



Strategy & Safety  
Management Directorate

Safety Intelligence &  
Performance Department

# Annual Safety Recommendations Review 2020



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Strategy & Safety Management Directorate  
Safety Intelligence & Performance Department

**Annual  
Safety Recommendations  
Review  
2020**

### Disclaimer:

The Annual Safety Recommendations Review is produced by the European Union Aviation Safety Agency (EASA). This edition provides an overview of the safety recommendations that have been addressed to EASA in 2020. It also presents the replies produced during the year.

This annual review aims at providing feedback on the follow-up given to safety recommendations in the context of openness, transparency and accountability that characterises European Public Administration.

Apart from its safety-related informative character, this review is also expected to provide relevant information related to safety concerns raised, for both EASA and its stakeholders, including the European public.

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2020 Annual Safety Recommendations Review



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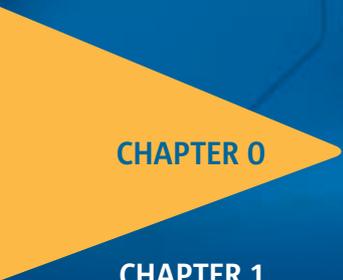
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# Abbreviation list





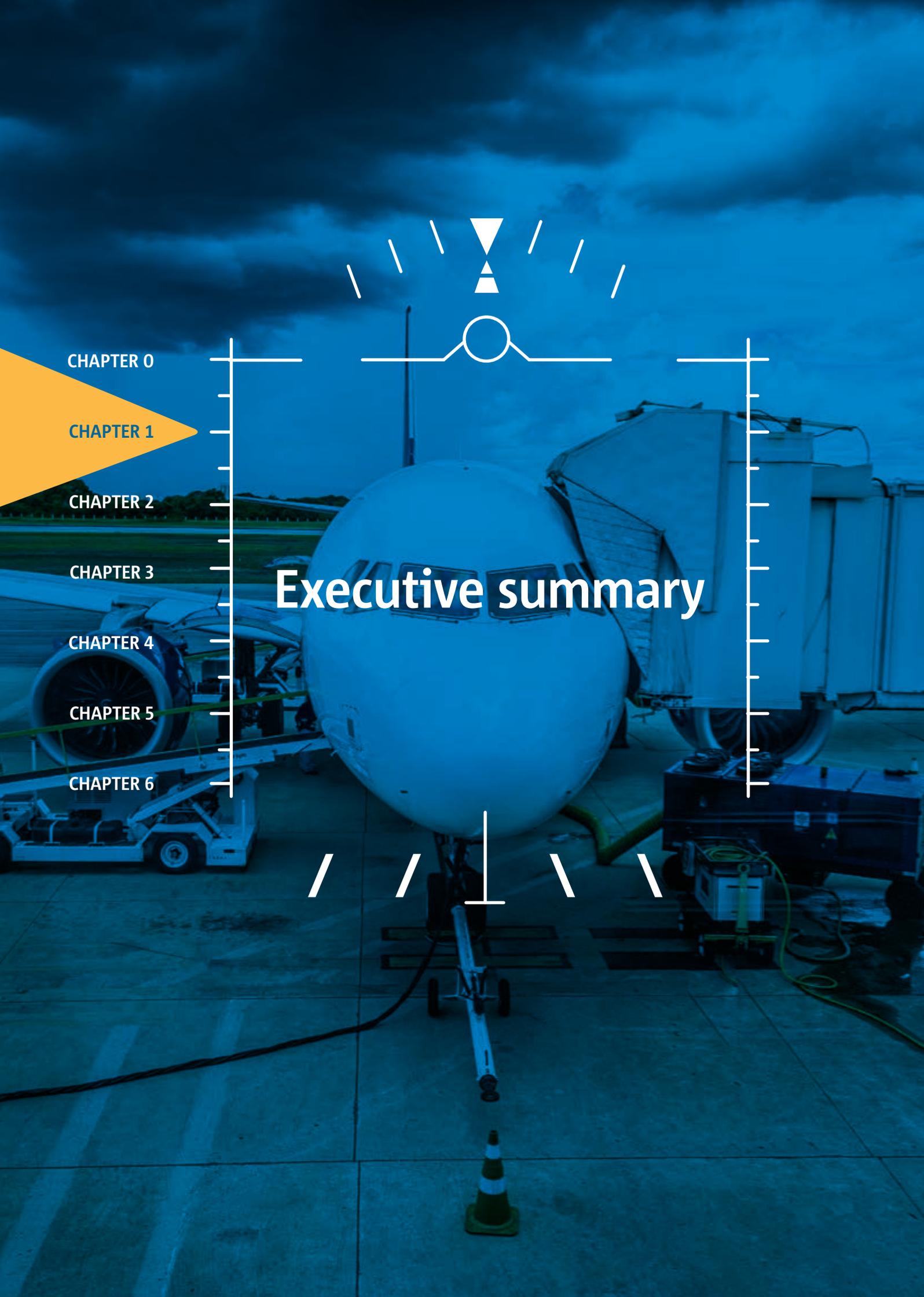
## Abbreviation list

AAIB	The United Kingdom Air Accidents Investigations Branch
AB	Advisory Body
AD	Airworthiness Directive
AFM	Aircraft Flight Manual
AIA	Aerospace Industries Association
ALS	Airworthiness Limitations Section
AMC	Acceptable Means of Compliance
ANS	Air Navigation Services
ANSV	Agenzia Nazionale per la Sicurezza del Volo, Italy
BEA	Bureau d'Enquête et d'Analyse pour l'Aviation Civile, France
BFU	German Federal Bureau of Aircraft Accident Investigation
BMVIT	Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology
CAG	Collaborative Analysis Group
CAT	Commercial Air Transport
CAW	Continuing Airworthiness
CO	Carbon monoxide
CRM	Crew Resource Management
CS	Certification Specifications
CVR	Cockpit Voice Recorder
DSB	Dutch Safety Board, The Netherlands
EASA	European Union Aviation Safety Agency
EFB	Electronic Flight Bag
ED	Executive Director
ENCASIA	European Network of Civil Aviation Safety Investigation Authorities
EPAS	European Plan for Aviation Safety
EU	European Union
EUROCAE	European Organisation for Civil Aviation Equipment
FAA	Federal Aviation Administration, USA
FCL	Flight Crew Licencing
FCPC	Flight controls primary computer
FDM	Flight Data Monitoring
FDR	Flight Data Recorder
GA	General Aviation



## Abbreviation list

GM	Guidance Material
HEMS	Helicopter Emergency Medical Services
ICA	Instructions for Continued Airworthiness
ICAO	International Civil Aviation Organization
IFSD	In-Flight Shut Down
IPC	Intermediate Pressure Compressor
IPT	Intermediate Pressure Turbine
JETQC	Jet Engine Titanium Quality Committee
JRC	Joint Research Centre
MCTOM	Maximum Certified Take-Off Mass
MOPSC	Maximum Operational Passenger Seating Configuration
MSL	Mean Sea Level
MS	Member States
NM	Nautical Miles
NPA	Notice of Proposed Amendment
NTSB	National Transportation Safety Board, USA
QMS	Quality Management System
RISC	Rotor Integrity Steering Committee
RMT	Rulemaking Task
RWY	Runway
SHK	Statens haverikommission, Sweden
SIA	Safety Investigation Authority
SIB	Safety Information Bulletin
SMS	Safety Management System
SRGC	Safety Recommendation of Global Concern
SRIS	Safety Recommendation Information System
SRM	Safety Risk Management
SRUR	Safety Recommendation of Union-wide Relevance
SSP	State Safety Programme
STC	Supplemental Type Certificate
TC	Type Certificate
ToR	Terms of Reference
UTC	Coordinated Universal Time



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# Executive summary



# Executive summary

The Annual Safety Recommendations Review provides information on the activity carried out by the Agency in the field of accident and incident investigation and follow-up in 2020. In addition, the review highlights a range of safety issues and Agency safety improvement actions that will be of interest to the European aviation community and the wider public.

This 14th edition includes:

- General statistical data on the safety recommendations addressed by Safety Investigation Authorities to the Agency in 2020;
- Information on the replies that the Agency has provided to safety recommendations in 2020;
- Main safety issues that have been addressed and the actions taken.

The Agency has a key role in safety investigation follow-up in Europe. This has been reflected in the establishment of a precise process for managing the safety recommendations received. Due to its central position in the aviation safety system, the Agency is able to take actions with respect to systemic problems and risk management.

The implementation of safety recommendations serves to ensure lessons are learned and help prevent future occurrences. The review of trends in safety recommendations and analysis of safety issues also supports the development of safety risk portfolios. These are published in Volume III of the EPAS.

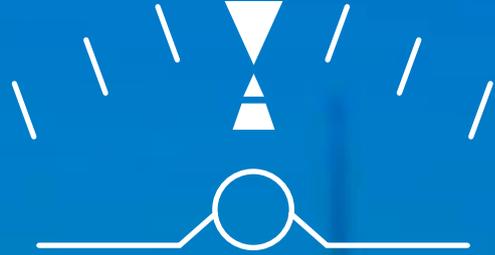
During 2020, Safety Investigation Authorities from 17 different States addressed 32 safety recommendations to the Agency in the context of EASA's remit, 26 originating from EASA Member States and 6 from non-EASA Member States. This volume is lower than the number of safety recommendations received in 2018 and 2019.

The majority of these safety recommendations were related to aviation-related equipment/facilities. The second most frequent category was related to aircraft or procedures or regulations.

23 of the safety recommendations received from EASA Member States (MS) were classified as being Safety Recommendations of Union-wide Relevance (SRUR) and 20 were classified as being Safety Recommendations of Global Concern (SRGC), i.e. of international interest.

The handling of safety recommendations in a systematic manner constitutes one of EASA's key responsibilities. In 2020, the Agency provided 81 replies to 74 safety recommendations:

- 38 of these were final replies (closing safety recommendations) with 33% of these replies assessed as "agreed" by EASA, and 46% assessed as "partially agreed";
- The remaining 43 replies were updates providing information on the progress of the actions decided upon by the Agency and for which the relevant activities were not yet completed;
- 94 percent of the final responses provided by the Agency and assessed by the originator of the recommendation were reported as "adequate" or "partially adequate".



