EASA
European Union Aviation Safety Agency

ANNUAL SAFETY RECOMMENDATIONS REVIEW 2025

Safety Management, Sustainability &
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Safety Intelligence & Performance Department

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Disclaimer:

The Annual Safety Recommendations Review is published by the European Union Aviation Safety Agency (EASA). This 18th edition provides an overview of the safety recommendations addressed to EASA in 2024, as well as the replies that EASA issued in the same timeframe.

This annual review highlights the actions EASA has undertaken in response to safety recommendations and is published in the context of the openness, transparency and accountability that characterises European Public Administration.

In line with EASA's commitment to upholding and enhancing aviation safety, this review provides relevant information related to safety concerns identified, for the benefit of EASA's stakeholders including the European public.

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List of Abbreviations

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AB	Advisory Bodies
AC	Advisory Circular
AD	Airworthiness Directive
AFCS	Automatic Flight Control System
AFM	Aircraft Flight Manual
AH	Airbus Helicopters
ALS	Airworthiness Limitations Section
AMC	Acceptable Means of Compliance
AMM	Aircraft Maintenance Manual
AMP	Aircraft Maintenance Programme
ANAC	Agência Nacional de Aviação Civil
AOC	Air Operator Certificate
ATC	Air Traffic Control
ATPL	Airline Transport Pilot Licence
BEA	Bureau d'Enquêtes et d'Analyses pour la sécurité de l'aviation civile
BFU	Bundesstelle für Flugunfalluntersuchung
BIS	Best Intervention Strategy
BPS	Ballistic Parachute System
CAAC	Civil Aviation Administration of China
CAG	Collaborative Analysis Groups
CARI	Continued Airworthiness Review Item
CAT	Commercial Air Transport
CEN	European Committee for Standardisation
CFD	Computational Fluid Dynamics
CFRS	Crash-Resistant Fuel System
CIVP	Continued Integrity Verification Programme
CM	Certification Memorandum
CMA	Common Mode Analysis
CPL	Commercial Pilot Licence
CPR	Changed Product Rule
CRI	Certification Review Item
CRM	Crew Resource Management
CS	Certification Specification

List of Abbreviations

CVR	Cockpit Voice Recorder
DAH	Design Approval Holder
EASA	European Union Aviation Safety Agency
EC	European Community
ECU	Engine Control Unit
ED	Executive Director
ELT	Emergency Locator Transmitter
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
EWIS	Electrical Wiring Interconnection System
FAA	Federal Aviation Administration
FADEC	Full Authority Digital Engine Control
FCMIR	Flight Crew-Machine Interface Recordings
FDR	Flight Data Recorder
FEM	Flight Examiner Manual
FHA	Functional Hazard Assessment
FMEA	Failure Modes and Effects Analysis
FSTD	Flight Simulation Training Devices
GA	General Aviation
GH	Ground Handling
GHSP	Ground Handling Service Providers
GM	Guidance Material
HPA	High-Performance Aeroplanes
HTAWS	Terrain Avoidance and Warning System
IAMFTF	International Aircraft Materials Fire Test Forum
ICA	Instructions for Continued Airworthiness
ICAO	International Civil Aviation Organization
IDE	Instruments, Data and Equipment
ILS	Instrument Landing System
IM	Interpretative Material
IR	Instrument Rating

List of Abbreviations

JRC	European Joint Research Center
LTE	Loss of tail rotor effectiveness
MASPS	Minimum Aviation System Performance Standard
MBSA	Model-Based Safety Analysis
MCTOM	Maximum Certificated Take-off Mass
MGB	Main Gear Box
MOPS	Minimum Operational Performance Specifications
MOPSC	Maximum Operational Passenger Seating Configuration
MPO	Multi-Pilot Operations
MRBR	Maintenance Review Board Report
MS	Member States
MTOM	Maximum Take-off Mass
NAA	National Aviation Authority
NCA	National Competent Authorities
NCC	Non-Commercial operations with Complex motor-powered aircraft
NCO	Non-Commercial Operations
NDT	Non-Destructive Test
NLR	Nederlands Lucht- en Ruimtevaartcentrum
NMSB	Non-Modification Service Bulletin
NPA	Noticed of Proposed Amendment
NPRM	Notice of Proposed Rulemaking
OBWBS	On Board Weight and Balance Systems
OHA	Oxygen Hazards Analysis
PDA	Premature Descent Alerts
PMC	Program Management Committee
PSE	Principle Structure Elements
PT	Power Turbines
QMS	Quality Management System
RCF	Rolling Contact Fatigue
RMT	Rulemaking Task
SA	Single Aisle
SAIB	Special Airworthiness Information Bulletin
SAR	Search And Rescue Centers

