions of the message.

GM2 SERA.14045 Transmitting technique

ED Decision 2016/023/R

CHECK

'CHECK' is not to be used in any other context than 'examine a system or procedure'. No answer is normally expected.

GM3 SERA.14045 Transmitting technique

ED Decision 2016/023/R

MAINTAIN

For example, 'Maintain VFR'.

GM4 SERA.14045 Transmitting technique

ED Decision 2016/023/R

OVER

'OVER' is not normally used in VHF communications.

GM5 SERA.14045 Transmitting technique

ED Decision 2016/023/R

OUT

'OUT' is not normally used in VHF communications.

GM6 SERA.14045 Transmitting technique

ED Decision 2016/023/R

ROGER

'ROGER' is under no circumstances to be used in reply to a question requiring 'READ BACK' or a direct answer in the affirmative (AFFIRM) or negative (NEGATIVE).

GM7 SERA.14045 Transmitting technique

ED Decision 2016/023/R

STANDBY

The caller would normally re-establish contact if the delay is lengthy. 'STANDBY' is not an approval or denial.

GM8 SERA.14045 Transmitting technique

ED Decision 2016/023/R

UNABLE

'UNABLE' is normally followed by a reason.

SERA.14050 Radiotelephony call signs for aircraft

Regulation (EU) 2016/1185

(a) Full call signs:

An aircraft radiotelephony call sign shall be one of the following types:

(1) Type (a) — the characters corresponding to the registration marking of the aircraft; or

(2) Type (b) — the telephony designator of the aircraft operator, followed by the last four characters of the registration marking of the aircraft;

(3) Type (c) — the telephony designator of the aircraft operator, followed by the flight identification.

(b) Abbreviated call signs:

The aircraft radiotelephony call signs shown in point (a), with the exception of Type (c), may be abbreviated under the circumstances prescribed in point SERA.14055(c). Abbreviated call signs shall be in the following form:

(1) Type (a) — the first character of the registration and at least the last two characters of the call sign;

(2) Type (b) — the telephony designator of the aircraft operator, followed by at least the last two characters of the call sign;

(3) Type (c) — no abbreviated form.

GM1 SERA.14050 Radiotelephony call signs for aircraft

ED Decision 2016/023/R

PREFIX TO CALL SIGNS

The name of the aircraft manufacturer or of the aircraft model may be used as a radiotelephony prefix to the Type (a) call sign.

GM2 SERA.14050 Radiotelephony call signs for aircraft

ED Decision 2016/023/R

EXAMPLES OF FULL AND ABBREVIATED CALL SIGNS

	Type a)			Type b)	Type c)
Full call sign	N57826	*CESSNA FABCD	*CITATION FABCD	VARIG PVMA	SCANDINAVIAN 937
Abbreviated call sign	N26 *or* N826	CESSNA CD *or* CESSNA BCD	CITATION CD *or* CITATION BCD	VARIG MA *or* VARIG VMA	(no abbreviated form)

*The examples illustrate the application of GM1 SERA.14050.

SERA.14055 Radiotelephony procedures

Regulation (EU) 2016/1185

(a) An aircraft shall not change the type of its radiotelephony call sign during flight, except temporarily on the instruction of an ATC unit in the interests of safety. Except for reasons of safety, no transmission shall be directed to an aircraft during take-off, during the last part of the final approach or during the landing roll.

(b) Establishment of radiotelephony communications

(1) Full radiotelephony call signs shall always be used when establishing communication. When establishing communication, aircraft shall start their call by the designation of the station called, followed by the designation of the station calling.

(2) The reply to the above calls shall use the call sign of the station calling, followed by the call sign of the station answering, which shall be considered an invitation to proceed with transmission by the station calling. For transfers of communication within one ATS unit, the call sign of the ATS unit may be omitted, when so authorised by the competent authority.

(3) Communications shall commence with a call and a reply when it is desired to establish contact, except that, when it is certain that the station called will receive the call, the calling station may transmit the message, without waiting for a reply from the station called.

(c) Subsequent radiotelephony communications

(1) Abbreviated radiotelephony call signs, as prescribed in point SERA.14050(b), shall be used only after satisfactory communication has been established and provided that no confusion is likely to arise. An aircraft shall use its abbreviated call sign only after it has been addressed in this manner by the aeronautical station.

(2) When issuing ATC clearances and reading back such clearances, controllers and pilots shall always add the call sign of the aircraft to which the clearance applies. For other than those occasions, continuous two-way communication after contact has been established shall be permitted without further identification or call until termination of the contact.

GM1 SERA.14055(b) Radiotelephony procedures

ED Decision 2016/023/R

RADIOTELEPHONY CALLING PROCEDURE*

	Type a)	Type b)	Type c)
Designation of the station called	NEW YORK RADIO	NEW YORK RADIO	NEW YORK RADIO
Designation of the station calling	GABCD**	SPEEDBIRD ABCD**	AEROFLOT 321**

* In certain cases where the call is initiated by the aeronautical station, the call may be effected by transmission of coded tone signals.

** With the exception of the telephony designators and the type of aircraft, each character in the call sign is to be spoken separately. When individual letters are spelled out, the radiotelephony spelling alphabet prescribed in SERA.14020 is to be used. Numbers are to be spoken in accordance with SERA.14040.

RADIOTELEPHONY REPLY PROCEDURE

	Type a)	Type b)	Type c)
Designation of the station called	GABCD*	SPEEDBIRD ABCD*	AEROFLOT 321*
Designation of the answering station	NEW YORK RADIO	NEW YORK RADIO	NEW YORK RADIO

* With the exception of the telephony designator and the type of aircraft, each character in the call sign is to be spoken separately. When individual letters are spelled out, the radiotelephony spelling alphabet prescribed in SERA.14020 is to be used. Numbers are to be spoken in accordance with SERA.14040.

AMC1 SERA.14055(b)(2) Radiotelephony procedures

ED Decision 2016/023/R

Where authorised by the competent authority, after the initial establishment of radiotelephony contact between an aircraft and an ATS unit, for subsequent transfers of communication within the same ATS unit, the ATS position being called need not reply with its call sign. Such authorisation will be agreed with the ATS provider and duly promulgated.

SERA.14060 Transfer of VHF communications

Regulation (EU) 2016/1185

(a) An aircraft shall be advised by the appropriate ATS unit to transfer from one radio frequency to another in accordance with agreed procedures. In the absence of such advice, the aircraft shall notify the ATS unit before such a transfer takes place.

(b) When establishing initial contact on, or when leaving, a VHF frequency, an aircraft shall transmit such information as may be prescribed by the ANSP responsible for the provision of services and approved by the competent authority.

SERA.14065 Radiotelephony procedures for air-ground voice communication channel changeover

Regulation (EU) 2016/1185

(a) Unless otherwise prescribed by the ANSP responsible for the provision of services and approved by the competent authority, the initial call to an ATS unit after a change of air-ground voice communication channel shall contain the following elements:

(1) the designation of the ATS unit being called;

(2) call sign and, for aircraft in the heavy wake turbulence category, the word ‘Heavy’ or ‘Super’ if that aircraft has been so identified by the competent authority;

(3) level, including passing and cleared levels, if not maintaining the cleared level;

(4) speed, if assigned by ATC; and

(5) additional elements, as required by the ANSP responsible for the provision of services and approved by the competent authority.

(b) Pilots shall provide level information at the nearest full 30 m or 100 ft as indicated on the pilot's altimeter.

(c) Initial call to aerodrome control tower

For aircraft being provided with aerodrome control service, the initial call shall contain:

(1) the designation of the ATS unit being called;

(2) call sign and, for aircraft in the heavy wake turbulence category, the word 'Heavy' or 'Super' if that aircraft has been so identified by the competent authority;

(3) position; and

(4) additional elements, as required by the ANSP responsible for the provision of services and approved by the competent authority.

SERA.14070 Test procedures

Regulation (EU) 2016/1185

(a) The form of test transmissions shall be as follows:

(1) the identification of the station being called;

(2) the identification of the station calling;

(3) the words 'RADIO CHECK';

(4) the frequency being used.

(b) The reply to a test transmission shall be as follows:

(1) the identification of the station requesting the test;

(2) the identification of the station replying;

(3) information regarding the readability of the station requesting the test transmission.

(c) When the tests are made, the following readability scale shall be used:

Readability Scale

(1) 1 Unreadable

(2) 2 Readable now and then

(3) 3 Readable but with difficulty

(4) 4 Readable

(5) 5 Perfectly readable

SERA.14075 Exchange of communications

Regulation (EU) 2016/1185

(a) Communications shall be concise and unambiguous, using standard phraseology whenever available.

(1) When transmitted by an aircraft, the acknowledgement of receipt of a message shall comprise the call sign of that aircraft.

(2) When acknowledgement of receipt is transmitted by an ATS unit to an aircraft, it shall comprise the call sign of the aircraft, followed if considered necessary, by the call sign of the ATS unit.

(b) End of conversation.

A radiotelephone conversation shall be terminated by the receiving ATS unit or the aircraft using its own call sign.

(c) Corrections and repetitions

(1) When an error has been made in transmission, the word 'CORRECTION' shall be spoken, the last correct group or phrase repeated, and then the correct version transmitted.

(2) If a correction can best be made by repeating the entire message, the phrase 'CORRECTION, I SAY AGAIN' shall be used before the message is transmitted a second time.

(3) If the receiving station is in doubt as to the correctness of the message received, a repetition either in full or in part shall be requested.

(4) If repetition of an entire message is required, the words 'SAY AGAIN' shall be spoken. If repetition of a portion of a message is required, the phrase: 'SAY AGAIN ALL BEFORE… (first word satisfactorily received)' shall be used; or 'SAY AGAIN… (word before missing portion) TO…(word after missing portion)'; or 'SAY AGAIN ALL AFTER… (last word satisfactorily received)'.

(d) If, in checking the correctness of a read-back, incorrect items are noticed, the words 'NEGATIVE I SAY AGAIN' shall be transmitted at the conclusion of the read-back followed by the correct version of the items concerned.

GM1 SERA.14075(c)(4) Exchange of communications

ED Decision 2016/023/R

REPETITIONS

Specific items are to be requested, as appropriate, such as 'SAY AGAIN ALTIMETER', 'SAY AGAIN WIND'.

SERA.14080 Communications watch/Hours of service

Regulation (EU) 2016/1185

(a) During flight, aircraft shall maintain watch as required by the competent authority and shall not cease watch, except for reasons of safety, without informing the ATS unit concerned.

(1) Aircraft on long over-water flights or on flights over designated areas over which the carriage of an emergency locator transmitter (ELT) is required, shall continuously guard the VHF emergency frequency 121,5 MHz, except for those periods when aircraft carry out communications on other VHF channels or when airborne equipment limitations or cockpit duties do not permit simultaneous guarding of two channels.

(2) Aircraft shall continuously guard the VHF emergency frequency 121,5 MHz in areas or over routes where the possibility of interception of aircraft or other hazardous situations exists, and a requirement has been established by the competent authority.

(b) Aeronautical stations shall maintain a continuous listening watch on VHF emergency channel 121,5 MHz during the hours of service of the units at which it is installed. Where two or more such stations are co-located, provision of 121,5 MHz listening watch at one of them shall meet that requirement.

(c) When it is necessary for an aircraft or ATS unit to suspend operation for any reason, it shall, if possible, so inform other stations concerned, giving the time at which it is expected that operation will be resumed. When operation is resumed, other stations concerned shall be so informed. When it is necessary to suspend operation beyond the time specified in the original notice, a revised time of resumption of operation shall, if possible, be transmitted at or near the time first specified.

AMC1 SERA.14080 Communications watch/Hours of service

ED Decision 2016/023/R

GUARD ON FREQUENCY 121,5 MHZ

Aircraft on flights other than those specified should guard the emergency frequency 121,5 MHz to the extent possible.

SERA.14085 Use of blind transmission

Regulation (EU) 2016/1185

(a) When an aircraft fails to establish contact on the designated channel, on the previous channel used or on another channel appropriate to the route, and fails to establish communication with the appropriate ATS unit, other ATS unit or other aircraft using all available means, the aircraft shall transmit its message twice on the designated channel(s), preceded by the phrase 'TRANSMITTING BLIND' and, if necessary, include the addressee(s) for which the message is intended.

(b) When an aircraft is unable to establish communication due to receiver failure, it shall transmit reports at the scheduled times, or positions, on the channel in use preceded by the phrase 'TRANSMITTING BLIND DUE TO RECEIVER FAILURE'. The aircraft shall:

(1) transmit the intended message, following this by a complete repetition;

(2) advise the time of its next intended transmission;

(3) when provided with ATS, transmit information regarding the intention of the pilot-in-command with respect to the continuation of the flight.

SERA.14087 Use of relay communication technique

Regulation (EU) 2016/1185

(a) When an ATS unit has been unable to establish contact with an aircraft after calls on the frequencies on which the aircraft is believed to be listening, it shall:

(1) request other ATS units to render assistance by calling the aircraft and relaying traffic, if necessary; and

(2) request aircraft on the route to attempt to establish communication with the aircraft and relay traffic, if necessary.