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# Introduction





# Introduction

Within the European Union (EU), the principles governing the investigation of accidents and serious incidents are defined in Regulation (EU) No 996/2010<sup>1</sup> of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation.

Regulation (EU) No 996/2010 transposes international standards and recommended practices as described in Annex 13 to the Chicago Convention on International Civil Aviation. It sets out an obligation for each Member State of the European Union to establish an independent, permanent national civil aviation Safety Investigation Authority, which shall investigate accidents and serious incidents in order to improve aviation safety and prevent future occurrences without apportioning blame or liability. Investigation reports and the related safety recommendations are sent to the aviation authorities concerned for consideration and action as needed.

Regulation (EC) No 2018/1139, the EASA Basic Regulation, states that: “The Agency and the national competent authorities shall undertake the necessary and effective actions to increase and promote awareness of civil aviation safety and disseminate safety related information relevant for the prevention of accidents and incidents”.

The Agency assigns a high priority to the follow-up of safety recommendations and has established effective procedures to that effect:

- The Agency delivers a first reply to a safety recommendation within 90 days;
- Safety recommendations are subject to a continuous internal monitoring process until all agreed corrective actions are closed;
- The Agency receives assessments of its responses from Safety Investigation Authorities (SIAs).

These procedures support the Agency in ensuring transparency with respect to its decisions and actions in line with its mission for safety. The Agency also supports effective cooperation in safety investigation by working with the European Network of Civil Aviation Safety Investigation Authorities (ENCASIA) in Working Group 6 on Safety Recommendations.

The Agency also monitors safety recommendations that are issued to other aviation and non-aviation addressees.

The Annual Safety Recommendations Review provides an overview of the follow-up performed by the Agency in response to recommendations received.

The first edition of this Review was issued in 2007. This 14th edition reviews the 2020 activity and presents:

- General statistical data on the safety recommendations addressed by Safety Investigation Authorities to the Agency in 2020;
- Information on the replies that the Agency has given to past safety recommendations in 2020;
- Main safety issues that have been addressed through the actions taken.

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<sup>1</sup> As amended by Regulation (EU) No 376/2014 and Regulation (EU) 2018/1139

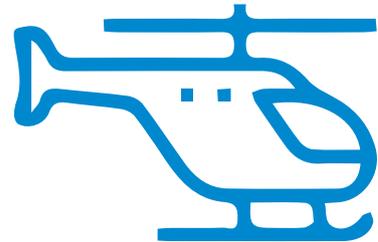


## Introduction

A process to identify, assess and mitigate safety risks at the European level has been established by the Agency since 2016. The safety risk management process involves the identification of safety issues, risk assessment and decision-making on the best course of action to mitigate these risks. The Agency, the Member States (MS) and industry work together in this process through Collaborative Analysis Groups (CAG) and Advisory Bodies (ABs).

The Annual Safety Review published by the Agency provides the main and most visible elements from the European safety risk management process, such as key statistics relating to accidents and serious incidents, as well as an analysis of the key risk areas and data portfolios for each domain. This risk management process is coordinated by the Agency and it supports the European Plan for Aviation Safety (EPAS).

Safety recommendations are a key input to the safety risk management process. They provide information on the possible deficiencies in the aviation system and propose solutions to mitigate the associated safety risks. When the analyses from the Annual Safety Review and Annual Safety Recommendations Review are considered alongside expertise from the collaborative analysis groups and other sources, the outputs are the safety risk portfolios. These are published in Volume III of the EPAS.



# Departure

Flight	Check-in	Gate	Info
8547	T1A 128-132	C41	gate open
2002	T1A 128-132	C	gate-info 21:05
711	T3 371-378	F06	delayed
567	T3 351-358	F32	boarding
457	T3 371-378	G36	gate closed
179	T3 351-358	F37	boarding
377	T3 371-378	F21	gate closed
859	T3 371-378	G12	gate closed
	T3 351-358	F31	gate closed
	351-358	F10	gate closed
		G21	gate open
	371-378	F08	gate open
599	T3 371-378	F15	gate closed
331	T3 371-378	F13	boarding
517	T3 351-358	F22	gate closed
535	T3	F20	gate closed
840	T3 371-378	F16	boarding
167	T3 371-378	G26	boarding
835	T1 178-182	D23	boarding
1888	T1 151-155	C31	boarding
755	T3 371-378	G16	boarding
689	T3 351-358	D24	gate open
410	T1 183-194	D70	gate open
605	T1 151-155	C38	gate open
2757	T3 351-358	C75	gate open
8858	T3 371-378	F06	gate open
913	T1 157-160	C35	gate open
4734	T1A 117-118	C71	gate open
5294	T3 341-346	G01	boarding
154	T3 351-358	F04	gate open
239	T3 351-358	G32	
767	T3 371-378	C73	
137			

Time	Act.	To	Flight	Check-in	Gate	Info
21:15		Nice	OS 423	T3 351-358	F02	gate open
21:15		Moscow DME	T3 371-378		G17	
21:20		Kiev	OS 667	T3 351-358	C06	
21:25		London LGW	EA 1300	T1 157-160	C01	
21:25		Budapest	OS 717	T3 371-378	F	gate-info 20:20
21:30		Gdansk	W6 1782	T1A 117-127	C	gate-info 20:20
21:33		Linz	RJ 820			
21:35		Bordeaux	VOE2455	T1A 121	C	gate-info 20:20
21:40		Athens	OS 803	T3 371-378	F	gate-info 20:20
21:40		Brussels	SN 2908	T3 351-358	F	gate-info 20:20
21:45		Barcelona	T3 371-378	C	gate-info 20:20	
21:55		Salzburg	VY 6689	T1A 117-127	C	gate-info 20:20
22:00		Rome FCO	T3 371-378	F	gate-info 20:20	
22:00		Kosice	OS 849	T3 351-358	C	gate-info 20:20
22:20		Tirana	T3 351-358	C	gate-info 20:20	
22:30		Doha	OS 025	T3 351-358	C	gate-info 20:20
22:55		Bangkok				
23:20						
++++ Next Day +++++						
00:30		Moscow SVO	SU 2355	T1 185-187	D	
05:30		Kiev	PS 844	T1 183-184	D	
05:40		Tel Aviv	W6 2811	T1A 117-127	D	
05:45		Barcelona	OE 122	T1 161-162	C	gate-info
05:50		Seville	OS 209	T3 351-358	F	gate-info
05:50		Madrid	W6 145	T1A 117-127	C	gate-info
05:50		Larnaca	OE 108	T1 161-162	C	gate-info
05:55		Kutaisi	W6 2820	T1 155-155	D	gate-info 06:20
05:55		Barcelona	EJUS852	T1A 117-127	D	gate-info 06:20
06:00		Kharkiv	W6 2825	T1 157-160	C	gate-info 06:20
06:00		Berlin TXL	W6 2825	T1A 117-127	D	gate-info 06:20
06:05		Ohrid	LH 1247	T3 351-358	F	
06:10		Frankfurt				

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## Safety Recommendations received in 2020

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# Safety Recommendations received in 2020

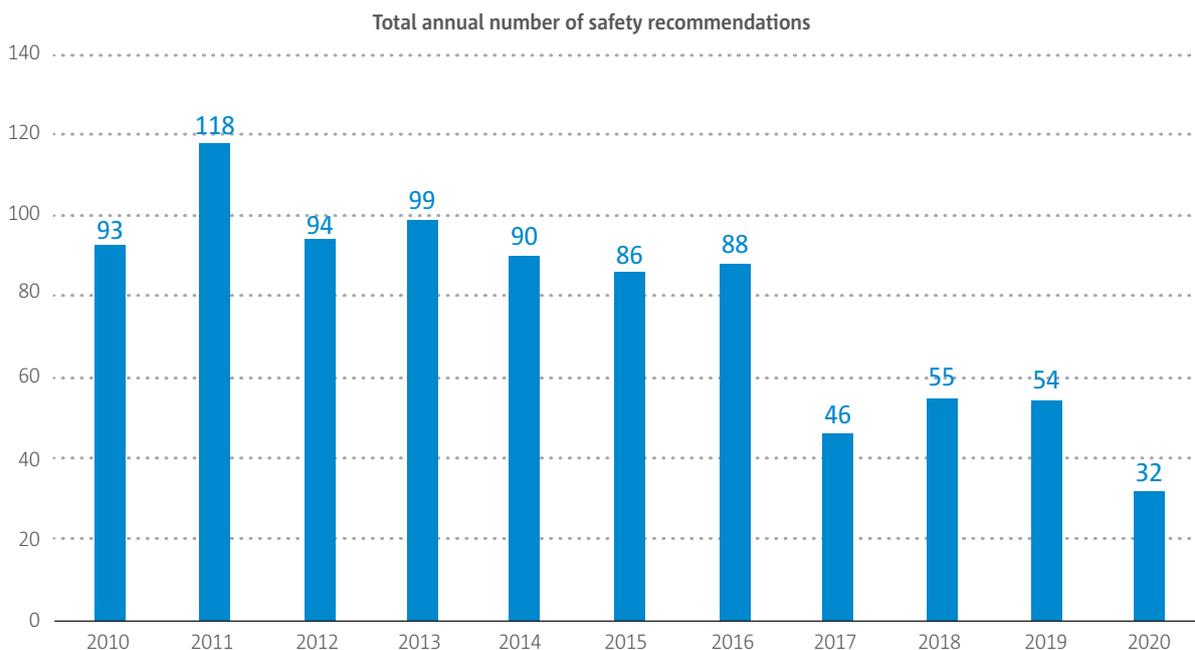
## 3.1 Overview of Safety Recommendations received in 2020

EASA is the most frequent single addressee of Safety Recommendations. However, most safety recommendations issued during 2020 were addressed to the National Civil Aviation Authorities of EASA Member States.

During 2020, EASA received a total of 32 safety recommendations.

Figure 1 shows the total annual number of safety recommendations that the Agency has received over the past 10 years. The follow-up of safety recommendations and the role of the Agency is mandated by Regulation (EU) No 996/2010. The issuance of safety recommendations addressed to the Agency started to develop shortly before this regulation came into force in 2010. In the years from 2012 to 2016, the annual number of safety recommendations addressed to the Agency remained almost constant. In 2017, this amount fell by around half. Despite a marginal increase in 2018, the general downward trend continues.