List of Abbreviations

SB	Service Bulletin
SC	Special Condition
SEI	Sustained Engine Imbalance
SFCL	Sailplane Flight Crew Licensing
SHE	Safran Helicopter Engines
SIA	Safety Investigation Authority
SIB	Safety Information Bulletin
SMS	Safety Management System
SNPRM	Supplemental Notice of Proposed Rulemaking
SPHP	Single-Engine Turboprop High Performance
SPL	Sailplane Pilot Licence
SPN	Safety Promotion Network
SPT	Safety Promotion Task
SR	Safety Recommendation
SRGC	Safety Recommendation of Global Concern
SRM	Safety Risk Management
SRM	Single Resource Management
SRUR	Safety Recommendation of Union-wide Relevance
SSA	System Safety Analysis
SSP	State Safety Programme
STC	Supplemental Type Certificate
SUB	Sicherheitsuntersuchungsstelle des Bundes
TAWS	Terrain Avoidance and Warning System
TCCA	Transport Canada Civil Aviation
TCH	Type Certificate Holder
TEM	Threat and Error Management
TIP	Technical Implementation Procedures
TOPMS	Take-Off Performance Monitoring System
UAS	Unmanned Aircraft Systems
UAV	Unmanned Aerial Vehicles
UPRT	Upset Prevention and Recovery Training
VAST	Vertical Aviation Safety Team

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Chapter 1

Executive summary

Executive Summary

Welcome to the 2025 edition of the Annual Safety Recommendation Review. The analysis presented in this review provides an overview of the activities carried out in 2024 by the European Union Aviation Safety Agency (EASA) in response to safety recommendations, as well as a comparison with historical data. This review also highlights a range of safety issues and safety improvement actions that will be of interest to the European aviation community and the wider public.

EASA has a key role in addressing safety concerns which emerge during safety investigations, and the processing of safety recommendations in a systematic manner constitutes one of its core responsibilities. This has been reflected in the establishment of a proven process for managing the safety recommendations received and tracking them through to closure. Due to its central position in the European aviation safety system, EASA can take actions with respect to systemic problems and risk management.

Overview of Safety Recommendations in 2024

A total of **40 safety recommendations** were addressed to EASA during 2024, stemming from **26 separate occurrences**, including **18 accidents** and **8 serious incidents**. The majority of these originated from EU-based SIAs, maintaining a consistent trend observed over recent years. Notably, no safety recommendations concerning Unmanned Aerial Vehicles (UAVs) were received in 2024.

These recommendations predominantly focused on **procedures and regulations (52.5%)**, followed by those related to **aircraft, equipment, and facilities (32.5%)**, and **personnel-related issues (15%)**. This distribution highlights the continuing relevance of regulatory frameworks and operational practices as core areas for safety improvement.

EASA's Involvement in Investigations

Beyond its role as a recipient of safety recommendations, EASA also provided direct technical expertise in support of several high-profile investigations worldwide, including major occurrences in Japan, Serbia, Brazil, and Lithuania. EASA's participation in these investigations—often through the on-site deployment of Technical Advisors—demonstrates its active contribution to international aviation safety and its support for collaborative investigation efforts within and beyond Europe.

Formal Replies and Continuous Engagement

In 2024, EASA issued **97 formal replies** in response to **92 safety recommendations**. Of these, **55 were final replies**, 80% of which resulted in the closure of the safety recommendation through either direct implementation or alternative corrective actions. The remaining **42 replies** were interim updates, providing transparency on ongoing safety actions and progress.