(b) The provisions of point (a) shall also be applied:

(1) at request of the ATS unit concerned;

(2) when an expected communication from an aircraft has not been received within a time period such that the occurrence of a communication failure is suspected.

SERA.14090 Specific communication procedures

Regulation (EU) 2016/1185

(a) Movement of vehicles

Phraseologies for the movement of vehicles, other than tow-tractors, on the manoeuvring area shall be the same as those used for the movement of aircraft, with the exception of taxi instructions, in which case the word 'PROCEED' shall be substituted for the word 'TAXI' when communicating with vehicles.

(b) Air traffic advisory service

Air traffic advisory service does not deliver 'clearances' but only 'advisory information' and it shall use the word 'advise' or 'suggest' when a course of action is proposed to an aircraft.

(c) Indication of heavy wake turbulence category

(1) For aircraft in the heavy wake turbulence category, the word 'Heavy' shall be included immediately after the aircraft call sign in the initial radiotelephony contact between such aircraft and ATS units.

(2) For specific aircraft in the heavy wake turbulence category, as identified by the competent authority, the word 'Super' shall be included immediately after the aircraft call sign in the initial radiotelephony contact between such aircraft and ATS units.

(d) Procedures related to weather deviation

When the pilot initiates communications with ATC, a rapid response may be obtained by stating 'WEATHER DEVIATION REQUIRED' to indicate that priority is desired on the frequency and for ATC response. When necessary, the pilot shall initiate communications using the urgency call 'PAN PAN' (preferably spoken three times).

SERA.14095 Distress and urgency radiotelephony communication procedures

Regulation (EU) 2016/1185

(a) General

(1) Distress and urgency traffic shall comprise all radiotelephony messages relative to the distress and urgency conditions respectively. Distress and urgency conditions are defined as:

(i) *Distress* a condition of being threatened by serious and/or imminent danger and of requiring immediate assistance.

(ii) *Urgency* a condition concerning the safety of an aircraft or other vehicle, or of some person on board or within sight, but which does not require immediate assistance.

(2) The radiotelephony distress signal 'MAYDAY' and the radiotelephony urgency signal 'PAN PAN' shall be used at the commencement of the first distress and urgency communication respectively. At the commencement of any subsequent communication in distress and urgency traffic, it shall be permissible to use the radiotelephony distress and urgency signals.

(3) The originator of messages addressed to an aircraft in distress or urgency condition shall restrict to the minimum the number and volume and content of such messages as required by the condition.

(4) If no acknowledgement of the distress or urgency message is made by the ATS unit addressed by the aircraft, other ATS units shall render assistance as prescribed in points (b)(2) and (b)(3) respectively.

(5) Distress and urgency traffic shall normally be maintained on the frequency on which such traffic was initiated until it is considered that better assistance can be provided by transferring that traffic to another frequency.

(6) In cases of distress and urgency communications, in general, the transmissions by radiotelephony shall be made slowly and distinctly, each word being clearly pronounced to facilitate transcription.

(b) Radiotelephony distress communications

(1) Action by the aircraft in distress

In addition to being preceded by the radiotelephony distress signal 'MAYDAY' in accordance with point (a)(2), preferably spoken three times, the distress message to be sent by an aircraft in distress shall:

(i) be on the air-ground frequency in use at the time;

(ii) consist of as many as possible of the following elements spoken distinctly and, if possible, in the following order:

(A) the name of the ATS unit addressed (time and circumstances permitting);

(B) the identification of the aircraft;

(C) the nature of the distress condition;

(D) the intention of the pilot-in-command;

(E) present position, level and heading.

(2) Action by the ATS unit addressed or by the first ATS unit acknowledging the distress message

The ATS unit addressed by an aircraft in distress, or the first ATS unit acknowledging the distress message, shall:

(i) immediately acknowledge the distress message;

(ii) take control of the communications or specifically and clearly transfer that responsibility, advising the aircraft if a transfer is made; and

(iii) take immediate action to ensure that all necessary information is made available, as soon as possible, to:

(A) the ATS unit concerned;

(B) the aircraft operator concerned, or its representative, in accordance with pre-established arrangements;

(iv) warn other ATS units, as appropriate, in order to prevent the transfer of traffic to the frequency of the distress communication.

(3) Imposition of silence

(i) The aircraft in distress, or the ATS unit in control of distress traffic, shall be permitted to impose silence, either on all stations of the mobile service in the area or on any station which interferes with the distress traffic. It shall address these instructions 'to all stations' or to one station only, according to the circumstances. In either case, it shall use:

(A) 'STOP TRANSMITTING';

(B) the radiotelephony distress signal 'MAYDAY'.

(ii) The use of the signals specified in point (b)(3)(i) shall be reserved for the aircraft in distress and for the ATS unit controlling the distress traffic.

(4) Action by all other ATS units/aircraft

(i) The distress communications have absolute priority over all other communications and ATS units/aircraft aware of them shall not transmit on the frequency concerned unless:

(A) the distress is cancelled or the distress traffic is terminated;

(B) all distress traffic has been transferred to other frequencies;

(C) the ATS unit controlling communications gives permission;

(D) it has itself to render assistance.

(ii) Any ATS unit/aircraft which has knowledge of distress traffic, and which cannot itself assist the aircraft in distress, shall nevertheless continue listening to such traffic until it is evident that assistance is being provided.

(5) Termination of distress communications and of silence

(i) When an aircraft is no longer in distress, it shall transmit a message cancelling the distress condition.

(ii) When the ATS unit which has controlled the distress communication traffic becomes aware that the distress condition is ended, it shall take immediate action to ensure that this information is made available, as soon as possible, to:

(A) the ATS units concerned;

(B) the aircraft operator concerned, or its representative, in accordance with pre-established arrangements.

(iii) The distress communication and silence conditions shall be terminated by transmitting a message, including the words 'DISTRESS TRAFFIC ENDED', on the frequency or frequencies being used for the distress traffic. This message shall be originated only by the ATS unit controlling the communications when, after the reception of the message prescribed in point (b)(5)(i), it is authorised to do so by the competent authority.

(c) Radiotelephony urgency communications

(1) Action by the aircraft reporting an urgency condition except as indicated in point (c)(4)

In addition to being preceded by the radiotelephony urgency signal 'PAN PAN' in accordance with point (a)(2), preferably spoken three times and each word of the group

pronounced as the French word 'panne', the urgency message to be sent by an aircraft reporting an urgency condition shall:

(i) be on the air-ground frequency in use at the time;

(ii) consist of as many as required of the following elements spoken distinctly and, if possible, in the following order:

(A) the name of the ATS unit addressed;

(B) the identification of the aircraft;

(C) the nature of the urgency condition;

(D) the intention of the pilot-in-command;

(E) present position, level and heading;

(F) any other useful information.

(2) Action by the ATS unit addressed or first ATS unit acknowledging the urgency message

The ATS unit addressed by an aircraft reporting an urgency condition or the first ATS unit acknowledging the urgency message shall:

(i) acknowledge the urgency message;

(ii) take immediate action to ensure that all necessary information is made available, as soon as possible, to:

(A) the ATS unit concerned;

(B) the aircraft operator concerned, or its representative, in accordance with pre-established arrangements;

(iii) if necessary, exercise control of communications.

(3) Action by all other ATS units/aircraft

The urgency communications have priority over all other communications except distress communications and all ATS units/aircraft shall take care not to interfere with the transmission of urgency traffic.

(4) Action by an aircraft used for medical transports

(i) The use of the signal described in point (c)(4)(ii) shall indicate that the message which follows concerns a protected medical transport pursuant to the 1949 Geneva Conventions and Additional Protocols.

(ii) For the purpose of announcing and identifying aircraft used for medical transports, a transmission of the radiotelephony urgency signal 'PAN PAN', preferably spoken three times, and each word of the group pronounced as the French word 'panne', shall be followed by the radiotelephony signal for medical transports 'MAY-DEE-CAL', pronounced as in the French 'medical'. The use of the signals described above indicates that the message which follows concerns a protected medical transport.

The message shall convey the following data:

(A) the call sign or other recognised means of identification of the medical transports;

(B) position of the medical transports;

(C) number and type of the medical transports;

(D) intended route;

(E) estimated time en-route and of departure and arrival, as appropriate; and

(F) any other information such as flight altitude, radio frequencies guarded, languages used and secondary surveillance radar modes and codes.

(5) Action by the ATS units addressed, or by other stations receiving a medical transports message

The provisions of points (c)(2) and (c)(3) shall apply as appropriate to ATS units receiving a medical transports message.

GM1 SERA.14095(b)(1) Distress and urgency radiotelephony communication procedures

ED Decision 2016/023/R

ACTION BY THE AIRCRAFT IN DISTRESS

(a) The provisions may be supplemented by the following measures:

(1) the distress message of an aircraft in distress being made on the emergency frequency 121,5 MHz or another aeronautical mobile frequency, if considered necessary or desirable. Not all aeronautical stations maintain a continuous guard on the emergency frequency,

(2) the distress message of an aircraft in distress being broadcast if time and circumstances render this course preferable;

(3) the aircraft transmitting on the maritime mobile service radiotelephony calling frequencies;

(4) the aircraft using any means at its disposal to attract attention and make known its conditions (including the activation of the appropriate SSR mode and code);

(5) any station taking any means at its disposal to assist an aircraft in distress;

(6) any variation on the elements listed, when the transmitting station is not itself in distress, provided that such circumstance is clearly stated in the distress message.

(b) The ATS unit addressed will normally be that ATS unit communicating with the aircraft or in whose area of responsibility the aircraft is operating.

GM1 SERA.14095(b)(2)(iii)(B) Distress and urgency radiotelephony communication procedures

ED Decision 2016/023/R

ACTION BY THE ATS UNIT

The requirement to inform the aircraft operator concerned does not have priority over any other action which involves the safety of the flight in distress, or of any other flight in the area, or which might affect the progress of expected flights in the area.

GM1 SERA.14095(c)(1) Distress and urgency radiotelephony communication procedures

ED Decision 2016/023/R

ACTION BY AIRCRAFT REPORTING AN URGENCY CONDITION

(a) These provisions are not intended to prevent an aircraft from broadcasting an urgency message if time and circumstances render this course preferable.

(b) The ATS unit addressed will normally be that ATS unit communicating with the aircraft or in whose area of responsibility the aircraft is operating.

GM1 SERA.14095(c)(1)(ii)(F) Distress and urgency radiotelephony communication procedures

ED Decision 2016/023/R

Any other useful information may consist of information such as but not limited to remaining aircraft endurance/fuel, number of persons on board, possible presence of hazardous materials and the nature thereof, aircraft colour/markings, survival aids, etc. and may also be transmitted in situation of distress.

GM1 SERA.14095(c)(2) Distress and urgency radiotelephony communication procedures

ED Decision 2016/023/R

ACTION BY ATS WHEN AN URGENCY CONDITION IS REPORTED

The requirement to inform the aircraft operating agency concerned does not have priority over any other action which involves the safety of the flight in distress, or of any other flight in the area, or which might affect the progress of expected flights in the area.

APPENDIX 1 SIGNALS

Regulation (EU) 2016/1185

1. DISTRESS AND URGENCY SIGNALS

1.1. General

1.1.1. Notwithstanding the provisions in 1.2 and 1.3, an aircraft in distress shall use any means at its disposal to attract attention, make known its position and obtain help.

1.1.2. The telecommunication transmission procedures for the distress and urgency signals shall be in accordance with Section 14.

1.2. Distress signals

1.2.1. The following signals, used either together or separately, mean that grave and imminent danger threatens, and immediate assistance is requested:

(a) a signal made by radiotelegraphy or by any other signalling method consisting of the group SOS (.. .— — — . .. in the Morse Code);

(b) a radiotelephony distress signal consisting of the spoken word MAYDAY;

(c) a distress message sent via data link which transmits the intent of the word MAYDAY;

(d) rockets or shells throwing red lights, fired one at a time at short intervals;

(e) a parachute flare showing a red light;

(f) setting of the transponder to Mode A Code 7700.

1.3. Urgency signals

1.3.1. The following signals, used either together or separately, mean that an aircraft wishes to give notice of difficulties which compel it to land without requiring immediate assistance:

(a) the repeated switching on and off of the landing lights; or

(b) the repeated switching on and off of the navigation lights in such manner as to be distinct from flashing navigation lights.

1.3.2. The following signals, used either together or separately, mean that an aircraft has a very urgent message to transmit concerning the safety of a ship, aircraft or other vehicle, or of some person on board or within sight:

(a) a signal made by radiotelegraphy or by any other signalling method consisting of the group XXX (—..— —..— —..— in the Morse Code);

(b) a radiotelephony urgency signal consisting of the spoken words PAN, PAN;

(c) an urgency message sent via data link which transmits the intent of the words PAN, PAN.