► Figure 1: Safety Recommendations addressed to EASA per year





## Safety Recommendations received in 2020

This trend is more pronounced if the safety recommendations issued by EASA Member States are considered alone. In 2020 only 26 safety recommendations came from EASA MS. This decrease can mostly be attributed to the following factors:

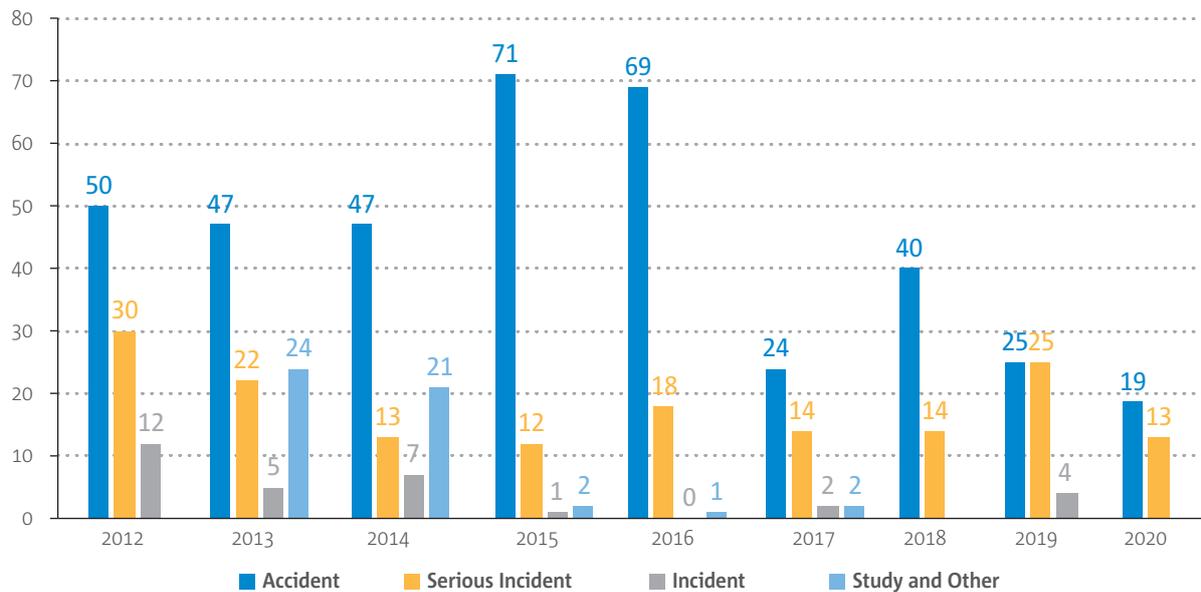
- the European aviation system is becoming increasingly more oriented towards proactively identifying safety issues and implementing safety actions that would otherwise be raised during investigations;
- the Agency is frequently involved in the initial phase of drafting reports, leading to draft safety recommendations being discussed in advance and in some cases either withdrawn, revised or re-addressed as a result of this dialogue.

In 2020, the safety recommendations received related to 26 occurrences, comprising 15 accidents and 11 serious incidents. None arose from studies.

Overall, each investigation resulted in a maximum of two safety recommendations being addressed to the Agency.

Figure 2 shows the total number of safety recommendations received by occurrence class since 2012.

► Figure 2: Annual Safety Recommendations by occurrence class 2012-2020





**Safety Recommendations received in 2020**

The aircraft categories and operation types involved in the occurrences that resulted in safety recommendations in 2019 are listed in the table below.

► **Figure 3: Safety Recommendations received in 2020 by Type of Operation and Aircraft Category**

Type of Operation	Aircraft Category					
	Fixed Wing				Rotorcraft	Grand Total
	Large Aeroplane	Small Aeroplane	Ultralight/Microlight	Sailplane		
<b>Commercial Air Transport</b>	13				2	15
<b>Cargo</b>						
Airline						
<b>Passenger</b>						
Airline	12					12
HEMS						
Other	1				2	3
<b>Non-Commercial Operations</b>		8		3		11
Flight Training		4				4
Pleasure		4		3		7
Relocation						
<b>Specialised Operations (Aerial Work)</b>		4			2	6
Parachute drop		2				2
Calibration		2				2
Aerial photographing					1	1
Firefighting						
Towing					1	1
<b>Grand Total</b>	13	12		3	4	32

Compared to the previous year, the number of the recommendations related to Non-Commercial operations has remained constant except those related to ultra/microlight aircraft, a category for which no recommendations were issued. The greatest reduction in numbers can be seen in the number of safety recommendations related to commercial aviation.



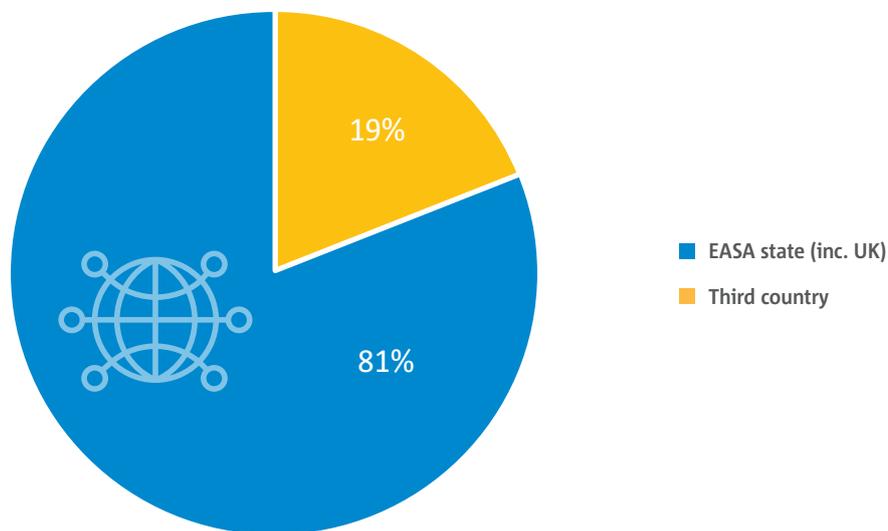
## Safety Recommendations received in 2020

### 3.2 Origin of the Safety Recommendations received in 2020

In 2020, the Safety Investigation Authorities (SIAs) of 17 different States addressed 32 safety recommendations to the Agency.

Figure 4 shows the percentage distribution of safety recommendations that were addressed to EASA in 2020 between EASA Member States and non-EASA Member States. The chart shows that EASA Member States issued 81% of the safety recommendations received by EASA in 2020.

► Figure 4: Origin of Safety Recommendations received by EASA



Roughly one-third (37.5%) of the Safety Recommendations received in 2020 were related to six occurrences, each investigation resulting in two safety recommendations to the Agency as follows:

1. The investigation into an accident involving an Airbus A380 in September 2017 over Greenland was completed by the French accident investigation authority, BEA. The aircraft experienced an in-flight separation of the first rotating assembly at the front of the engine, along with the air inlet and fan case, resulting also in slight damage to the surrounding structure of the aircraft.
2. In July 2019, a GA-8-TC aircraft was involved in a fatal accident in Sweden. It was carrying out a parachute jumping operation while it experienced a loss of control and crashed due to non-compliance with maximum take of weight and centre of gravity limitations, aggravated by the change in the aircraft's centre of gravity as the jumpers were positioning themselves inside the aircraft. A Tecnam P2002 aircraft was involved in a fatal accident in Italy in February 2020. It was conducting a training flight with a student pilot and an instructor on board. The purpose of the flight was to train stall and prevention of a spin.
3. An accident involving a Embraer E190 aircraft, which occurred in April 2017 in the UK where during an evacuation, the passengers who evacuated via the overwing exits reported being unsure of how to get down from the wing to the ground and several re-entered the cabin and exited via one of the escape slides.

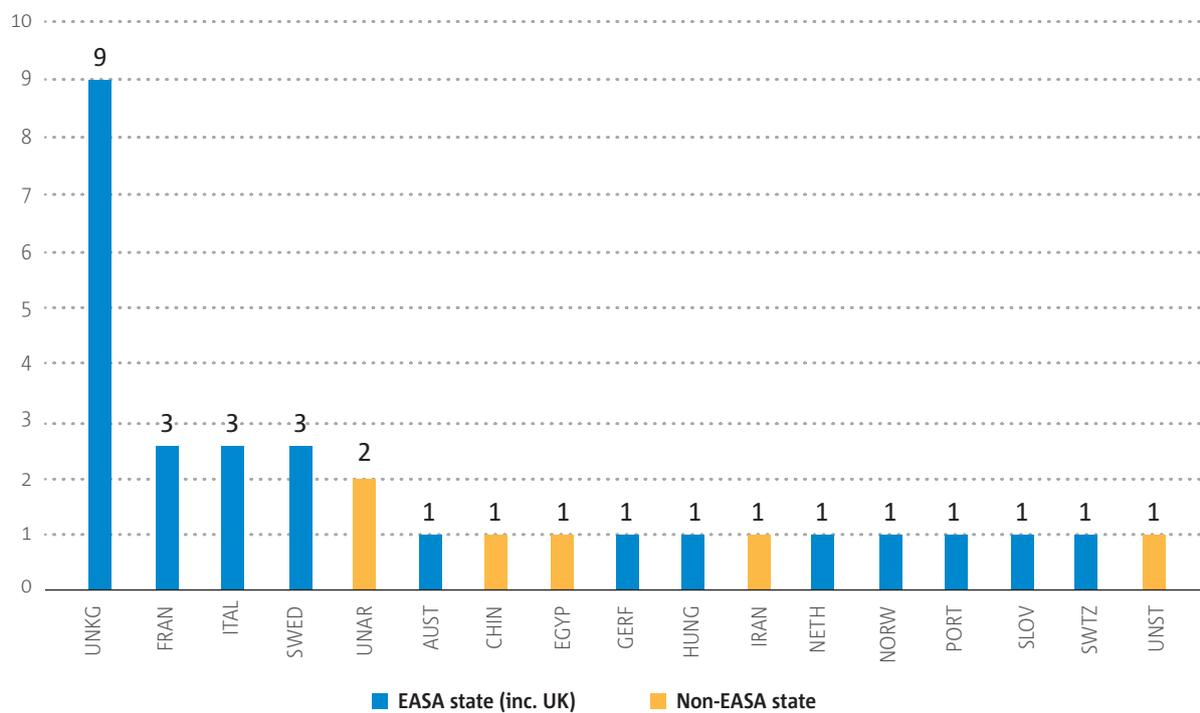


### Safety Recommendations received in 2020

- 4. A serious incident involving an Airbus A320 in March 2019 in the UK, where following an evacuation, passengers who tried to collect their hand luggage slowed down the evacuation.
- 5. An accident involving a Diamond DA62 which crashed during a calibration flight after entering the wake turbulence of a heavier aircraft.