2. VISUAL SIGNALS USED TO WARN AN UNAUTHORISED AIRCRAFT FLYING IN OR ABOUT TO ENTER A RESTRICTED, PROHIBITED OR DANGER AREA

2.1. When visual signals are used to warn unauthorised aircraft flying in or about to enter a restricted, prohibited or danger area by day and by night, a series of projectiles discharged from the ground at intervals of 10 seconds, each showing, on bursting, red and green lights or stars shall indicate to an unauthorised aircraft that it is flying in or about to enter a restricted, prohibited or danger area, and that the aircraft is to take such remedial action as may be necessary.

3. SIGNALS FOR AERODROME TRAFFIC

3.1. Light and pyrotechnic signals

3.1.1. Instructions

Table AP 1-1

Light		From Aerodrome Control to:	
		Aircraft in flight	Aircraft on the ground
Directed towards aircraft concerned (see Figure A1-1).	Steady green	Cleared to land	Cleared for take-off
	Steady red	Give way to other aircraft and continue circling	Stop
	Series of green flashes	Return for landing[1]	Cleared to taxi
	Series of red flashes	Aerodrome unsafe, do not land	Taxi clear of landing area in use
	Series of white flashes	Land at this aerodrome and proceed to apron[2]	Return to starting point on the aerodrome
Red pyrotechnic		Notwithstanding any previous instructions, do not land for the time being	

[1] Clearances to land and to taxi will be given in due course.

[2] Clearances to land and to taxi will be given in due course.

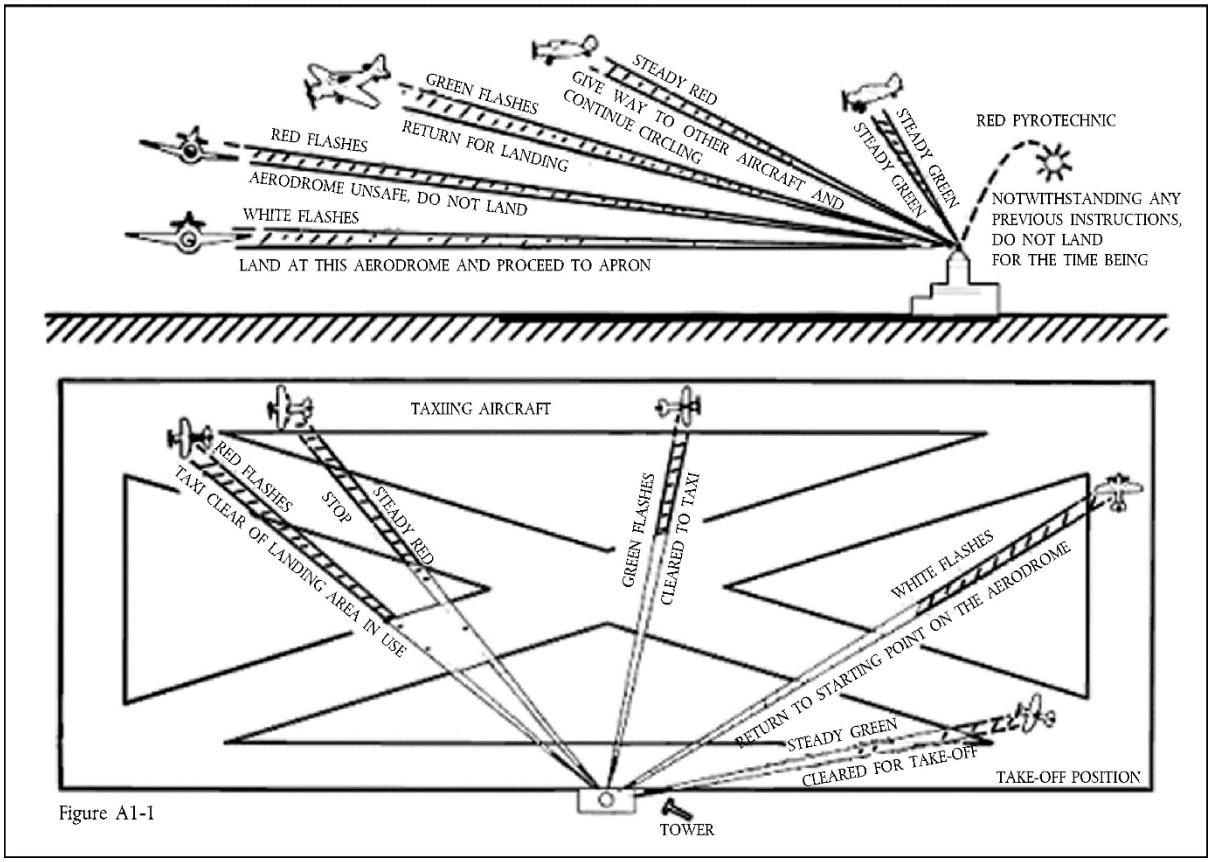


Figure A1-1

3.1.2. Acknowledgement by an aircraft

(a) When in flight:

(1) during the hours of daylight:

– by rocking the aircraft's wings, except for the base and final legs of the approach;

(2) during the hours of darkness:

– by flashing on and off twice the aircraft's landing lights or, if not so equipped, by switching on and off twice its navigation lights.

(b) When on the ground:

(1) during the hours of daylight:

– by moving the aircraft's ailerons or rudder;

(2) during the hours of darkness:

– by flashing on and off twice the aircraft's landing lights or, if not so equipped, by switching on and off twice its navigation lights.

3.2. Visual ground signals

3.2.1. Prohibition of landing

3.2.1.1. A horizontal red square panel with yellow diagonals (Figure A1-2) when displayed in a signal area indicates that landings are prohibited and that the prohibition is liable to be prolonged.

Figure A1-2

3.2.2. Need for special precautions while approaching or landing

3.2.2.1. A horizontal red square panel with one yellow diagonal (Figure A1-3) when displayed in a signal area indicates that owing to the bad state of the manoeuvring area, or for any other reason, special precautions must be observed in approaching to land or in landing.

Figure A1-3

3.2.3. Use of runways and taxiways

3.2.3.1. A horizontal white dumb-bell (Figure A1-4) when displayed in a signal area indicates that aircraft are required to land, take off and taxi on runways and taxiways only.

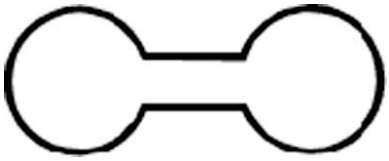


Figure A1-4

3.2.3.2. The same horizontal white dumb-bell as in 3.2.3.1 but with a black bar placed perpendicular to the shaft across each circular portion of the dumb-bell (Figure A1-5) when displayed in a signal area indicates that aircraft are

required to land and take off on runways only, but other manoeuvres need not be confined to runways and taxiways.

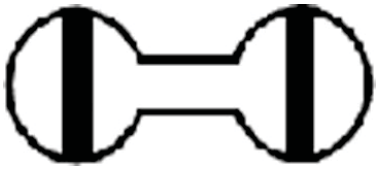


Figure A1-5

3.2.4. Closed runways or taxiways

3.2.4.1. Crosses of a single contrasting colour, white on runways and yellow on taxiways (Figure A1-6), displayed horizontally on runways and taxiways or parts thereof indicate an area unfit for movement of aircraft.

Figure A1-6

3.2.5. Directions for landing or take-off

3.2.5.1. A horizontal white or orange landing T (Figure A1-7) indicates the direction to be used by aircraft for landing and take-off, which shall be in a direction parallel to the shaft of the T towards the cross arm. When used at night, the landing T shall be either illuminated or outlined in white lights.

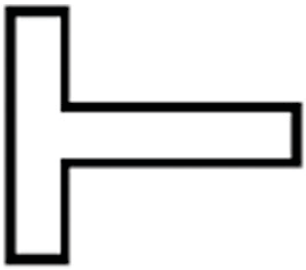


Figure A1-7

3.2.5.2. A set of two digits (Figure A1-8) displayed vertically at or near the aerodrome control tower indicates to aircraft on the manoeuvring area the direction for take-off, expressed in units of 10 degrees to the nearest 10 degrees of the magnetic compass.

Figure A1-8

3.2.6. Right-hand traffic

3.2.6.1. When displayed in a signal area, or horizontally at the end of the runway or strip in use, a right-hand arrow of conspicuous colour (Figure A1-9) indicates that turns are to be made to the right before landing and after take-off.

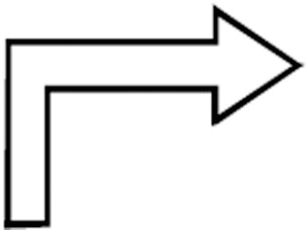


Figure A1-9

3.2.7. Air traffic services reporting office

3.2.7.1. The letter C displayed vertically in black against a yellow background (Figure A1-10) indicates the location of the air traffic services reporting office.

Figure A1-10

3.2.8. Sailplane flights in operation

3.2.8.1. A double white cross displayed horizontally (Figure A1-11) in the signal area indicates that the aerodrome is being used by sailplanes and that sailplane flights are being performed.

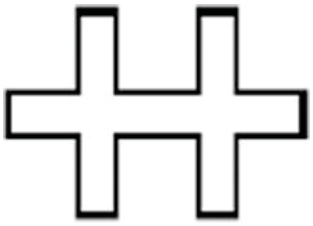


Figure A1-11

4. MARSHALLING SIGNALS

4.1. From a signalman/marshaller to an aircraft

4.1.1. The signals for use by the signalman/marshaller, with hands illuminated as necessary to facilitate observation by the pilot, and facing the aircraft in a position shall be:

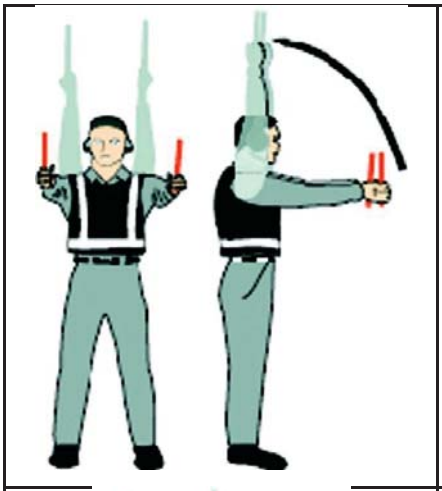
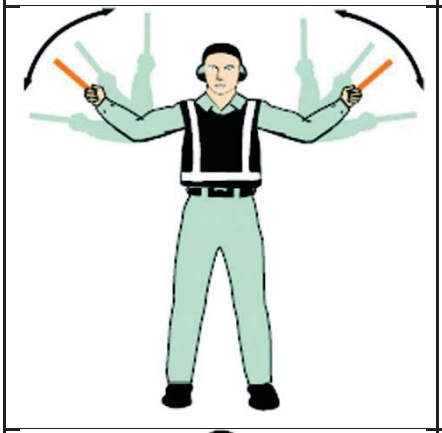
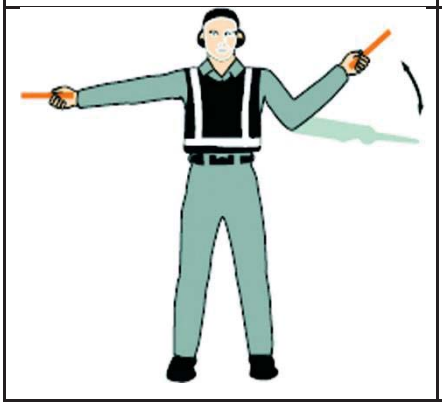
(a) for fixed-wing aircraft, on left side of aircraft, where best seen by the pilot; and

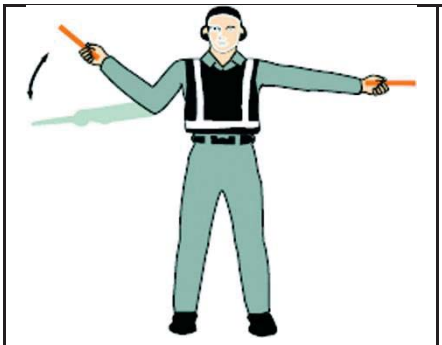
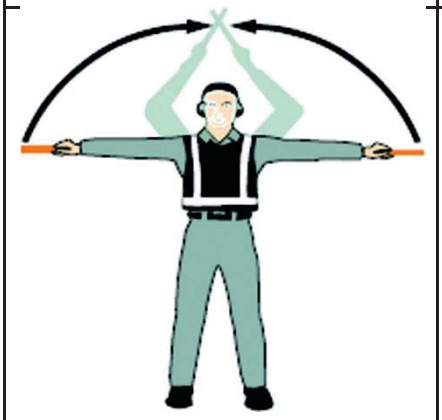
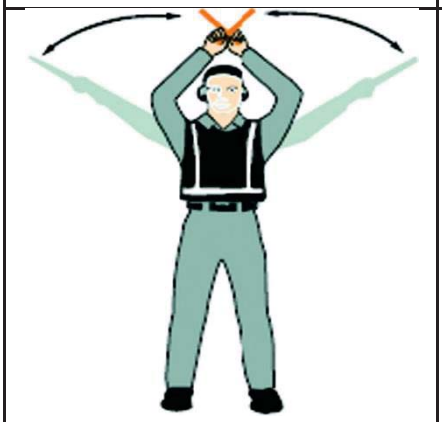
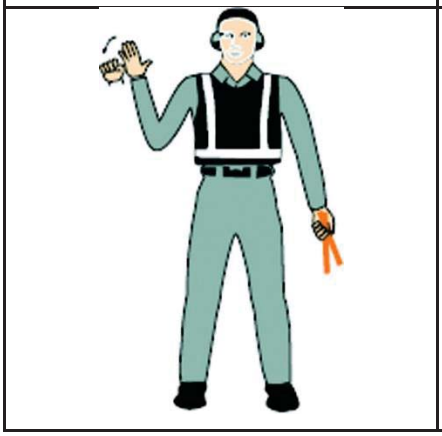
(b) for helicopters, where the signalman/marshaller can best be seen by the pilot.