Figure 5 shows the contribution of the different SIAs to the total number of safety recommendations addressed to the Agency in 2020, as well as the number of occurrences that contributed to these safety recommendations.

► Figure 5: States' contribution to Safety Recommendations received in 2020





## Safety Recommendations received in 2020

The United Kingdom Air Accidents Investigations Branch issued 9 safety recommendations that are related to 6 different occurrences. Two of them result from a serious incident involving an Airbus A320 in March 2019 in UK, where following an evacuation, passengers who tried to collect their hand luggage slowed down the evacuation. Two more recommendations were issued as a result of an investigation into another evacuation-related serious incident involving an Embraer E190 aircraft. The remaining five safety recommendations that UK issued arise from:

- An accident involving a Piper 46 aircraft in which the pilot and the passenger lost their lives;
- An investigation into two serious incidents involving a Bell 429 helicopter where the helicopter experienced controllability problems;
- An accident involving a Schempp Hirth Cirrus sailplane after it lost control following a loss of the horizontal tailplane;
- Serious incident involving a De Havilland DHC8 in which the aircraft experienced controllability problems after take-off;
- A serious incident involving a Cessna Citation in which the aircraft experienced an uncommanded roll after take-off.

The French Accident investigation authority, Bureau d'Enquêtes et d'Analyses pour la sécurité de l'aviation civile (BEA) addressed three safety recommendations to the Agency, two of which are related to an accident involving an Airbus A380 in September 2017. One safety recommendation was related to an accident involving an Aerospatiale AS350 helicopter where health issues were identified with the pilot.

The Italian Accident Investigation Authority, Agenzia Nazionale per la Sicurezza del Volo (ANSV) issued three safety recommendations to the Agency that were related to two occurrences as follows:

- An accident involving a Tecnam P2002 aircraft that was conducting a training flight;
- An accident involving a Tecnam P92 aircraft in which the aircraft experienced an engine failure and loss of control.

The Swedish Accident Investigation Authority, Statens haverikommission (SHK), issued three safety recommendations related to two occurrences, as follows:

- An accident involving a GA-8-TC aircraft carrying out parachute jumping operations;
- An accident involving a Beech-95 aircraft which experienced a collapse of the landing gear upon landing.

The safety recommendations issued by SIAs in 2020 address a wide scope of subjects under the Agency's remit including product certification, continuous airworthiness, air traffic management, air operations, flight crew and safety risk management.



### 3.3 Involvement in accident and serious incident investigations

During 2020, the most notable events were:

- An accident involving a Boeing 737 occurred in Iran in January, which was shot down during climb and causing the fatal injury of all 176 people on board.
- An accident involving a Boeing 737 in Turkey in February in which the aircraft overran the runway after landing, causing 3 fatalities and 180 injuries.
- A serious incident involving an Airbus A321 in the UK in February in which the aircraft experienced degraded performance in both engines after take-off. The crew was able to carry out a safe landing using a lower thrust setting.
- A serious incident involving an Airbus A220 in France in February in which the aircraft experienced an engine failure at cruise. The engine type involved had already similar failure events in previous year. There were no injuries.
- A serious incident involving a Boeing B757 in Iceland in February in which the aircraft suffered a main landing gear collapse after landing on RWY10 at Keflavik Intl. Airport in the presence of 42 kts wind, gusts at 55 kts from 130°.
- A serious incident involving an Airbus A321 in UK in February in which the aircraft experienced a double engine problem at initial climb from London Gatwick due to biocide contamination caused during maintenance.
- A serious incident involving an Airbus A321 in Vietnam in March, in which the aircraft experienced an uncontained engine failure on take-off. There were no injuries.
- A serious incident involving a Bae ATP in UK in May in which the aircraft veered off the runway momentarily during a landing in a strong crosswind. There were no injuries.
- An accident involving an Airbus A320 in Pakistan in May 2020 in which the aircraft crashed on approach due to a failure of both engines. 97 out of 99 persons on board were fatally injured.
- A serious incident involving an Airbus A321 in UK in June, in which the airspeed indication was inoperative on take-off due to debris in the airspeed sensor after a long storage period.
- A serious incident involving an Airbus A330 in Taiwan in June, due to multiple system failures on landing (3 FCPCs, ground spoilers, thrust reversers, and autobrake) on wet RWY, heavily affecting the landing distance.
- A serious incident involving an ATR72 in Indonesia in July in which the aircraft's main and standby display units showing the flight and engine parameters went blank after take-off due to a failure in the aircraft's electrical supply system.
- An accident involving a Pilatus PC-6 aircraft in Italy in September where the aircraft lost part of the left wing and crashed after an unrecoverable spin. There were two fatalities.
- A serious incident involving an ATR 42-500 in Colombia in October where the aircraft experienced a ground collision with the gate due to a malfunction of the braking system.
- An accident involving an A109 S occurred in US in November operating a HEMS flight, which crashed when landing on the rooftop helipad of the USC medical building in Los Angeles.



## Safety Recommendations received in 2020

In addition, several investigations launched in previous years were still on-going or completed in 2020 with the Agency's participation by monitoring the progress and providing technical expertise. Significant events are listed below:

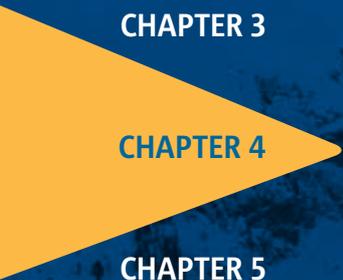
- A serious incident involving an Airbus A320 in Switzerland in June 2017 in which the crew was exposed to exhaust gases of the preceding aircraft and became unwell during the flight. A draft report was issued in 2020.
- An accident involving an ATR42 in Canada in December 2017 in which the aircraft crashed after take-off due to ice accumulation on the wings. Several occupants received either serious or minor injuries. The Transport Safety Board of Canada released a draft final report on the event in November 2020.
- A serious incident involving an Airbus A330 in US in April 2018 in which the aircraft experienced an engine failure during climb but landed safely.
- An accident involving an AW169 helicopter in UK in October 2018 in which the helicopter crashed shortly after take-off from a football arena. The five occupants onboard were fatally injured. The draft report was issued in 2020.
- A serious incident involving an Airbus A220 in USA on 25 July 2019, in which the aircraft experienced an engine failure on cruise. The National Transportation Safety Board (NTSB) of USA released a draft report in 2020.
- A serious incident involving a Boeing 737 in Czech Republic in August 2019 in which the aircraft experienced an engine failure on cruise. The crew decided to continue the flight to its destination and the aircraft flew another 2 hrs 20 minutes with only one engine. The final report was issued in 2020.

Please note that safety actions that were taken immediately during or following an investigation do not appear in this publication unless the Safety Investigation Authority issued an associated, formal safety recommendation to EASA in 2020.





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# Safety Recommendations replies in 2020





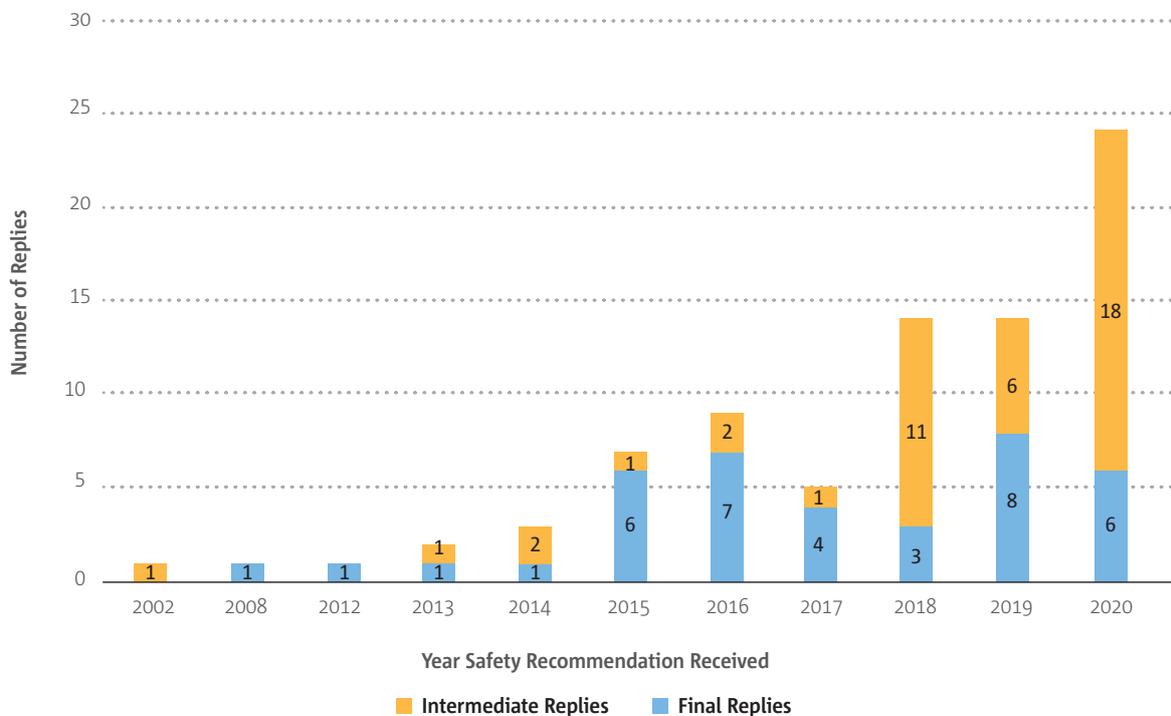
# Safety Recommendations replies in 2020

## 4.1 Overview of Safety Recommendations replies in 2020

In 2020, the Agency issued 81 replies to 74 safety recommendations. As updates are provided, several response letters can be issued for the same recommendation within a year. The vast majority of replies produced in 2020 were Agency’s responses to safety recommendations first received in the years 2015 to 2019.