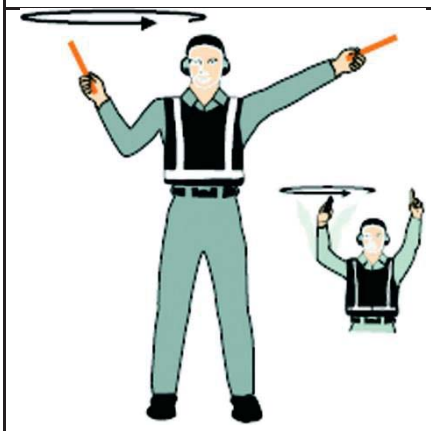
4.1.2. Prior to using the following signals, the signalman/marshaller shall ascertain that the area within which an aircraft is to be guided is clear of objects which the aircraft, in complying with SERA.3301(a), might otherwise strike.

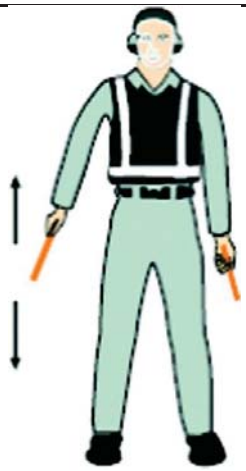
	**1. Wingwalker/guide**[1] Raise right hand above head level with wand pointing up; move left-hand wand pointing down toward body.

[1] This signal provides an indication by a person positioned at the aircraft wing tip, to the pilot/marshaller/push-back operator, that the aircraft movement on/off a parking position would be unobstructed.

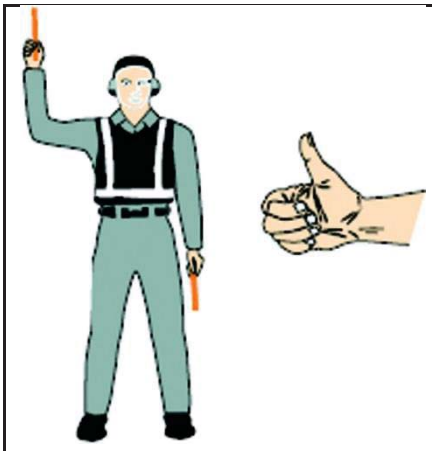
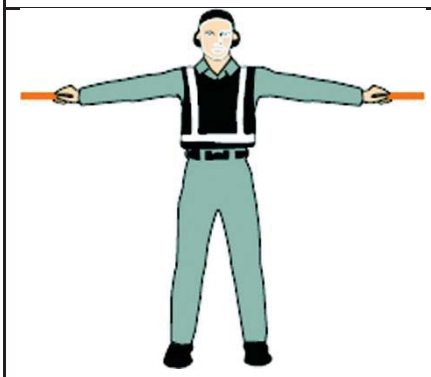
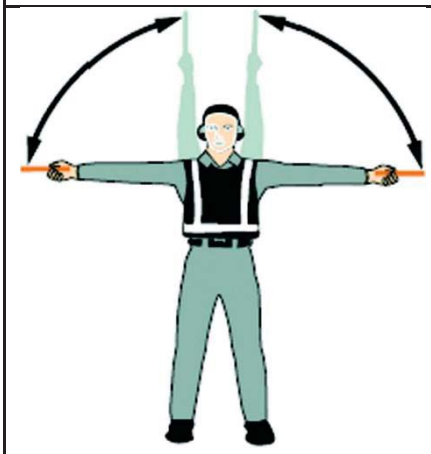
	**2. Identify gate** Raise fully extended arms straight above head with wands pointing up.
	**3. Proceed to next signalman/marshaller or as directed by tower/ground control** Point both arms upward; move and extend arms outward to sides of body and point with wands to direction of next signalman/marshaller or taxi area.
	**4. Straight ahead** Bend extended arms at elbows and move wands up and down from chest height to head.
	**5(a) Turn left (from pilot's point of view)** With right arm and wand extended at a 90-degree angle to body, make 'come ahead' signal with left hand. The rate of signal motion indicates to pilot the rate of aircraft turn.

	**5(b) Turn right (from pilot's point of view)** With left arm and wand extended at a 90-degree angle to body, make 'come ahead' signal with right hand. The rate of signal motion indicates to pilot the rate of aircraft turn.
	**6(a) Normal stop** Fully extend arms and wands at a 90-degree angle to sides and slowly move to above head until wands cross.
	**6(b) Emergency stop** Abruptly extend arms and wands to top of head, crossing wands.
	**7(a) Set brakes** Raise hand just above shoulder height with open palm. Ensuring eye contact with flight crew, close hand into a fist. *Do not* move until receipt of 'thumbs up' acknowledgement from flight crew.

	**7(b) Release brakes** Raise hand just above shoulder height with hand closed in a fist. Ensuring eye contact with flight crew, open palm. *Do not* move until receipt of 'thumbs up' acknowledgement from flight crew.
	**8(a) Chocks inserted** With arms and wands fully extended above head, move wands inward in a 'jabbing' motion until wands touch. *Ensure* acknowledgement is received from flight crew.
	**8(b) Chocks removed** With arms and wands fully extended above head, move wands outward in a 'jabbing' motion. *Do not* remove chocks until authorised by flight crew.
	**9. Start engine(s)** Raise right arm to head level with wand pointing up and start a circular motion with hand; at the same time, with left arm raised above head level, point to engine to be started.

	**10. Cut engines** Extend arm with wand forward of body at shoulder level; move hand and wand to top of left shoulder and draw wand to top of right shoulder in a slicing motion across throat.
	**11. Slow down** Move extended arms downwards in a 'patting' gesture, moving wands up and down from waist to knees.
	**12. Slow down engine(s) on indicated side** With arms down and wands toward ground, wave either *right* or *left* wand up and down indicating engine(s) on *left* or *right* side respectively should be slowed down.

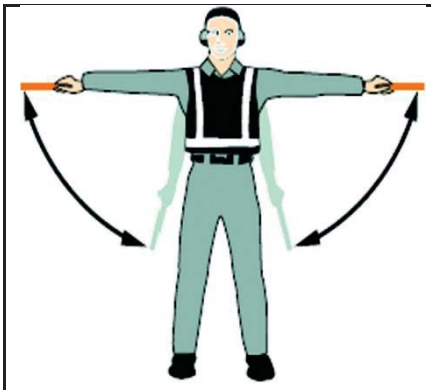
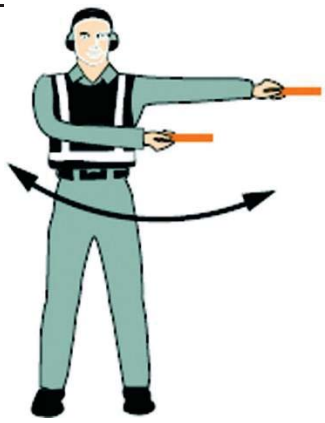
	**13. Move back** With arms in front of body at waist height, rotate arms in a forward motion. To stop rearward movement, use signal 6(a) or 6(b).
	**14(a) Turns while backing (for tail to starboard)** Point left arm with wand down and bring right arm from overhead vertical position to horizontal forward position, repeating right-arm movement.
	**14(b) Turns while backing (for tail to port)** Point right arm with wand down and bring left arm from overhead vertical position to horizontal forward position, repeating left-arm movement.

	**15. Affirmative/all clear**[1] Raise right arm to head level with wand pointing up or display hand with 'thumbs up'; left arm remains at side by knee.
	**16. *Hover***[2] Fully extend arms and wands at a 90-degree angle to sides.
	**17. Move upwards**[3] Fully extend arms and wands at a 90-degree angle to sides and, with palms turned up, move hands upwards. Speed of movement indicates rate of ascent.

[1] This signal is also used as a technical/servicing communication signal.

[2] For use to hovering helicopters

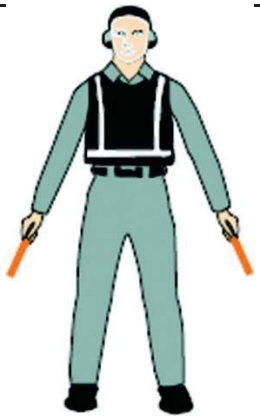
[3] For use to hovering helicopters.

	**18. Move downwards**[1] Fully extend arms and wands at a 90-degree angle to sides and, with palms turned down, move hands downwards. Speed of movement indicates rate of descent.
	**19(a) Move horizontally left (from pilot's point of view)**[2] Extend arm horizontally at a 90-degree angle to right side of body. Move other arm in same direction in a sweeping motion.
	**19(b) Move horizontally right (from pilot's point of view)**[3] Extend arm horizontally at a 90-degree angle to left side of body. Move other arm in same direction in a sweeping motion.

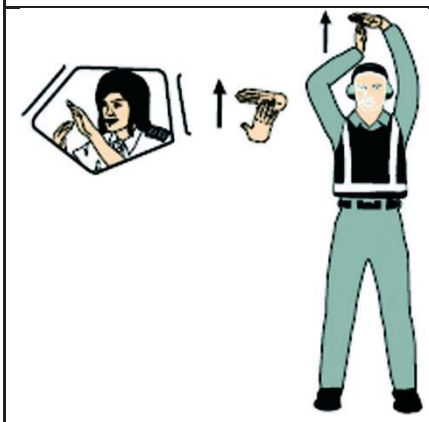
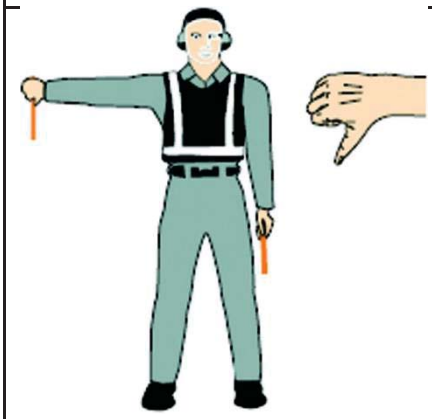
[1] For use to hovering helicopters.

[2] For use to hovering helicopters.

[3] For use to hovering helicopters.

	**20. *Land*[1]** Cross arms with wands downwards and in front of body.
	**21. Hold position/stand by** Fully extend arms and wands downwards at a 45-degree angle to sides. Hold position until aircraft is clear for next manoeuvre.
	**22. Dispatch aircraft** Perform a standard salute with right hand and/or wand to dispatch the aircraft. Maintain eye contact with flight crew until aircraft has begun to taxi.

[1] For use to hovering helicopters.

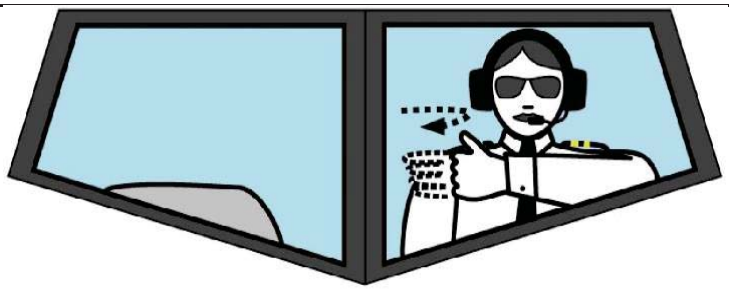
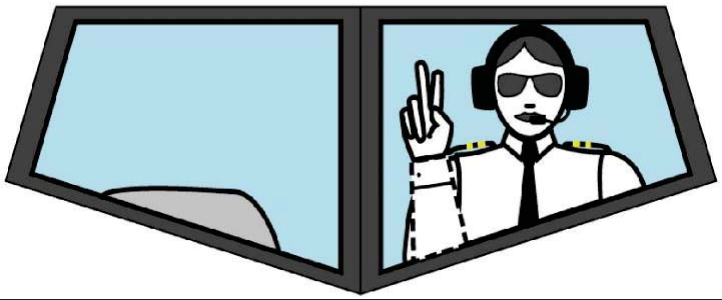
	**23. Do not touch controls (technical/servicing communication signal)** Extend right arm fully above head and close fist or hold wand in horizontal position; left arm remains at side by knee.
	**24. Connect ground power (technical/servicing communication signal)** Hold arms fully extended above head; open left hand horizontally and move finger tips of right hand into and touch open palm of left hand (forming a 'T'). At night, illuminated wands can also be used to form the 'T' above head.
	**25. Disconnect power (technical/servicing communication signal)** Hold arms fully extended above head with finger tips of right hand touching open horizontal palm of left hand (forming a 'T'); then move right hand away from the left. *Do not* disconnect power until authorised by flight crew. At night, illuminated wands can also be used to form the 'T' above head.
	**26. Negative (technical/servicing communication signal)** Hold right arm straight out at 90 degrees from shoulder and point wand down to ground or display hand with 'thumbs down'; left hand remains at side by knee.

	**27. Establish communication via interphone (technical/servicing communication signal)** Extend both arms at 90 degrees from body and move hands to cup both ears.
	**28. Open/close stairs (technical/servicing communication signal)**[1] With right arm at side and left arm raised above head at a 45-degree angle, move right arm in a sweeping motion towards top of left shoulder.

[1] This signal is intended mainly for aircraft with the set of integral stairs at the front.

4.2. From the pilot of an aircraft to a signalman/marshaller

4.2.1. These signals shall be used by a pilot in the cockpit with hands plainly visible to the signalman/marshaller, and illuminated as necessary to facilitate observation by the signalman/marshaller.

	(a) Brakes engaged: raise arm and hand, with fingers extended, horizontally in front of face, then clench fist.
	(b) Brakes released: raise arm, with fist clenched, horizontally in front of face, then extend fingers.
	(c) Insert chocks: arms extended, palms outwards, move hands inwards to cross in front of face.
	(d) Remove chocks: hands crossed in front of face, palms outwards, move arms outwards.
	(e) Ready to start engine(s): Raise the appropriate number of fingers on one hand indicating the number of the engine to be started.

4.3. Technical/servicing communication signals

4.3.1. Manual signals shall only be used when verbal communication is not possible with respect to technical/servicing communication signals.

4.3.2. Signalmen/marshallers shall ensure that an acknowledgement is received from the flight crew with respect to technical/servicing communication signals.

5. STANDARD EMERGENCY HAND SIGNALS

5.1. The following hand signals are established as the minimum required for emergency communication between the ARFF incident commander/ARFF firefighters and the cockpit and/or cabin crews of the incident aircraft. ARFF emergency hand signals should be given from the left front side of the aircraft for the cockpit crew.

	**1. Recommend evacuation** Evacuation recommended based on aircraft rescue and fire-fighting and Incident Commander's assessment of external situation. Arm extended from body, and held horizontal with hand upraised at eye level. Execute beckoning arm motion angled backward. Non-beckoning arm held against body. Night — same with wands.
	**2. Recommend stop** Recommend evacuation in progress be halted. Stop aircraft movement or other activity in progress. Arms in front of head — Crossed at wrists Night — same with wands.
	**3. Emergency contained** No outside evidence of dangerous conditions or 'all-clear.' Arms extended outward and down at a 45 degree angle. Arms moved inward below waistline simultaneously until wrists crossed, then extended outward to starting position. Night — same with wands.

	**4. Fire** Move right-hand in a 'fanning' motion from shoulder to knee, while at the same time pointing with left hand to area of fire. Night — same with wands.

GM1 to Appendix 1(4.1) MARSHALLING SIGNALS

ED Decision 2013/013/R

FROM A SIGNALMAN/MARSHALLER TO AN AIRCRAFT — GENERAL

(a) The meaning of the relevant signals remains the same if bats, illuminated wands or torch lights are held rather than the signalman's hands being illuminated.

(b) The aircraft engines are numbered, for the signalman facing the aircraft, from right to left (i.e. No 1 engine being the port outer engine).

(c) References to wands may also be read to refer to daylight-fluorescent table-tennis bats or gloves (daytime only).

(d) References to the signalman may also be read to refer to marshaller.

(e) The design of many aircraft is such that the path of the wing tips, engines and other extremities cannot always be monitored visually from the flight deck while the aircraft is being manoeuvred on the ground.

GM1 to Appendix 1(4.2.1.1) MARSHALLING SIGNALS

ED Decision 2013/013/R

FROM THE PILOT OF AN AIRCRAFT TO A SIGNALMAN/MARSHALLER — BRAKES

When providing the signal for 'brakes engaged' the moment the fist is clenched indicates the moment of brake engagement. When providing the signal for 'brakes released' the moment the fingers are extended indicates the moment of brake release.

GM1 to Appendix 1(5.1) STANDARD EMERGENCY HAND SIGNALS

ED Decision 2013/013/R

GENERAL

In order to communicate more effectively with the cabin crew, emergency hand signals may be given by ARFF firefighters from positions other than those that would be used by a signalman to provide marshalling signals.

APPENDIX 2 UNMANNED FREE BALLOONS

Regulation (EU) 2016/1185

1. CLASSIFICATION OF UNMANNED FREE BALLOONS

1.1. Unmanned free balloons shall be classified as (see Figure AP2-1):

(a) *light*: an unmanned free balloon which carries a payload of one or more packages with a combined mass of less than 4 kg, unless qualifying as a heavy balloon in accordance with (c)(2),(3) or (4); or

(b) *medium*: an unmanned free balloon which carries a payload of two or more packages with a combined mass of 4 kg or more, but less than 6 kg, unless qualifying as a heavy balloon in accordance with (c)(2), (3) or (4) below; or

(c) *heavy*: an unmanned free balloon which carries a payload which:

(1) has a combined mass of 6 kg or more; or

(2) includes a package of 3 kg or more; or

(3) includes a package of 2 kg or more with an area density of more than 13 g per square centimetre, determined by dividing the total mass in grams of the payload package by the area in square centimetres of its smallest surface; or

(4) uses a rope or other device for suspension of the payload that requires an impact force of 230 N or more to separate the suspended payload from the balloon.

2. GENERAL OPERATING RULES

2.1. An unmanned free balloon shall not be operated without authorisation from the State from which the launch is made.

2.2. An unmanned free balloon, other than a light balloon used exclusively for meteorological purposes and operated in the manner prescribed by the competent authority, shall not be operated across the territory of another State without authorisation from the other State concerned.

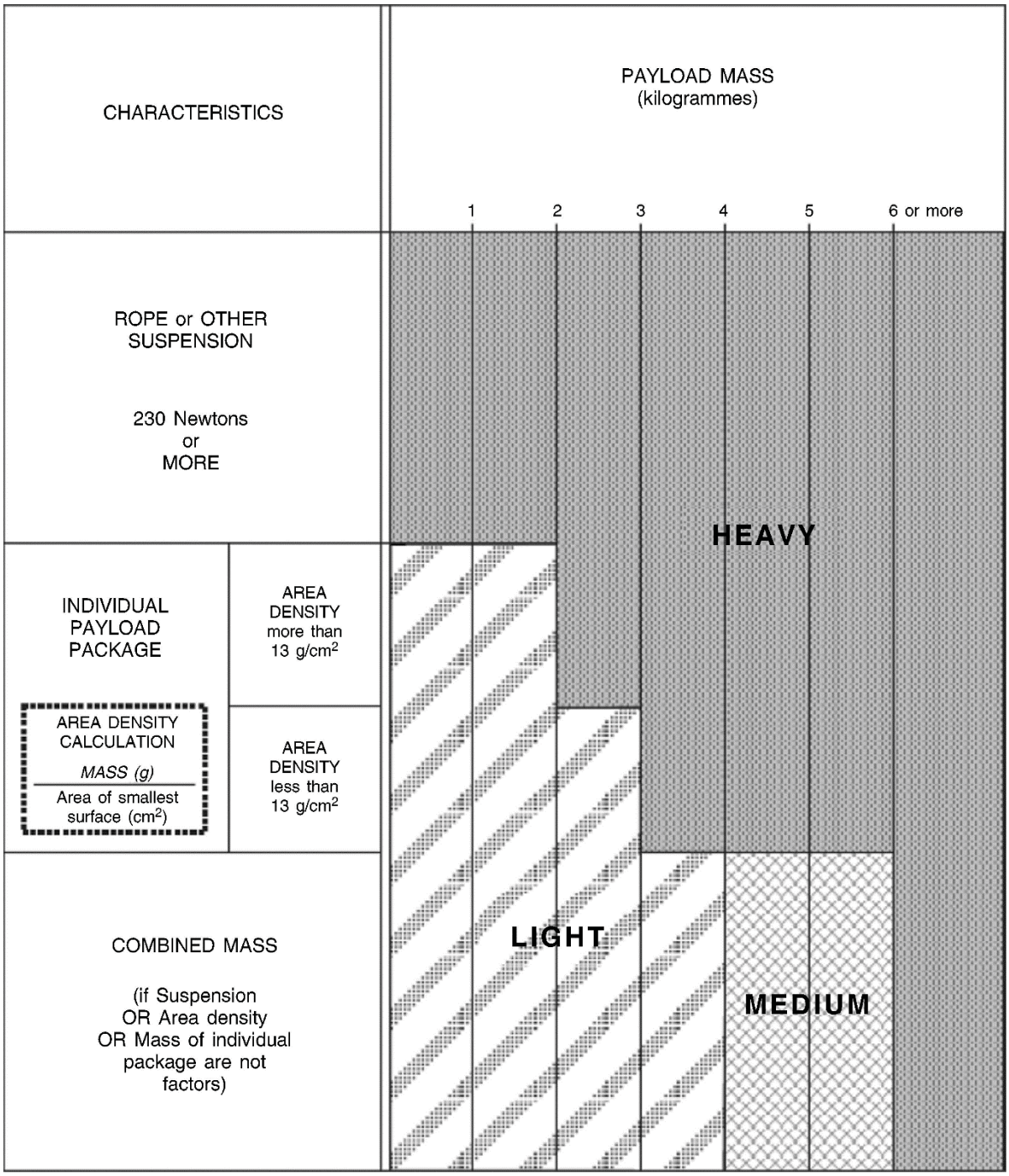
2.3. The authorisation referred to in 2.2 shall be obtained prior to the launching of the balloon if there is reasonable expectation, when planning the operation, that the balloon may drift into airspace over the territory of another State. Such authorisation may be obtained for a series of balloon flights or for a particular type of recurring flight, e.g. atmospheric research balloon flights.

2.4. An unmanned free balloon shall be operated in accordance with conditions specified by the State of Registry and the State(s) expected to be overflown.

2.5. An unmanned free balloon shall not be operated in such a manner that impact of the balloon, or any part thereof, including its payload, with the surface of the earth, creates a hazard to persons or property.

2.6. A heavy unmanned free balloon shall not be operated over the high seas without prior coordination with the ANSP(s).

Figure AP2-1



3. OPERATING LIMITATIONS AND EQUIPMENT REQUIREMENTS

3.1. A heavy unmanned free balloon shall not be operated without authorisation from the ANSP(s) at or through any level below 18 000 m (60 000 ft) pressure-altitude at which:

(a) there are clouds or obscuring phenomena of more than four oktas coverage; or

(b) the horizontal visibility is less than 8 km.

3.2. A heavy or medium unmanned free balloon shall not be released in a manner that will cause it to fly lower than 300 m (1 000 ft) over the congested areas of cities, towns or settlements or an open-air assembly of persons not associated with the operation.

3.3. A heavy unmanned free balloon shall not be operated unless:

(a) it is equipped with at least two payload flight-termination devices or systems, whether automatic or operated by telecommand, that operate independently of each other;

(b) for polyethylene zero-pressure balloons, at least two methods, systems, devices, or combinations thereof, that function independently of each other are employed for terminating the flight of the balloon envelope;

(c) the balloon envelope is equipped with either a radar reflective device(s) or radar reflective material that will present an echo to surface radar operating in the 200 MHz to 2 700 MHz frequency range, and/or the balloon is equipped with such other devices as will permit continuous tracking by the operator beyond the range of ground-based radar.

3.4. A heavy unmanned free balloon shall not be operated under the following conditions:

(a) in an area where ground-based SSR equipment is in use, unless it is equipped with a secondary surveillance radar transponder, with pressure-altitude reporting capability, which is continuously operating on an assigned code, or which can be turned on when necessary by the tracking station; or

(b) in an area where ground-based ADS-B equipment is in use, unless it is equipped with an ADS-B transmitter, with pressure-altitude reporting capability, which is continuously operating or which can be turned on when necessary by the tracking station.

3.5. An unmanned free balloon that is equipped with a trailing antenna that requires a force of more than 230 N to break it at any point shall not be operated unless the antenna has coloured pennants or streamers that are attached at not more than 15 m intervals.

3.6. A heavy unmanned free balloon shall not be operated below 18 000 m (60 000 ft) pressure-altitude at night or during any other period prescribed by the competent authority, unless the balloon and its attachments and payload, whether or not they become separated during the operation, are lighted.

3.7. A heavy unmanned free balloon that is equipped with a suspension device (other than a highly conspicuously coloured open parachute) more than 15 m long shall not be operated during night below 18 000 m (60 000 ft) pressure-altitude unless the suspension device is coloured in alternate bands of high conspicuity colours or has coloured pennants attached.