However, replies to recommendations from earlier years were also issued, as per the table below, for those cases where follow-up actions and conclusions were reached, or which required updates and/or closure of the safety recommendation.

► Figure 6: EASA replies to safety recommendations in 2020, by year received





## 4.2 Status of Safety Recommendations replies issued in 2020

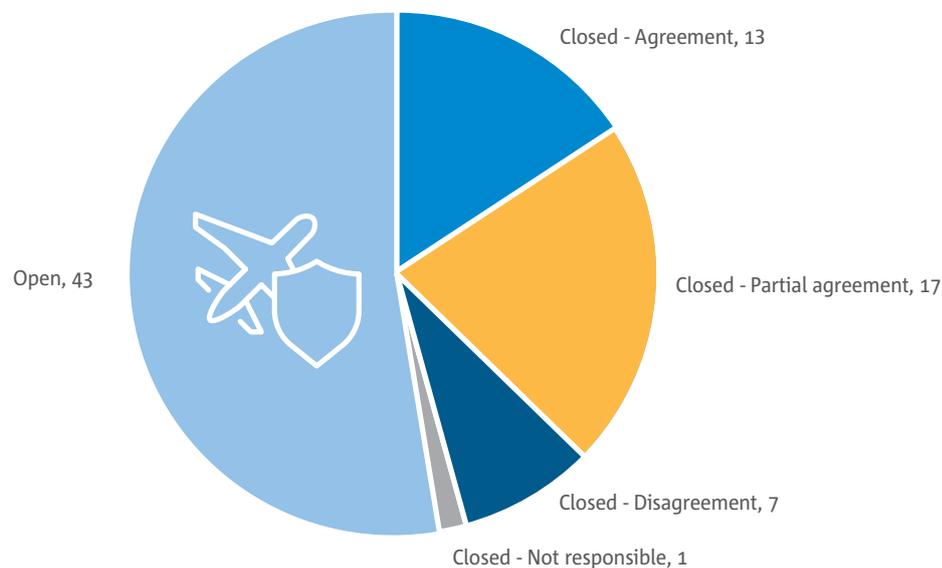
Each final response closing a safety recommendation and the response assessment by the originator is classified according to the categories<sup>2</sup> given in Annex C.

Among the 81 replies that were sent by the Agency in 2020, summarised in Figure 7, 38 were final replies that closed safety recommendations. These resulted in the following responses by the Agency:

- The Agency agreed to take corrective action in 30 cases, either by directly applying the recommended actions as was the case for 13 of them or, for the remaining 17, by partially agreeing but taking corrective actions other than those recommended;
- In a further 7 cases, the safety recommendations were evaluated and the safety benefit was not agreed;
- In 1 case, the safety recommendation fell outside EASA's mandate.

Figure 7 below shows this distribution:

► Figure 7: Safety Recommendation Replies sent in 2020 [status, total number]



In monitoring safety recommendations, their status remains open until the action related to each recommendation is fully developed and completed.

<sup>2</sup> These definitions of classification categories were developed in collaboration with the European Network of Safety Investigation Authorities and are part of a taxonomy aimed at facilitating the management of safety recommendations.



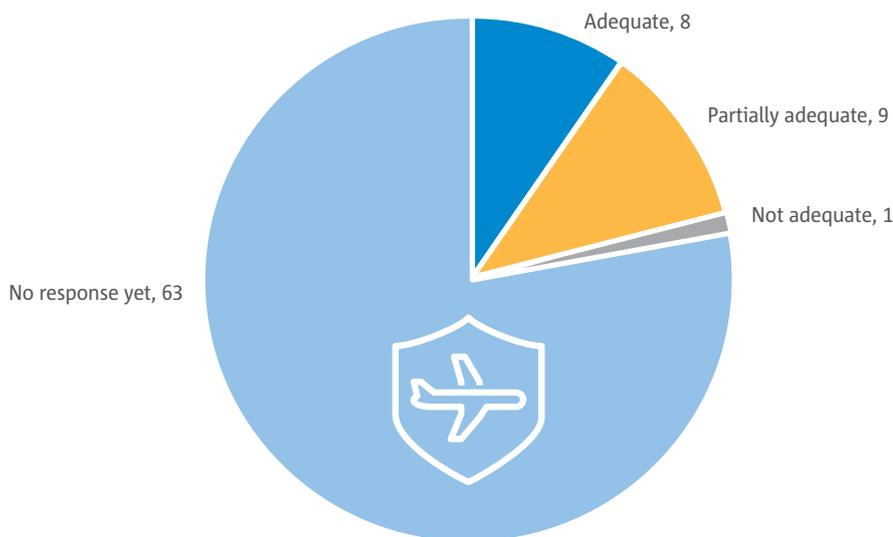
## Safety Recommendations replies in 2020

In addition to the 38 final replies closing a safety recommendation, 43 updating replies (intermediate responses) were issued. These updating replies provided information on the progress of the actions decided upon by the Agency but for which the relevant activities had not yet been completed.

To monitor whether Safety Investigation Authority (SIA) consider the Agency's responses to be adequate, or if they disagree with the actions proposed, the Agency has implemented procedures in line with Regulation (EU) No 996/2010.

Figure 8 shows the total number of response assessments that EASA received from the SIAs based on the 81 replies sent in 2020<sup>3</sup>. As assessed, 17 of the responses provided by the Agency were deemed to be "adequate" or "partially adequate" (8 and 9 respectively), and 1 response was deemed as "not adequate". With respect to the 63 remaining closing replies sent in 2020, EASA awaits the SIAs' assessment.

► Figure 8: Reply assessment received from the originator on the EASA Replies sent in 2020 [reference date: 22.01.2021]



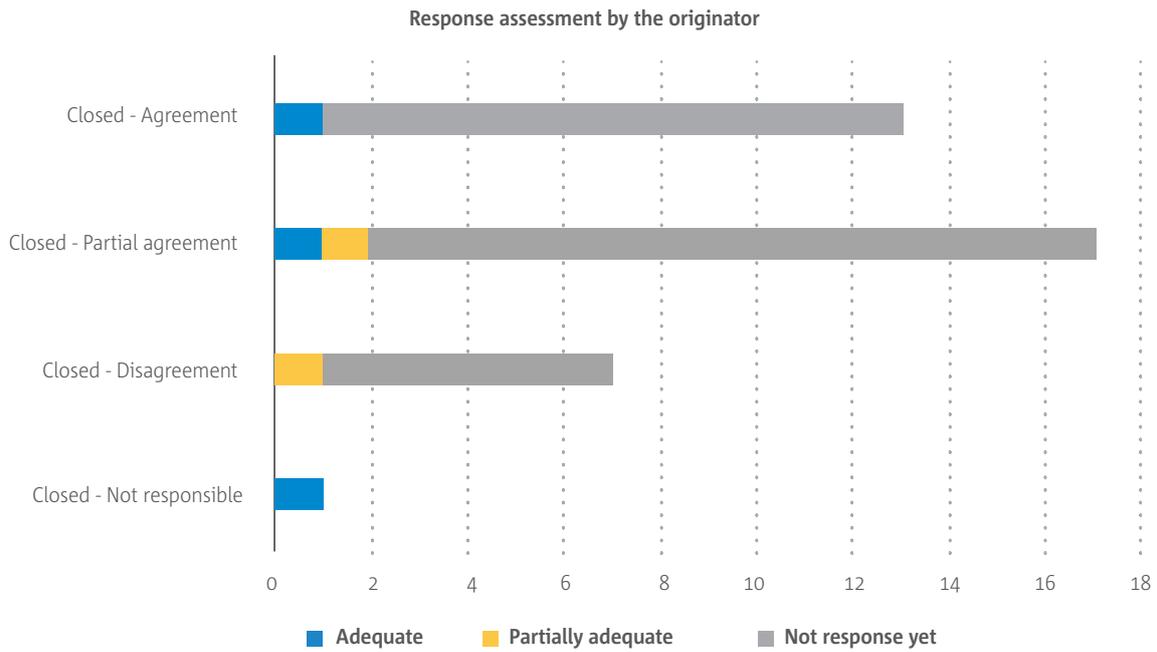
3 The statistical reference date is 22 January 2021.



## Safety Recommendations replies in 2020

Figure 9 provides an overview of the recommendation assessments and/or classifications as determined by the addressee.

► Figure 9: Assessment received by EASA on the Final Responses sent in 2020  
[total, reference date: 22.01.2021]





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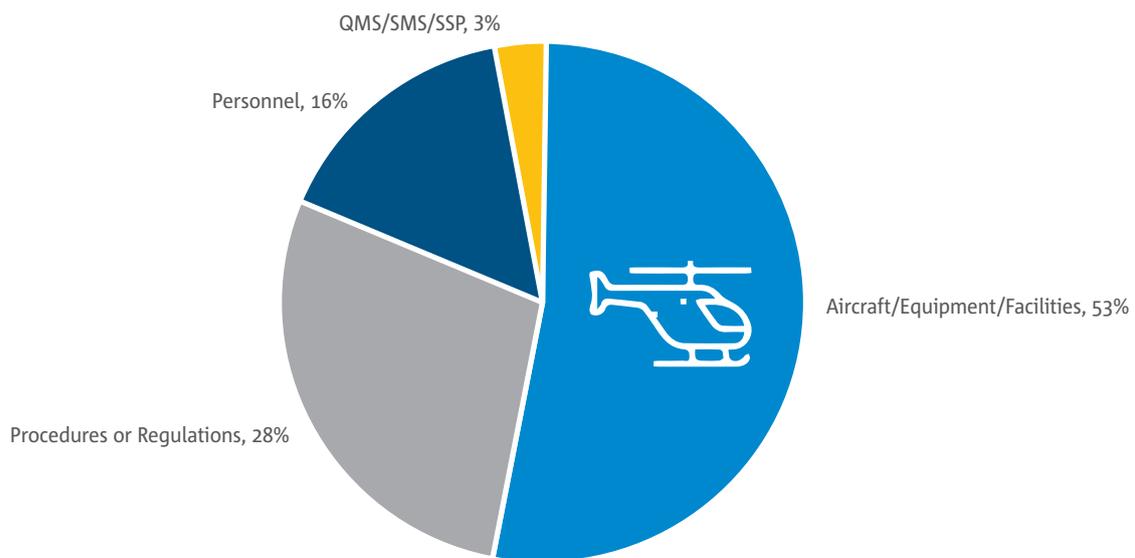
# Overview of key safety topics processed and actions carried out in 2020



# Overview of key safety topics processed and actions carried out in 2020

In 2020, Safety Investigation Authorities from 17 different States issued 32 safety recommendations to EASA that addressed issues within EASA's remit. Figure 10 provides a breakdown of the safety recommendation topics. Among the safety recommendations, the European SIAs classified 23 as being of Union-wide Relevance (SRUR) and 20 as being of Global Concern (SRGC). The handling of the safety recommendations in a systematic manner constitutes one of EASA's key responsibilities.