4. TERMINATION

4.1. The operator of a heavy unmanned free balloon shall activate the appropriate termination devices required by 3.3(a) and (b):

(a) when it becomes known that weather conditions are less than those prescribed for the operation;

(b) if a malfunction or any other reason makes further operation hazardous to air traffic or to persons or property on the surface; or

(c) prior to unauthorised entry into the airspace over another State's territory.

5. FLIGHT NOTIFICATION

5.1. Pre-flight notification

5.1.1. Early notification of the intended flight of an unmanned free balloon in the medium or heavy category shall be made to the appropriate air traffic services unit not less than seven days before the date of the intended flight.

5.1.2. Notification of the intended flight shall include such of the following information as may be required by the appropriate air traffic services unit:

(a) balloon flight identification or project code name;

(b) balloon classification and description;

(c) SSR code, aircraft address or NDB frequency as applicable;

(d) operator's name and telephone number;

(e) launch site;

(f) estimated time of launch (or time of commencement and completion of multiple launches);

(g) number of balloons to be launched and the scheduled interval between launches (if multiple launches);

(h) expected direction of ascent;

(i) cruising level(s) (pressure-altitude);

(j) the estimated elapsed time to pass 18 000 m (60 000 ft) pressure-altitude or to reach cruising level if at or below 18 000 m (60 000 ft), together with the estimated location. If the operation consists of continuous launchings, the time to be included shall be the estimated time at which the first and the last in the series will reach the appropriate level (e.g. 122136Z–130330Z);

(k) the estimated date and time of termination of the flight and the planned location of the impact/recovery area. In the case of balloons carrying out flights of long duration, as a result of which the date and time of termination of the flight and the location of impact cannot be forecast with accuracy, the term 'long duration' shall be used. If there is to be more than one location of impact/recovery, each location shall be listed together with the appropriate estimated time of impact. If there is to be a series of continuous impacts, the time to be included shall be the estimated time of the first and the last in the series (e.g. 070330Z–072300Z).

5.1.3. Any changes in the pre-launch information notified in accordance with point 5.1.2 shall be forwarded to the ATS unit concerned not less than 6 hours before the estimated time of launch, or in the case of solar or cosmic disturbance investigations involving a critical time element, not less than 30 minutes before the estimated time of the commencement of the operation.

5.2. Notification of launch

5.2.1. Immediately after a medium or heavy unmanned free balloon is launched the operator shall notify the appropriate air traffic services unit of the following:

(a) balloon flight identification;

(b) launch site;

(c) actual time of launch;

(d) estimated time at which 18 000 m (60 000 ft) pressure-altitude will be passed, or the estimated time at which the cruising level will be reached if at or below 18 000 m (60 000 ft), and the estimated location; and

(e) any changes to the information previously notified in accordance with 5.1.2(g) and (h).

5.3. Notification of cancellation

5.3.1. The operator shall notify the appropriate air traffic services unit immediately it is known that the intended flight of a medium or heavy unmanned free balloon, previously notified in accordance with paragraph 5.1, has been cancelled.

6. POSITION RECORDING AND REPORTS

6.1. The operator of a heavy unmanned free balloon operating at or below 18 000 m (60 000 ft) pressure-altitude shall monitor the flight path of the balloon and forward reports of the balloon's position as requested by air traffic services. Unless air traffic services require reports of the balloon's position at more frequent intervals, the operator shall record the position every 2 hours.

6.2. The operator of a heavy unmanned free balloon operating above 18 000 m (60 000 ft) pressure-altitude shall monitor the flight progress of the balloon and forward reports of the balloon's position as requested by air traffic services. Unless air traffic services require reports of the balloon's position at more frequent intervals, the operator shall record the position every 24 hours.

6.3. If a position cannot be recorded in accordance with 6.1 and 6.2, the operator shall immediately notify the appropriate air traffic services unit. This notification shall include the last recorded position. The appropriate air traffic services unit shall be notified immediately when tracking of the balloon is re-established.

6.4. One hour before the beginning of planned descent of a heavy unmanned free balloon, the operator shall forward to the appropriate ATS unit the following information regarding the balloon:

(a) the current geographical position;

(b) the current level (pressure-altitude);

(c) the forecast time of penetration of 18 000 m (60 000 ft) pressure-altitude, if applicable;

(d) the forecast time and location of ground impact.

6.5. The operator of a heavy or medium unmanned free balloon shall notify the appropriate air traffic services unit when the operation is ended.

GM1 to Appendix 2(3.3b) OPERATING LIMITATIONS AND EQUIPMENT REQUIREMENTS

ED Decision 2013/013/R

SUPER-PRESSURE BALLOONS

Super-pressure balloons do not require flight termination devices as they quickly rise after payload discharge and burst without the need for a device or system designed to puncture the balloon envelope. In this context a super-pressure balloon is a simple non-extensible envelope capable of withstanding a differential of pressure, higher inside than out. It is inflated so that the smaller night-time pressure of the gas still fully extends the envelope. Such a super-pressure balloon will keep essentially constant level until too much gas diffuses out of it.

APPENDIX 3 TABLE OF CRUISING LEVELS

Regulation (EU) No 923/2012

1.1. The cruising levels to be observed are as follows:

TRACK[1]											
From 000 degrees to 179 degrees						From 180 degrees to 359 degrees					
IFR Flights			VFR Flights			IFR Flights			VFR Flights		
Level			Level			Level			Level		
FL	Feet	Metres	FL	Feet	Metres	FL	Feet	Metres	FL	Feet	Metres
010	1000	300	—	—	—	020	2000	600	—	—	—
030	3000	900	035	3500	1050	040	4000	1200	045	4500	1350
050	5000	1500	055	5500	1700	060	6000	1850	065	6500	2000
070	7000	2150	075	7500	2300	080	8000	2450	085	8500	2600
090	9000	2750	095	9500	2900	100	10000	3050	105	10500	3200
110	11000	3350	115	11500	3500	120	12000	3650	125	12500	3800
130	13000	3950	135	13500	4100	140	14000	4250	145	14500	4400
150	15000	4550	155	15500	4700	160	16000	4900	165	16500	5050
170	17000	5200	175	17500	5350	180	18000	5500	185	18500	5650
190	19000	5800	195	19500	5950	200	20000	6100	205	20500	6250
210	21000	6400	215	21500	6550	220	22000	6700	225	22500	6850
230	23000	7000	235	23500	7150	240	24000	7300	245	24500	7450
250	25000	7600	255	25500	7750	260	26000	7900	265	26500	8100
270	27000	8250	275	27500	8400	280	28000	8550	285	28500	8700
290	29000	8850				300	30000	9150			
310	31000	9450				320	32000	9750			
330	33000	10050				340	34000	10350			
350	35000	10650				360	36000	10950			
370	37000	11300				380	38000	11600			
390	39000	11900				400	40000	12200			
410	41000	12500				430	43000	13100			
450	45000	13700				470	47000	14350			
490	49000	14950				510	51000	15550			
etc.	etc.	etc. etc.				etc.	etc.	etc.			

[1] Magnetic track, or in polar areas at latitudes higher than 70 degrees and within such extensions to those areas as may be prescribed by the competent authorities, grid tracks as determined by a network of lines parallel to the Greenwich Meridian superimposed on a polar stereographic chart in which the direction towards the North Pole is employed as the Grid North.

APPENDIX 4 ATS AIRSPACE CLASSES – SERVICES PROVIDED AND FLIGHT REQUIREMENTS

Regulation (EU) 2016/1185

(SERA.6001 and SERA.5025(b) refers)

Class	Type of flight	Separation provided	Service provided	Speed limitation[1]	Radio communication capability requirement	Continuous two-way air-ground voice communication required	Subject to an ATC clearance
A	IFR only	All aircraft	Air traffic control service	Not applicable	Yes	Yes	Yes
B	IFR	All aircraft	Air traffic control service	Not applicable	Yes	Yes	Yes
	VFR	All aircraft	Air traffic control service	Not applicable	Yes	Yes	Yes
C	IFR	IFR from IFR IFR from VFR	Air traffic control service	Not applicable	Yes	Yes	Yes
	VFR	VFR from IFR	(1) Air traffic control service for separation from IFR; (2) Air traffic control service, VFR/VFR traffic information (and traffic avoidance advice on request)	250 kts IAS below 3 050 m (10 000 ft) AMSL	Yes	Yes	Yes
D	IFR	IFR from IFR	Air traffic control service, traffic information about VFR flights d traffic avoidance advice on request)	250 kts IAS below 3 050 m (10 000 ft) AMSL	Yes	Yes	Yes
	VFR	Nil	Air traffic control service, IFR/VFR and VFR/VFR traffic information (and traffic avoidance advice on request)	250 kts IAS below 3 050 m (10 000 ft) AMSL	Yes	Yes	Yes
E	IFR	IFR from IFR	Air traffic control service and, as far as practical, traffic information about VFR flights	250 kts IAS below 3 050 m (10 000 ft) AMSL	Yes	Yes	Yes

[1] When the level of the transition altitude is lower than 3 050 m (10 000 ft) AMSL, FL 100 should be used in lieu of 10 000 ft. Competent authority may also exempt aircraft types, which for technical or safety reasons, cannot maintain this speed.

Class	Type of flight	Separation provided	Service provided	Speed limitation[1]	Radio communication capability requirement	Continuous two-way air-ground voice communication required	Subject to an ATC clearance
	VFR	Nil	Traffic information as far as practical	250 kts IAS below 3 050 m (10 000 ft) AMSL	No[1]	No[1]	No
F	IFR	IFR from IFR as far as practical	Air traffic advisory service; flight information service if requested	250 kts IAS below 3 050 m (10 000 ft) AMSL	Yes[2]	No[2]	No
	VFR	Nil	Flight information service if requested	250 kts IAS below 3 050 m (10 000 ft) AMSL	No[1]	No[1]	No
G	IFR	Nil	Flight information service if requested	250 kts IAS below 3 050 m (10 000 ft) AMSL	Yes[1]	No[1]	No
	VFR	Nil	Flight information service if requested	250 kts IAS below 3 050 m (10 000 ft) AMSL	No[1]	No[1]	No

[1] Pilots shall maintain continuous air-ground voice communication watch and establish two-way communication, as necessary, on the appropriate communication channel in RMZ.

[2] Air-ground voice communications mandatory for flights participating in the advisory service. Pilots shall maintain continuous air-ground voice communication watch and establish two-way communication, as necessary, on the appropriate communication channel in RMZ.

GM1 to Appendix 4 ATS airspace classes — services provided and flight requirements

ED Decision 2013/013/R

GENERAL

The purpose of this Appendix is to show the requirements related to each specific airspace class in a concise manner. Therefore, it does not provide any specifications additional to those already expressed in the implementing rule.

APPENDIX 5 TECHNICAL SPECIFICATIONS RELATED TO AIRCRAFT OBSERVATIONS AND REPORTS BY VOICE COMMUNICATIONS

Regulation (EU) 2016/1185

A. REPORTING INSTRUCTIONS

MODEL AIREP SPECIAL

	ITEM	PARAMETER	TRANSMIT IN TELEPHONY as appropriate
	—	Message- type designator — special air-report	[AIREP] SPECIAL
Section 1	1	Aircraft identification	*(aircraft identification)*
Section 1	2	Position	POSITION *(latitude and longitude)* OVER *(significant point)* ABEAM *(significant point)* *(significant point) (bearing) (distance)*
Section 1	3	Time	*(time)*
Section 1	4	Level	FLIGHT LEVEL *(number)* or *(number)* METRES or FEET CLIMBING TO FLIGHT LEVEL *(number)* or *(number)* METRES or FEET DESCENDING TO FLIGHT LEVEL *(number)* or *(number)* METRES or FEET
Section 1	5	Next position and estimated time over	*(position) (time)*
Section 1	6	Ensuing significant point	*(position)* NEXT
Section 2	7	Estimated time of arrival	*(aerodrome) (time)*
Section 2	8	Endurance	ENDURANCE *(hours and minutes)*
Section 3	9	Phenomenon encountered or observed prompting a special air-report: — Moderate turbulence — Severe turbulence — Moderate icing — Severe icing — Severe mountain wave — Thunderstorms without hail — Thunderstorms with hail — Heavy dust/sandstorm — Volcanic ash cloud — Pre-eruption volcanic activity or volcanic eruption	 TURBULENCE MODERATE TURBULENCE SEVERE ICING MODERATE ICING SEVERE MOUTAINWAVE SEVERE THUNDERSTORMS THUNDERSTORMS WITH HAIL DUSTSTORM or SANDSTORM HEAVY VOLCANIC ASH CLOUD PRE-ERUPTION VOLCANIC ACTIVITY or VOLCANIC ERUPTION

1. CONTENTS OF AIR-REPORTS

1.1. Position reports and special air-reports

1.1.1. Section 1 of the model set out in point A is obligatory for position reports and special air-reports, although Items 5 and 6 thereof may be omitted. Section 2 shall be added, in whole or in part, only when so requested by the operator or its designated representative, or when deemed necessary by the pilot-in-command. Section 3 shall be included in special air-reports.