► Figure 10: Safety Recommendations addressed to EASA per topic by EU SIAs



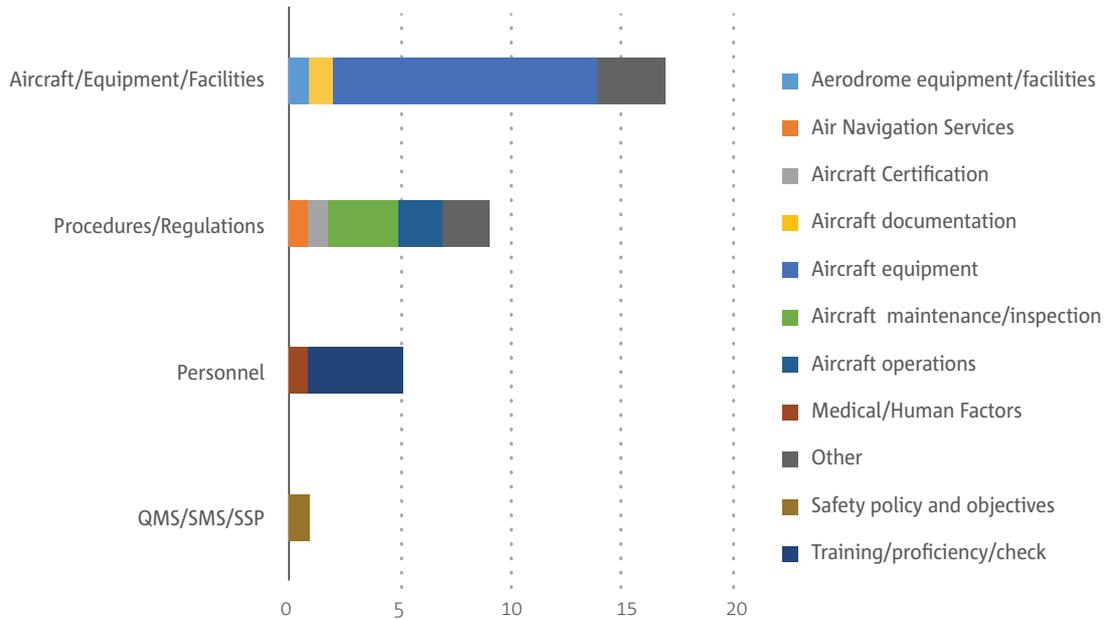
The above distribution is consistent with the data that the European Network of Civil Aviation Authorities (ENCASIA) presented in its Annual Report.



## Overview of key safety topics processed and actions carried out in 2020

A further breakdown of the topics is also provided below in Figure 11

► Figure 11: Safety Recommendations addressed to EASA per topic and area



Among the actions taken in 2020, several key safety topics are outlined below with accompanying information on the action that the Agency has taken. The description highlights the safety issues that were underlined by the safety recommendations, together with the actions taken by the Agency in response.

## 5.1 Propulsion products

The number of safety recommendations related to propulsion products addressed to EASA in 2020 was three, out of which two related to engines fitted in a transport category aircraft and one to general aviation aircraft.

### Safety recommendations:

The investigation into an accident involving an Airbus A380 in September 2017 over Greenland was completed by the French accident investigation authority, BEA. The aircraft experienced an in-flight separation of the first rotating assembly at the front of the engine, along with the air inlet and fan case, resulting also in slight damage to the surrounding structure of the aircraft.

The investigation identified the following factors that had contributed to the event:

- engine designer's/manufacturer's lack of knowledge of the cold dwell fatigue phenomenon in the titanium alloy, Ti-6Al-4V;



## Overview of key safety topics processed and actions carried out in 2020

- absence of instructions from the certification bodies about taking into account macro-zones (i.e. colony of similarly oriented alpha grains) and the cold dwell fatigue phenomenon in the critical parts of an engine, when demonstrating conformity;
- absence of non-destructive means to detect the presence of unusual macro-zones in titanium alloy parts;
- an increase in the risk of having large macro-zones with increased intensity in large Ti-6-4 forgings due to bigger engines, and in particular, bigger fans.

The BEA issued two safety recommendations addressed to EASA:

- EASA and the FAA ensure that the design and sizing criteria and methods along with the manufacturing processes and in-production checks of engine rotor-grade critical parts made of  $\alpha/\beta$  titanium alloy, and in particular the titanium alloy Ti-6-4, are such that the risk of failure of these parts due to the cold dwell fatigue phenomenon is controlled.
- EASA and the FAA carry out a review of engine rotor-grade critical parts made of  $\alpha/\beta$  titanium alloy, and in particular the titanium alloy Ti-6-4, which undergo a manufacturing process likely to lead to the presence of intense macro-zones and for which the risk of failure due to a cold dwell fatigue phenomenon has not been sufficiently taken into account during the certification. EASA and the FAA will subsequently make sure, where appropriate, that an adapted in-service inspection programme is implemented to detect possible incipient cracks which might lead to the failure of the part.

### EASA Actions:

The Agency has committed to addressing the issue through collaborative work together with the FAA and industry and has provided the following reply as an intermediate measure:

“The European Union Aviation Safety Agency (EASA) is working with the Federal Aviation Administration (FAA) and two Industry groups, the Aerospace Industries Association (AIA) Rotor Integrity Steering Committee (RISC) and the Jet Engine Titanium Quality Committee (JETQC), to address the safety issues of the recommendation. These complimentary teams will be considering industry practices for improved titanium alloy conversion practices and the characterization and quantification of titanium micro-texture, with the objective of a holistic design, manufacturing and lifing system. Concurrently, the EASA will work with its applicants to assess existing life limited part/critical part rotor designs. EASA will provide a follow-on response once our evaluation is complete.”

### EASA replies to previous safety recommendations on propulsion products:

- A Boeing B787 aircraft experienced an engine failure on 26 November 2016 during a climb out from Sydney. The intermediate pressure compressor (IPC) suffered severe damage and the aircraft landed safely in Singapore.

The engine manufacturer carried out inspections on several similar engines that were in its maintenance facilities at that time and found cracks on the blade roots of the first stage of the IP compressor in four engines. Following this, it developed a new maintenance inspection technique to detect cracks at the IP compressor blade roots.

The Transport Safety Investigation Bureau of Singapore issued one safety recommendation to the Agency:

“The European Aviation Safety Agency to require the engine manufacturer to review the design of the IP compressor blade to prevent the development of cracks.”



## Overview of key safety topics processed and actions carried out in 2020

After two intermediate replies in 2018 and 2019, the Agency has provided the following final closing reply in 2020:

“Following a review of the design of the intermediate pressure compressor (IPC) blade, the European Union Aviation Safety Agency (EASA) has ensured that the entire Trent 1000/7000 fleet is protected against the consequences of the development of cracks in the rotor 1 and rotor 2 blades as follows:

Trent 1000-A, -AE, -C, -CE, -D, -E, -G, and -H (‘package B’ models): Mandatory inspection according to EASA Airworthiness Directive (AD) 2019-0249 which superseded previous ADs 2019-0075 and 2018-0167R2;

Trent 1000-A2, -AE2, -C2, -CE2, -D2, -E2, -G2, -H2, -J2, -K2 and -L2 (‘package C’ models): Mandatory inspection according to EASA AD 2019-0248 which superseded previous ADs 2018-0084R2 and 2018-0073;

Trent 1000-AE3, -CE3, -D3, -G3, -H3, -J3, -K3, -L3, -M3, -N3, -P3, -Q3 and -R3 (‘Ten’ models): Mandatory inspection according to the engine Airworthiness Limitations Section (ALS) of the Instructions for Continued Airworthiness (ICA);

Trent 7000-72 and -72C (‘7000’ models): Mandatory blade life limit at 300 cycles in the engine ALS of the ICA.

New rotor 1 and rotor 2 blades for ‘Package C’ models were certified by EASA in December 2018. Installation of these blades according to Service Bulletin TRENT 1000 72-J941 constitutes a terminating action to EASA AD 2019-0248.

The redesign of rotor 1 and rotor 2 blades for the ‘TEN’ and ‘7000’ models was certified by EASA in September 2019. The mandatory inspection or life limit of the ALS is not applicable to these new blades introduced by Service Bulletin TRENT 1000 72-AK117 and 72-AK210.

Finally, the redesign of rotor 1 and rotor 2 blades is currently being processed by EASA for the ‘Package B’ model and will be approved in the coming months. AD 2019-0249 is not applicable to these new rotor 1 and rotor 2 blades.

In summary, the review of the IPC blade design to prevent the development of cracks has resulted in mandatory containment actions, and in the design of new blades which are not affected by the same cracking problem for all Trent 1000/7000 engine models.

- On April 17, 2018 a Boeing 737-7H4, experienced a left engine failure while climbing through flight level 320 en-route to the flight’s assigned cruise altitude. Portions of the left engine inlet and fan cowl separated from the airplane, and fragments from the inlet and fan cowl struck the left wing, the left-side fuselage, and the left horizontal stabilizer. One fan cowl fragment impacted the left-side fuselage near a cabin window, and the window departed the airplane, which resulted in a rapid depressurization. The airplane landed safely.

The NTSB issued the following safety recommendation to the Agency:

“Expand your certification requirements for transport-category airplanes and aircraft engines to mandate that airplane and engine manufacturers work collaboratively to:

- (1) analyze all critical fan blade impact locations for all engine operating conditions, the resulting fan blade fragmentation, and the effects of the fan-blade-out-generated loads on the nacelle structure and
- (2) develop a method to ensure that the analysis findings are fully accounted for in the design of the nacelle structure and its components.”



## Overview of key safety topics processed and actions carried out in 2020

The Agency provided an interim reply in February 2020:

“EASA has initiated a review of CS-E and CS-25 and is reviewing the options available to address this safety recommendation in the most efficient way.

An update will be provided once this action has progressed.”

Since the interim reply, EASA has been working actively, and in coordination with the FAA and relevant stakeholders, to address the safety recommendation. In the interim period, EASA has already implemented design considerations in on-going certification projects.

## 5.2 Passenger evacuation

Failure to evacuate the aircraft in a timely, orderly, and safe manner may lead to the death or injury of passengers and crew. Transport category aircraft are subject to a certification requirement that assumes the aircraft can be evacuated in 90 seconds without serious injuries to persons. This capability will have to be demonstrated by the aircraft manufacturer with an actual aircraft and persons participating in the test evacuation.

There has been an increasing trend in passenger behaviour to try to take their hand luggage and personal belongings with them when evacuation is announced. This happens despite the fact that in the safety briefing given by the cabin crew, passengers are advised not to do so. Carrying any excess items during the evacuation may considerably reduce the time available for all the passengers to exit the aircraft and it might even lead to the obstruction of available emergency exits.

### Safety recommendations:

In 2020, the Agency received three safety recommendations related to passenger evacuation. Two of them stem from the same event and they concern the possibility to evacuate all passengers within the required time. These two safety recommendations are issued by the UK Safety investigation authority, UK AAIB, and are associated with an event involving an Airbus A320 in March 2019, where the aircraft was evacuated on the runway after an aborted take-off due to an engine failure:

- It is recommended that the European Union Aviation Safety Agency commission research to determine how to prevent passengers from obstructing aircraft evacuations by retrieving carry-on baggage.
- It is recommended that the European Union Aviation Safety Agency consider including a more realistic simulation of passenger behaviour in regard to carry-on baggage in the test criteria and procedures for the emergency demonstration in CS-25.

### EASA Actions:

The Agency’s response to the first recommendation is to include the safety issue in the Safety Risk Portfolio (SRP) for large aeroplanes, as part of the European Union Aviation Safety Agency (EASA) Safety Risk Management (SRM) process (see the Annual Safety Review 2020, published on the EASA web site at: <https://www.easa.europa.eu/newsroom-and-events/news/easa-publishes-annual-safety-review-asr-2020>). The SRP is used to trigger the assessment of safety issues, to target analysis activities over key risk areas and to prioritise safety actions. This includes consideration of the exposure to the hazard and its predicted evolution in the coming years, the expected safety benefit of the mitigation recently implemented or committed, or recommended, and reprioritisation of actions where appropriate.



## Overview of key safety topics processed and actions carried out in 2020

Passengers taking hand luggage and thereby preventing or slowing down the evacuation is one of the identified sub-set of associated risks.

The Emergency Evacuation safety issue is currently under consideration in order to develop recommendations for actions that are in line with the Best Intervention Strategy (BIS) process, with potential inclusion of the mitigating actions in the European Plan for Aviation Safety (EPAS). The recommendation for EASA to commission research to determine how to prevent passengers from obstructing aircraft evacuations by retrieving carry-on baggage will be considered within this process.

For the second recommendation, the Agency has concluded, after an assessment of the overall risk, that the aeroplane evacuation demonstration requirement in Certification Specification (CS) CS 25.803(c) and the test criteria and procedures in Appendix J to CS-25 are not intended to investigate all possible emergency evacuation scenarios that may occur in service. In particular, the emergency demonstration is not intended to take into account the impact of unruly passengers. The emergency demonstration provides a standard method for assessing the evacuation capability of the aeroplane and to demonstrate the effectiveness of crew emergency procedures and training.

The related test conditions and pass/fail criteria (e.g. the 90 seconds limit to the evacuation time) demonstrate that the aircraft design provides an acceptable level of performance in a standard evacuation scenario.

The simulation of passenger behaviour with regard to carry-on baggage would not provide appreciable added value in the evaluation of the aircraft design and would result in an increased risk of injury for certification test participants.

The European Union Aviation Safety Agency (EASA) therefore does not deem it is appropriate to amend CS 25.803(c) and Appendix J to CS-25 as suggested by this safety recommendation.

### Previous EASA Actions:

Since the safety issue has been identified already in the past, the Agency has issued an amendment to the Air Operations Regulations in 2017. ED Decision 2019/019/R, containing provisions for an Acceptable Means of Compliance (AMC) to CAT.OP.MPA.170 – Passenger briefing (AMC1.CAT.OP.MPA.170). This AMC requires that the passenger safety briefing before take-off includes instructions on the importance of leaving hand baggage behind in the event of evacuation.

Furthermore, Guidance Material (GM) was published in ED Decision 2017/008/R/R in 2019, proposing that operators consider including the safety briefing material instructions to leave hand baggage behind when evacuation is announced.

AMC and GM are by nature a means to supplement the provisions of a Regulation by indicating how to comply with its intent (AMC) and by providing additional guidance on how to achieve this (GM).

## 5.3 Single pilot CRM

Crew resource management (CRM) is a concept used nowadays in a multi-pilot operation. It is intended to provide the flight crew with the means to manage the flight safely by applying a set of procedures designed for specific phases of the flight. These procedures are formalised, used in a constant manner and the crews are trained to use them when they communicate with each other. In a single-pilot operation, the safety net provided by another pilot verifying the intended actions and standardised procedures is absent. The pilot needs to manage the flight him or herself in a safe manner by using the available equipment and cockpit automation.



## Overview of key safety topics processed and actions carried out in 2020

### Safety recommendation:

Following an investigation into an accident involving a Diamond DA40 aircraft in Germany in March 2018, the German accident investigation authority, BFU, issued the following safety recommendation to the Agency:

- The European Aviation Safety Agency (EASA) should include Single Pilot Operation CRM and the concept of Safety Gates within Safety Promotion for General Aviation.

### EASA Actions:

The Agency had already decided to address the safety issue within the framework of safety promotion and provided the following interim reply to the BFU:

“The European Union Aviation Safety Agency’s (EASA) Safety Promotion Plan for General Aviation (GA) has already identified the need to focus on pilot decision-making in single pilot operations. A new Safety Promotion activity is being developed for launch in Q3 2021 to cover the key decision-making factors for GA pilots from take-off to landing. This intends to highlight the key decision-making points, and particular attention will also be paid to landing preparation, approach and touch-down. This material is planned to consist of videos, blog articles, guides and also a ‘serious game’ to use the scientifically-proven approach of game-based learning to assist pilots in learning and improving their CRM and decision-making skills in a safe environment at no cost in order to help achieve maximum reach in the pilot community.”

## 5.4 Pilot training

In 2020, the Agency received four safety recommendations concerning pilot training in general aviation (GA) and Non-Commercial-other than complex aircraft (NCO) operations. While the Agency possesses various means to address the safety concerns, it has committed to the principles of the General Aviation Road Map which aims to bring positive change to the general aviation community by simplifying existing regulations where possible, introducing flexible measures where necessary, and developing safety promotion to address safety risks. Thus the Competent Authorities of the Member States and all the different actors in the general aviation field will have their own responsibilities regarding safety of the domain including identification of the risks in their specific operating environment and oversight of the efficiency of the application of the rules and the risk management. This does not however rule out the option of regulatory changes, as can be seen from the Agency’s actions as a response to one of the safety recommendations.

### Safety recommendations:

A Tecnam P2002 aircraft was involved in a fatal accident in Italy in February 2020. It was conducting a training flight with a student pilot and an instructor on board. The purpose of the flight was to train stall and prevention of a spin.

The final report contained two safety recommendations addressed to the Agency:

- EASA to take appropriate initiatives to define a clear, full and unambiguous technical definition of “spin”, “incipient spin” and “developed spin”, similarly to what has been done by the FAA, in order to allow the flight training schools to limit operations of aircraft to missions and manoeuvres for which they are certified, preventing confusion; and
- To take appropriate initiatives to add the note “(if suitable aircraft available)” within the EASA Part-FCL regulation, to all the missions related to “stall and recovery at the incipient spin stage



## Overview of key safety topics processed and actions carried out in 2020

(stall with excessive wing drop, about 45°)", as already present for the other missions related to spin training, in order to allow the flight training schools to limit operations of aircraft to missions and manoeuvres for which they are certified, preventing confusion.

### EASA Actions:

Regarding the first safety recommendation, the Agency has stated that while there already are existing requirements for the use of suitable aircraft and definitions for the different stages of a spin, the Agency has decided to better clarify the purpose of exercise 11 under rulemaking task RMT.0678 entitled "Simpler, lighter and better Part-FCL requirements for general aviation", Subtask 2, for which the Notice of Proposed Amendment (NPA) is being prepared.

Regarding the second safety recommendation, the Agency did not see a need to adopt further regulatory material but instead committed to engage in safety promotion activities by informing the appropriate industry collaborative group, in which the Competent Authorities of the Member States are represented, of their responsibilities for verifying and accepting aircraft proposed for use for training courses prior to course approval.

### Safety recommendation:

In July 2019, a GA-8-TC aircraft was involved in a fatal accident in Sweden. It was carrying out parachute jumping operations when it experienced a loss of control and crashed due to an excessive change in the aircraft's centre of gravity as the jumpers were positioning themselves inside the aircraft.

The Swedish investigation Authority issued one safety recommendation concerning pilot training to the Agency:

- EASA to consider introducing a formal training programme for pilots in parachute operations.

### EASA Actions:

In its reply, the Agency stated that according to the principles mentioned in the first paragraph, it does not see a need for a regulatory changes and it highlighted the roles and responsibilities of all the parties involved. Among the options for safety promotion, the Agency has already conducted a workshop in February 2021, dedicated to promoting safe parachute operations. The workshop was well-attended by a broad audience including the parachuting community and relevant authorities, to whom it was possible to convey important safety messages to share best practices.