1.1.2. Condition prompting the issuance of a special air-report are to be selected from the list presented in point SERA.12005(a).

1.1.3. In the case of special air-reports containing information on volcanic activity, a post-flight report shall be made using the volcanic activity reporting form (Model VAR) set out in point B. All elements which are observed shall be recorded and indicated respectively in the appropriate places on the form Model VAR.

1.1.4. Special air-reports shall be issued as soon as practicable after a phenomenon calling for a special air-report has been observed.

2. DETAILED REPORTING INSTRUCTIONS

2.1. Items of an air-report shall be reported in the order in which they are listed in the model AIREP SPECIAL form.

MESSAGE TYPE DESIGNATOR. Report 'SPECIAL' for a special air-report.

Section 1

Item 1 — AIRCRAFT IDENTIFICATION. Report the aircraft radiotelephony call sign as prescribed in point SERA.14050.

Item 2 — POSITION. Report position in latitude (degrees as 2 numerics or degrees and minutes as 4 numerics, followed by 'North' or 'South') and longitude (degrees as 3 numerics or degrees and minutes as 5 numerics followed by 'East' or 'West'), or as a significant point identified by a coded designator (2 to 5 characters), or as a significant point followed by magnetic bearing (3 numerics) and distance in nautical miles from the point. Precede significant point with 'ABEAM', if applicable.

Item 3 — TIME. Report time in hours and minutes UTC (4 numerics) unless reporting time in minutes past the hour (2 numerics) is prescribed on the basis of regional air navigation agreements. The time reported must be the actual time of the aircraft at the position and not the time of origination or transmission of the report. Time shall always be reported in hours and minutes UTC when issuing a special air-report.

Item 4 — FLIGHT LEVEL OR ALTITUDE. Report flight level by 3 numerics when on standard pressure altimeter setting. Report altitude in metres followed by 'METRES' or in feet followed by 'FEET' when on QNH. Report 'CLIMBING' (followed by the level) when climbing or 'DESCENDING' (followed by the level) when descending to a new level after passing the significant point.

Item 5 — NEXT POSITION AND ESTIMATED TIME OVER. Report the next reporting point and the estimated time over such reporting point, or report the estimated position that will be reached one hour later, according to the position reporting

procedures in force. Use the data conventions specified in Item 2 for position. Report the estimated time over this position. Report time in hours and minutes UTC (4 numerics) unless reporting time in minutes past the hour (2 numerics) as prescribed by regional air navigation agreements.

Item 6 — ENSUING SIGNIFICANT POINT. Report the ensuing significant point following the 'next position and estimated time over'.

Section 2

Item 7 — ESTIMATED TIME OF ARRIVAL. Report the name of the aerodrome of the first intended landing, followed by the estimated time of arrival at this aerodrome in hours and minutes UTC (4 numerics).

Item 8 — ENDURANCE. Report 'ENDURANCE' followed by fuel endurance in hours and minutes (4 numerics).

Section 3

Item 9 — PHENOMENON PROMPTING A SPECIAL AIR-REPORT. Report one of the following phenomena encountered or observed:

- moderate turbulence as 'TURBULENCE MODERATE', and
- severe turbulence as 'TURBULENCE SEVERE'.

  The following specifications apply:

  - Moderate - Conditions in which moderate changes in aircraft attitude and/or altitude may occur but the aircraft remains in positive control at all times. Usually, small variations in airspeed. Changes in accelerometer readings of 0,5 g to 1,0 g at the aircraft's centre of gravity. Difficulty in walking. Occupants feel strain against seat belts. Loose objects move about.
  - Severe - Conditions in which abrupt changes in aircraft attitude and/or altitude occur; aircraft may be out of control for short periods. Usually, large variations in airspeed. Changes in accelerometer readings greater than 1,0 g at the aircraft's centre of gravity. Occupants are forced violently against seat belts. Loose objects are tossed about.
- moderate icing as 'ICING MODERATE', severe icing as 'ICING SEVERE';
  - The following specifications apply:
  - Moderate - Conditions in which change of heading and/or altitude may be considered desirable.
  - Severe - Conditions in which immediate change of heading and/or altitude is considered essential.
- Severe mountain wave as 'MOUNTAIN WAVE SEVERE';

  The following specification applies:

  - Severe - Conditions in which the accompanying downdraft is 3,0 m/s (600 ft/min) or more and/or severe turbulence is encountered.

– Thunderstorm without hail as 'THUNDERSTORM', thunderstorm with hail as 'THUNDERSTORM WITH HAIL';

The following specification applies:

Only report those thunderstorms which are:

– obscured in haze, or

– embedded in cloud, or

– widespread, or

– forming a squall line.

– Heavy duststorm or sandstorm as 'DUSTSTORM HEAVY' or 'SANDSTORM HEAVY';

– Volcanic ash cloud as 'VOLCANIC ASH CLOUD';

– Pre-eruption volcanic activity or a volcanic eruption as 'PRE-ERUPTION VOLCANIC ACTIVITY' or 'VOLCANIC ERUPTION';

The following specification applies:

'Pre-eruption volcanic activity' in this context means unusual and/or increasing volcanic activity which could presage a volcanic eruption.

2.2. Information recorded on the volcanic activity reporting form (Model VAR) is not for transmission by RTF but, on arrival at an aerodrome, is to be delivered without delay by the operator or a flight crew member to the aerodrome meteorological office. If such an office is not easily accessible, the completed form shall be delivered in accordance with local arrangements agreed upon between MET and ATS providers and the aircraft operator.

3. FORWARDING OF METEOROLOGICAL INFORMATION RECEIVED BY VOICE COMMUNICATIONS

When receiving special air-reports, ATS units shall forward these air-reports without delay to the associated meteorological watch office (MWO). In order to ensure assimilation of air-reports in ground-based automated systems, the elements of such reports shall be transmitted using the data conventions specified below and in the order prescribed.

– ADDRESSEE. Record the station called and, when necessary, relay required.

– MESSAGE TYPE DESIGNATOR. Record 'ARS' for a special air-report.

– AIRCRAFT IDENTIFICATION. Record the aircraft identification using the data convention specified for Item 7 of the flight plan, without a space between the operator's designator and the aircraft registration or flight identification, if used.

Section 1

Item 0 — POSITION. Record position in latitude (degrees as 2 numerics or degrees and minutes as 4 numerics, followed, without a space, by N or S) and longitude (degrees as 3 numerics or degrees and minutes as 5 numerics, followed without a space by E or W), or as a significant point identified by a coded designator (2 to 5 characters), or as a

significant point followed by magnetic bearing (3 numerics) and distance in nautical miles (3 numerics) from the point. Precede significant point with 'ABEAM', if applicable.

Item 1 — TIME. Record time in hours and minutes UTC (4 numerics).

Item 2 — FLIGHT LEVEL OR ALTITUDE. Record 'F' followed by 3 numerics (e.g. 'F310') when a flight level is reported. Record altitude in metres followed by 'M' or in feet followed by 'FT' when an altitude is reported. Record 'ASC' (level) when climbing or 'DES' (level) when descending.

Section 2

Item 9 — PHENOMENON PROMPTING A SPECIAL AIR-REPORT. Record the phenomenon reported as follows:

- moderate turbulence as 'TURB MOD',
- severe turbulence as 'TURB SEV',
- moderate icing as 'ICE MOD',
- severe icing as 'ICE SEV',
- severe mountain wave as 'MTW SEV',
- thunderstorm without hail as 'TS',
- thunderstorm with hail as 'TSGR',
- heavy duststorm or sandstorm as 'HVY SS',
- volcanic ash cloud as 'VA CLD',
- pre-eruption volcanic activity or a volcanic eruption as 'VA',
- hail as 'GR',
- cumulonimbus clouds as 'CB'.
- TIME TRANSMITTED. Record only when Section 3 is transmitted.

4. SPECIFIC PROVISIONS RELATED TO REPORTING WIND SHEAR AND VOLCANIC ASH

4.1. Reporting of wind shear

4.1.1. When reporting aircraft observations of wind shear encountered during the climb-out and approach phases of flight, the aircraft type shall be included.

4.1.2. Where wind shear conditions in the climb-out or approach phases of flight were reported or forecast but not encountered, the pilot-in-command shall advise the appropriate ATS unit as soon as practicable unless the pilot-in-command is aware that the appropriate ATS unit has already been so advised by a preceding aircraft.

4.2. Post-flight reporting of volcanic activity

4.2.1. On arrival of a flight at an aerodrome, the completed report of volcanic activity shall be delivered by the aircraft operator or a flight crew member, without delay, to the aerodrome meteorological office, or if such office is not easily accessible to arriving flight crew members, the completed form

shall be dealt with in accordance with local arrangements agreed upon between MET and ATS providers and the aircraft operator.

4.2.2. The completed report of volcanic activity received by an aerodrome meteorological office shall be transmitted without delay to the meteorological watch office responsible for the provision of meteorological watch for the flight information region in which the volcanic activity was observed.

B. SPECIAL AIR-REPORT OF VOLCANIC ACTIVITY FORM (MODEL VAR)

MODEL VAR: to be used for post- flight reporting

VOLCANIC ACTIVITY REPORT

Air- reports are critically important in assessing the hazards which volcanic ash cloud presents to aircraft operations.

OPERATOR:			A/C IDENTIFICATION: (as indicated on flight plan)		
PILOT- IN- COMMAND:					
DEP FROM:	DATE:	TIME; UTC:	ARR AT:	DATE:	TIME; UTC:
ADDRESSEE			AIREP SPECIAL		
Items 1-8 are to be reported immediately to the ATS unit that you are in contact with.					
1) AIRCRAFT IDENTIFICATION			2) POSITION		
3) TIME			4) FLIGHT LEVEL OR ALTITUDE		
5) VOLCANIC ACTIVITY OBSERVED AT (position or bearing, estimated level of ash cloud and distance from aircraft)					
6) AIR TEMPERATURE			7) SPOT WIND		
8) SUPPLEMENTARY INFORMATION SO_2 DETECTED yes ☐ no ☐ Ash encountered yes ☐ no ☐			Other _____ (brief description of activity especially vertical and lateral extent of ash cloud and, where possible, horizontal movement, rate of growth, etc.)		
After landing complete items 9-16 then fax form to: (Fax number to be provided by the meteorological authority based on local arrangements between the meteorological authority and the operator concerned.)					
9) DENSITY OF ASH CLOUD	☐ (a) Wispy		☐ (b) Moderate dense	☐ (c) Very dense	
10) COLOUR OF ASH CLOUD	☐ (a) White ☐ (d) black		☐ (b) Light grey ☐ (c) other _____	☐ (c) Dark grey	
11) ERUPTION	☐ (a) continuous		☐ (b) intermittent	☐ (c) not visible	
12) POSITION OF ACTIVITY	☐ (a) Summit ☐ (d) Multiple		☐ (b) side ☐ (e) Not observed	☐ (c) Single	
13) OTHER OBSERVED FEATURES OF ERUPTION	☐ (a) Lightning ☐ (d) Ash fallout		☐ (b) Glow ☐ (e) Mushroom cloud	☐ (c) Large rocks ☐ (f) All	
14) EFFECT ON AIRCRAFT	☐ (a) Communication ☐ (d) Pitot static		☐ (b) Navigation systems ☐ (e) Windscreen	☐ (c) Engines ☐ (f) Windows	
15) OTHER EFFECTS	☐ (a) Turbulence		☐ (b) St. Elmo's Fire	☐ (c) Other fumes	
16) OTHER INFORMATION (Any information considered useful.)					

GM1 to Appendix 5 (2 — Section 1) DETAILED REPORTING INSTRUCTIONS

ED Decision 2016/023/R

POSITION

Example:

'4620North07805West', '4620North07800West', '4600North07800West', LN ('LIMA NOVEMBER'), 'MAY', 'HADDY' or 'DUB 180 DEGREES 40 MILES'

GM1 to Appendix 5 (2 — Section 1) DETAILED REPORTING INSTRUCTIONS

ED Decision 2016/023/R

FLIGHT LEVEL OR ALTITUDE

Example:

'FLIGHT LEVEL 310'

GM1 to Appendix 5 (2 — Section 3) DETAILED REPORTING INSTRUCTIONS

ED Decision 2016/023/R

PHENOMENON PROMPTING A SPECIAL AIR-REPORT - VOLCANIC ASH CLOUD, PRE-ERUPTION VOLCANIC ACTIVITY, OR VOLCANIC ERUPTION

In case of volcanic ash cloud, pre-eruption volcanic activity, or volcanic eruption, in accordance with SERA.12005, a post-flight report should also be made on the special air-report of volcanic activity form (Model VAR).

GM1 to Appendix 5 (3) FORWARDING OF METEOROLOGICAL INFORMATION RECEIVED BY VOICE COMMUNICATIONS

ED Decision 2016/023/R

AIRCRAFT IDENTIFICATION

Example:

'New Zealand 103' as 'ANZ103'

GM1 to Appendix 5 (3 — Section 1) FORWARDING OF METEOROLOGICAL INFORMATION RECEIVED BY VOICE COMMUNICATIONS

ED Decision 2016/023/R

POSITION

Example:

'4620N07805W', '4620N078W', '46N078W', 'LN', 'MAY', 'HADDY' or 'DUB180040'.

GM1 to Appendix 5 (1.1.4 and 2.1) SPECIAL AIR-REPORTS

ED Decision 2016/023/R

Examples of special air reports by voice communication

AS SPOKEN IN RADIOTELEPHONY	AS RECORDED BY THE AIR TRAFFIC SERVICES UNIT AND FORWARDED TO THE METEOROLOGICAL OFFICE CONCERNED
I.-[1] AIREP SPECIAL CLIPPER WUN ZERO WUN POSITION FIFE ZERO FOWer FIFE NORTH ZERO TOO ZERO WUN FIFE WEST WUN FIFE TREE SIX FLIGHT LEVEL TREE WUN ZERO CLIMBING TO FLIGHT LEVEL TREE FIFE ZERO THUNDERSTORMS WITH HAIL	I.- ARS PAA101 5045N02015W 1536 F310 ASC F350 TSGR
II.-[2] SPECIAL NIUGINI TOO SEVen TREE OVER MADANG ZERO AIT FOWer SIX WUN NINer TOUSAND FEET TURBULENCE SEVERE	II.- ARS ANG273 MD 0846 19000FT TURB SEV

[1] A special air-report which is required because of the occurrence of widespread thunderstorms with hail.

[2] A special air-report which is required because of severe turbulence. The aircraft is on QNH altimeter setting

SUPPLEMENT TO THE ANNEX

Regulation (EU) 2016/118

List of commonly agreed differences to be notified to ICAO in accordance with Article 5 of this Regulation:

ICAO Annex 2

Differences between this Regulation and the International Standards contained in Annex 2 to the Convention on International Civil Aviation, as amended

Difference A2-01	
ICAO Annex 2 Chapter 3 3.2.2.	New Provision. Implementing Regulation (EU) No 923/2012, SERA.3210(b), specifies: '(b) An aircraft that is aware that the manoeuvrability of another aircraft is impaired shall give way to that aircraft.'
Difference A2-02	
ICAO Annex 2 Chapter 3 3.2.3.2(b)	Implementing Regulation (EU) No 923/2012, paragraph SERA.3215(b)(2), specifies (with the addition to ICAO Standard in Annex 2, 3.2.3.2(b) of the underlined text): '(2) unless stationary and otherwise adequately illuminated, all aircraft on the movement area of an aerodrome shall display lights intended to indicate the extremities of their structure, as far as practicable;'
Difference A2-03	
ICAO Annex 2 Chapter 3 3.2.5(c) and (d)	Implementing Regulation (EU) No 923/2012, paragraph SERA.3225 differs from ICAO Standard in Annex 2, 3.2.5(c) and 3.2.5(d) in that it specifies that subparagraphs (c) and (d) do not apply to balloons: '(c) except for balloons, make all turns to the left, when approaching for a landing and after taking off, unless otherwise indicated, or instructed by ATC; (d) except for balloons, land and take off into the wind unless safety, the runway configuration, or air traffic considerations determine that a different direction is preferable.'
Difference A2-04	
ICAO Annex 2 Chapter 3 3.3.1.2.	ICAO Annex 2, 3.3.1.2 is replaced with point SERA.4001(b) of Implementing Regulation (EU) No 923/2012. The differences between that ICAO Standard and that Union regulation are as follows: With regards to VFR flights planned to operate across international borders, the Union regulation (point SERA.4001(b)(5)) differs from the ICAO Standard in Annex 2, 3.3.1.2(e) with the addition of the underlined text, as follows: 'any flight across international borders, unless otherwise prescribed by the States concerned.' With regard to VFR and IFR flights planned to operate at night, the following requirement is added to point SERA.4001(b)(6) of that Union regulation: '(6) any flight planned to operate at night, if leaving the vicinity of an aerodrome'
Difference A2-05	
ICAO Annex 2 Chapter 3 3.2.2.4.	New Provision. Implementing Regulation (EU) No 923/2012, paragraph SERA.3210(c)(3)(i) differs from ICAO Standard in Annex 2, 3.2.2.4 by specifying that: '(i) Sailplanes overtaking. A sailplane overtaking another sailplane may alter its course to the right or to the left.'
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Difference A2-07	
ICAO Annex 2 Chapter 4 4.6.	ICAO Annex 2, 4.6, is replaced with Implementing Regulation (EU) No 923/2012 SERA.5005, introducing the obstacle clearance criteria in (f), as follows: '(f) Except when necessary for take-off or landing, or except by permission from the competent authority, a VFR flight shall not be flown:

	(1) over the congested areas of cities, towns or settlements or over an open-air assembly of persons at a height less than 300 m (1000 ft) above the highest obstacle within a radius of 600 m from the aircraft; (2) elsewhere than as specified in (1), at a height less than 150 m (500 ft) above the ground or water, or 150 m (500 ft) above the highest obstacle within a radius of 150 m (500 ft) from the aircraft.'
Difference A2-08	
ICAO Annex 2 Chapter 3 3.8 and Appendix 2	The words 'in distress' of Chapter 3 Part 3.8, are not included in Union law, thus enlarging the scope of escort missions to any type of flight requesting such service. Furthermore the provisions contained in Appendix 2 Parts 1.1 to 1.3 inclusive as well as those found in Attachment A, are not contained in Union law.

ICAO Annex 3

Differences between this Regulation and the International Standards contained in Annex 3 to the Convention on International Civil Aviation, as amended.

Difference A3-01	
ICAO Annex 3 Chapter 5	New provision. Point SERA.12005 of Implementing Regulation (EU) No 923/2012 specifies: (b) Competent authorities shall prescribe as necessary other conditions which shall be reported by all aircraft when encountered or observed.

ICAO Annex 10

Differences between this Regulation and the International Standards contained in Annex 10 to the Convention on International Civil Aviation, as amended.

Difference A10-01	
ICAO Annex 10 Volume II Chapter 5 5.2.1.4.1	ICAO Annex 10, Volume II, Chapter 5.2.1.4.1 is transposed in point SERA.14035 of Implementing Regulation (EU) No 923/2012 with some differences. The differences between that ICAO Standard and that Union Regulation are as follows: SERA.14035 Transmission of numbers in radiotelephony (a) Transmission of numbers (1) All numbers used in the transmission of aircraft call sign, headings, runway, wind direction and speed shall be transmitted by pronouncing each digit separately. (i) Flight levels shall be transmitted by pronouncing each digit separately except for the case of flight levels in whole hundreds. (ii) The altimeter setting shall be transmitted by pronouncing each digit separately except for the case of a setting of 1000 hPa which shall be transmitted as 'ONE THOUSAND'. (iii) All numbers used in the transmission of transponder codes shall be transmitted by pronouncing each digit separately except that, when the transponder codes contain whole thousands only, the information shall be transmitted by pronouncing the digit in the number of thousands followed by the word 'THOUSAND'. (2) All numbers used in transmission of other information than those described in point (a)(1) shall be transmitted by pronouncing each digit separately, except that all numbers containing whole hundreds and whole thousands shall be transmitted by

	pronouncing each digit in the number of hundreds or thousands followed by the word 'HUNDRED' or 'THOUSAND', as appropriate. Combinations of thousands and whole hundreds shall be transmitted by pronouncing each digit in the number of thousands followed by the word 'THOUSAND', followed by the number of hundreds, followed by the word 'HUNDRED'. (3) In cases where there is a need to clarify the number transmitted as whole thousands and/or whole hundreds, the number shall be transmitted by pronouncing each digit separately. (4) When providing information regarding relative bearing to an object or to conflicting traffic in terms of the 12-hour clock, the information shall be given pronouncing the digits together such as 'TEN O'CLOCK' or 'ELEVEN O'CLOCK'. (5) Numbers containing a decimal point shall be transmitted as prescribed in point (a)(1) with the decimal point in appropriate sequence indicated by the word 'DECIMAL'. (6) All six digits of the numerical designator shall be used to identify the transmitting channel in Very High Frequency (VHF) radiotelephony communications except in the case of both the fifth and sixth digits being zeros, in which case only the first four digits shall be used.
Difference A10-02	
ICAO Annex 10 Volume II Chapter 5 5.2.1.7.3.2.3	ICAO Annex 10, Volume II, Chapter 5.2.1.7.3.2.3 is transposed in point SERA.14055 of Implementing Regulation (EU) No 923/2012 with a difference. The difference between that ICAO Standard and that EU Regulation is as follows: SERA.14055 Radiotelephony procedures (b) (2) The reply to the above calls shall use the call sign of the station calling, followed by the call sign of the station answering, which shall be considered an invitation to proceed with transmission by the station calling.For transfers of communication within one ATS unit, the call sign of the ATS unit may be omitted, when so authorised by the competent authority.

ICAO Annex 11

Differences between this Regulation and the International Standards contained in Annex 11 to the Convention on International Civil Aviation, as amended.

Difference A11-01	
ICAO Annex 11 Chapter 2 Paragraph 2.25.5	Implementing Regulation (EU) No 923/2012 SERA.3401(d)(1) differs from ICAO Annex 11, standard 2.25.5 by stating that 'Time checks shall be given at least to the nearest half minute'
Difference A11-02	
ICAO Annex 11 Chapter 2 Paragraph 2.6.1	Exemption possibility. Implementing Regulation (EU) No 923/2012 paragraph SERA.6001 allows aircraft to exceed the 250 knot speed limit where approved by the competent authority for aircraft types, which for technical or safety reasons, cannot maintain this speed
Difference A11-03	
ICAO Annex 11 Chapter 3	New provision. Implementing Regulation (EU) No 923/2012, paragraph SERA.8005(b), specifies:

	(b) Clearances issued by air traffic control units shall provide separation: (1) between all flights in airspace Classes A and B; (2) between IFR flights in airspace Classes C, D and E; (3) between IFR flights and VFR flights in airspace Class C; (4) between IFR flights and special VFR flights; (5) between special VFR flights unless otherwise prescribed by the competent authority; except that, when requested by the pilot of an aircraft and agreed by the pilot of the other aircraft and if so prescribed by the competent authority for the cases listed under (b) above in airspace Classes D and E, a flight may be cleared subject to maintaining own separation in respect of a specific portion of the flight below 3050 m (10000 ft) during climb or descent, during day in visual meteorological conditions.
Difference A11-04	
ICAO Annex 11 Chapter 3	Implementing Regulation (EU) No 923/2012, paragraph SERA.8015, specifies (with the addition to ICAO Standard in Annex 11, 3.7.3.1 of the underlined text): (e) Read-back of clearances and safety-related information (1) The flight crew shall read back to the air traffic controller safety-related parts of ATC clearances and instructions which are transmitted by voice. The following items shall always be read back: (i) ATC route clearances; (ii) clearances and instructions to enter, land on, take off from, hold short of, cross,taxi and backtrack on any runway; and (iii) runway-in-use, altimeter settings, SSR codes,newly assigned communication channels, level instructions, heading and speed instructions; and (iv) transition levels, whether issued by the controller or contained in ATIS broadcasts.
Difference A11-05	
ICAO Annex 11 Chapter 3	Implementing Regulation (EU) No 923/2012, paragraph SERA.8015(e)(2), specifies (with the addition to ICAO Standard in Annex 11, 3.7.3.1.1 of the underlined text): (2) Other clearances or instructions, including conditional clearances and taxi instructions, shall be read back or acknowledged in a manner to clearly indicate that they have been understood and will be complied with.
Difference A11-06	
ICAO Annex 11 Chapter 3	New provision. Point SERA.5010 of Implementing Regulation (EU) No 923/2012 specifies: SERA.5010 Special VFR in control zones Special VFR flights may be authorised to operate within a control zone, subject to an ATC clearance. Except when permitted by the competent authority for helicopters in special cases such as, but not limited to, medical flights, search and rescue operations and fire-fighting, the following additional conditions shall be applied: (a) such flights may be conducted during day only, unless otherwise permitted by the competent authority; (a) (b)by the pilot: (1) clear of cloud and with the surface in sight; (2) the flight visibility is not less than 1500 m or, for helicopters, not less than 800 m; (3) fly at a speed of 140 kts IAS or less to give adequate opportunity to observe other traffic and any obstacles in time to avoid a collision; and (c) an air traffic control unit shall not issue a Special VFR clearance to aircraft to take off or land at an aerodrome within a control zone, or enter the aerodrome traffic zone

	or aerodrome traffic circuit when the reported meteorological conditions at that aerodrome are below the following minima: (b) by ATC: (1) during day only, unless otherwise permitted by the competent authority; (2) (1)the ground visibility is not less than 1500 m or, for helicopters, not less than 800 m; (2) the ceiling is less than 180 m (600 ft).
Difference A03-07	
ICAO Annex 3 Chapter 5	New provision. Implementing Regulation (EU) No 923/2012, paragraph SERA.12005, specifies: (b) Competent authorities shall prescribe as necessary other conditions which shall be reported by all aircraft when encountered or observed.