### Safety recommendation:

A Cessna Citation aircraft was involved in a serious incident in UK on 13 April 2019. The aircraft experienced an uncommanded roll after take-off due to a malfunction in a system that was installed to provide supplement to aircraft control by deflecting symmetrically and automatically the control surfaces to alleviate gust loads. The pilot was not aware of the associated aircraft flight manual supplement and his instinctive response to the aircraft upset was different to that assumed by certification flight testing and the inoperative emergency procedure for the system.

The UK AAIB issued the following safety recommendation:

"It is recommended that the European Union Aviation Safety Agency determine the additional training it requires pilots to undertake in order to operate aircraft fitted with supplementary systems that influence flight path, where training on the original aircraft would not adequately prepare pilots for operating the modified aircraft in normal, abnormal or emergency situations."



## Overview of key safety topics processed and actions carried out in 2020

### EASA Actions:

The Agency carried out an extensive assessment of the existing requirements and concluded that they provide a high level of confidence that, where training elements are necessary to support a specific aircraft design, these are properly identified, approved as part of the TC, change to a TC or STC, and delivered to pilots, reinforcing the principle of their receiving appropriate training to ensure safe operation of the aircraft and its modifications.

## 5.5 CO detector

Carbon monoxide (CO) poisoning in piston-engine aircraft has been a safety issue throughout the years. It usually results from the engine exhaust system leaking CO to the inside of the aircraft and when remaining undetected, will eventually lead to CO poisoning of the occupants of the aircraft and an incapacitation of the pilot. When an accident happens and CO poisoning is suspected, this will be confirmed in the post-mortem examination.

There are different types of CO detectors available for either permanent or semi-permanent installation and while they are not required by existing regulations, their use has been promoted by the Agency and in 2015/2019, a certification standard change CS-SC107a has been created within (CS-STAN) Issue 3, to facilitate and encourage the installation of such devices.

### Safety recommendation:

In 2020 the UK Accident investigation authority, UK AAIB completed an investigation into an accident involving a Piper 46 aircraft in which the pilot and the passenger lost their lives. The report states that one causal factor was the pilot's impaired ability to control the aircraft due to the effects of CO poisoning.

The final report contained one safety recommendation to the Agency:

- It is recommended that the European Union Aviation Safety Agency require piston engine aircraft which may have a risk of carbon monoxide poisoning to have a CO detector with an active warning to alert pilots to the presence of elevated levels of carbon monoxide.

### EASA Actions:

The safety promotion activities conducted by the Agency so far include two Safety Information Bulletins (SIB) in 2010 and 2020, issuance of a CS as mentioned above, and production of safety promotion material addressed to general aviation community.

Following the safety recommendation, the Agency has provided the following reply:

“Prompted by the preliminary results of the Air Accidents Investigation Branch (AAIB) investigation, the European Union Aviation Safety Agency (EASA) has published the Safety Information Bulletin (SIB) No. 2020-01 ‘Carbon Monoxide (CO) Risk in Small Aeroplanes and Helicopters’ on 27 January 2020.

The aim of the SIB is to inform Type Certificate and Supplemental Type Certificate holders, maintenance personnel, owners and operators of small aeroplanes (CS-LSA, CS-VLA and CS-23) and light helicopters (CS-27) with internal combustion engines or combustion heaters of the dangers of exposure to CO and to provide recommendations as regards physiological reactions to CO exposure as well as its prevention and detection.

The SIB also refers to several related publications from the AAIB, the UK Civil Aviation Authority (CAA) and EASA.



## Overview of key safety topics processed and actions carried out in 2020

In addition, the European Plan for Aviation Safety (EPAS 2020-2024) includes a regular update of the air operational rules (rulemaking task RMT.0392) to ensure efficiency and proportionality of the regulatory framework of Commission Regulation (EU) No 965/2012 laying down technical requirements and administrative procedures related to air operations. The associated Terms of Reference (ToR) were published on the EASA website on 7 October 2020, and, as stated on page 2 of the ToR, this safety recommendation will be considered within the framework of this RMT.

The EPAS 2020-2024 indicates a planning milestone of 2021 Q1 for the associated Notice of Proposed Amendment (NPA). It should be noted that, depending on the complexity of the topics, several NPAs may be published in steps towards that target date.”

### 5.6 Erroneous take-off performance parameters

Following a few serious incidents involving transport-category aeroplanes during the previous years, the use of erroneous performance parameters at take-off appears to be a recurring safety issue. Discussion has taken place on the development and implementation of technical solutions, such as Take-off Performance Monitoring Systems and computer integrated functions to detect erroneous data input. The EASA Safety Risk Portfolio for Commercial Air Transport Aeroplanes identifies and addresses this topic as part of a wider safety issue “Entry of aircraft performance data”.

#### Safety recommendation:

A Boeing B777 was involved in a serious incident in Amsterdam on 21 April 2017. An incorrect aircraft weight was inserted in the Electronic Flight Bag (EFB) that was used to calculate the aircraft’s required performance on take-off. The use of an incorrect take-off weight resulted in a too early rotation and a subsequent tail strike on take-off.

The Investigation Authority of the Netherlands (Dutch Safety Board, DSB) issued the following safety recommendation to the Agency:

“(EASA) to take the initiative in the development of specifications and, subsequently, develop requirements for an independent onboard system that detects gross input errors in the process of takeoff performance calculations and/or alerts the flight crew during takeoff of abnormal low accelerations for the actual aeroplane configuration as well as insufficient runway length available in case of intersection takeoffs. Take this initiative in close consult with the aviation industry, including manufacturers of commercial jetliners amongst which in any case The Boeing Company.”

#### EASA Actions:

The Agency had already published a safety information bulletin (SIB) in 2016 titled “Use of Erroneous Parameters at Take-off” and the further short-, medium- and long-term actions are envisaged as stated in the Agency’s reply to the safety recommendation:

“The safety issue ‘Entry of aircraft performance data’ was included for the first time in the European Union Aviation Safety Agency’s (EASA’s) safety risk portfolio for commercial air transport fixed-wing (SRP CAT-FW) in the Annual Safety Review 2016.



## Overview of key safety topics processed and actions carried out in 2020

To reduce the risks, EASA issued a Safety Information Bulletin (SIB) 'Use of Erroneous Parameters at Take-off' to alert operators and flight crew to the safety issue and to recommend the implementation of operational mitigation measures (published in February 2016: <https://ad.easa.europa.eu/ad/2016-02>).

The effectiveness of the SIB 2016-02 was evaluated after Advisory Bodies - AB's consultation on 25 Oct 2019 (EASA Advisory Bodies composed of competent authorities and industry), in the frame of the BIS (Best Intervention Strategy) on 'Erroneous take-off parameters'.

The European Plan for Aviation Safety (EPAS) 2020 - 2024 - Appendix D - provides information on the BIS on 'Erroneous take-off Parameters' planning, according to new priorities defined by EASA and the ABs.

In line with EPAS, the Agency developed a strategic approach to mitigate the residual risks associated with this safety issue by encompassing the following short, medium and long-term initiatives:

### • Short term actions

The Agency has committed to preparing dedicated Safety Promotion material to reinforce the messages from the SIB. As an example, a video was recently published on the EASA Website (<https://www.easa.europa.eu/erroneous-take-performance-data>), where the lessons learned from previous safety investigations led by European investigation authorities are used to raise awareness on the risks associated with this safety issue; the video was further promoted in July 2020 with a blog article on the new EASA Together4Safety Air Ops Community Site (<https://www.easa.europa.eu/community/topics/erroneous-data-parameters>). These were also shared with EASA's collaborative partners, and a number of airlines have in turn shared the material with their flight crews.

### • Medium term initiatives

The Agency will review the SIB 2016-02 in the light of the evaluation carried out, with particular emphasis on a more consistent use of FDM, driving the attention of the operators towards the gathering and analysis of a dedicated list of precursors.

### • Long term plans

The Agency intends to re-evaluate the feasibility of developing requirements for onboard systems aimed at detecting gross input errors, given the evolving maturity of certain technical solutions.

To do that, an updated version of the BIS is planned to undergo a new AB's consultation in Q1-2021.'



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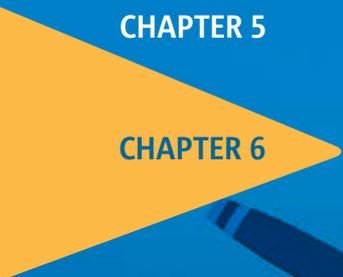
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# Conclusions





# Conclusions

In 2020, the Agency received a total of 32 safety recommendations that originated from 26 occurrences (15 accidents, 11 serious incidents and 0 incidents). These were sent by the Safety Investigation Authorities of 17 different States.

- 26 safety recommendations originated from EASA Member States and 6 from non-EASA Member States;
- 23 were classified as being of Union-wide Relevance (SRUR) (i.e. of EASA Member State interest only);
- 20 were classified as safety recommendations of Global Concern (SRGC) (i.e. of international interest); and
- 49% were related to procedures or regulations, while 40% were related to aircraft or aviation-related equipment/facilities.

The number of safety recommendations that the Agency received in 2020 is lower than the previous year, and in line with the abrupt fall observed since 2017. The number of safety recommendations addressed to EASA peaked between 2012 and 2016.

In 2020 the Agency provided 81 replies in response to 74 safety recommendations:

- 38 of them were final (closing safety recommendations) with 33% of them being in agreement, and 46% with partial agreement;
- The remaining 43 replies provided information updating the Safety Investigation Authorities on the progress of the actions decided upon by the Agency for which the relevant activities have not yet been completed;
- 94% of the final responses provided by the Agency and assessed by the originator of the recommendation were classified as “adequate” or “partially adequate”.

The number of replies provided in 2020 is lower than the number of replies provided in 2019. Nonetheless, the 38 closing replies sent in 2020 meant a reduction in the number of safety recommendations currently open for the Agency. Furthermore, the actions taken by the Agency in response to the safety recommendations encompassed several key safety topics that are currently part of the European Plan for Aviation Safety (EPAS) and which are included in the European safety risk management process.



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