Importantly, the alignment of EASA's responses with SIAs' expectations improved measurably compared to 2023. SIAs assessed **25 of EASA's final replies** as "adequate" or "partially adequate," with only **10 replies** rated as "not adequate." EASA welcomed a **significant increase in SIA assessments received,** compared with previous years, which it views as vital for reinforcing the feedback loop and enhancing safety dialogue. However, a large proportion of replies (36%) were still pending assessment at the end of the year, reflecting the time required for meaningful evaluation.

Key Areas of Safety Focus

EASA's responses to safety recommendations in 2024 reflect a multi-faceted safety strategy aligned with the European Plan for Aviation Safety (EPAS). Five key areas of focus emerged from its replies:

- **Regulatory Updates & Certification Enhancements:** EASA pursued updates to Certification Specifications and Acceptable Means of Compliance, addressing issues such as rotorcraft component fatigue and pressurised oxygen systems.
- **Operational Safety & Training:** EASA supported enhanced training requirements and safety promotion initiatives, including targeted campaigns on topics like unanticipated yaw in rotorcraft and rejected winch launches for glider pilots.
- **Maintenance & Continued Airworthiness:** In response to maintenance-related failures, EASA issued safety information bulletins and proposed regulatory changes to better address component degradation and critical maintenance tasks.
- **Fire Safety & Risk Mitigation:** Several actions were taken to review and revise cockpit fire response procedures and address hazards linked to oxygen-fed fires, including regulatory review and Safety Risk Management process proposals.
- **Ground Handling & Infrastructure:** EASA contributed to the development of formal de-icing regulations under the wider framework of ground handling oversight, as outlined in Opinion 01/2024.

Commitment to Continuous Improvement

Throughout 2024, EASA demonstrated its unwavering commitment to aviation safety through responsive, evidence-based action. It continued to refine its internal procedures, strengthened collaboration with SIAs, and aligned its actions with European-wide safety risk management processes. The integration of safety recommendations into its broader safety strategy ensures that each recommendation not only receives due attention but contributes to meaningful safety outcomes.

The year's efforts highlight EASA's role as a proactive, transparent, and safety-focused authority, dedicated to protecting the travelling public and supporting the ongoing evolution of Europe's aviation safety landscape.

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Chapter 2

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[1] 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 of the Chicago Convention on International Civil Aviation. It sets outs an obligation for each Member State of the European Union to establish an independent, permanent national civil aviation Safety Investigation Authority (hereinafter SIA), which shall investigate accidents and serious incidents 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, also known as 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".

EASA assigns a high priority to the follow-up of safety recommendations and has established effective procedures designed to ensure that:

- EASA provides a first reply to each safety recommendation within 90 calendar days;
- Subsequent replies are provided as necessary to update the SIA of progress;
- Safety recommendations are subject to a continuous internal monitoring process until all agreed corrective actions are closed;
- EASA reviews SIA assessments of its replies.

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

EASA 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 work performed by EASA in response to safety recommendations for which it is the addressee.

The first edition of this Review was issued in 2007. This 18th edition reviews the work undertaken in 2024 and presents:

- General statistical data on the safety recommendations that SIAs addressed to EASA in 2024;
- Information on the replies EASA issued in 2024 in response to safety recommendations;
- The main safety issues that have been addressed through the actions taken.

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

A process designed to identify, assess and mitigate safety risks at a European level was established by EASA in 2016. The European Safety Risk Management process involves the data-driven identification of safety issues, risk assessment and decision-making on the best course of action to mitigate these risks. To facilitate this process, EASA, the Member States (MS) and industry work together in Collaborative Analysis Groups (CAG) and Advisory Bodies (ABs).

A separate EASA publication, the Annual Safety Review, highlights the main and most visible elements of 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 safety risk portfolios for each domain. This risk management process is coordinated by EASA, 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 potential deficiencies in the aviation system and propose solutions to mitigate the associated safety risks.

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Chapter 3

Safety Recommendations addressed to EASA in 2024

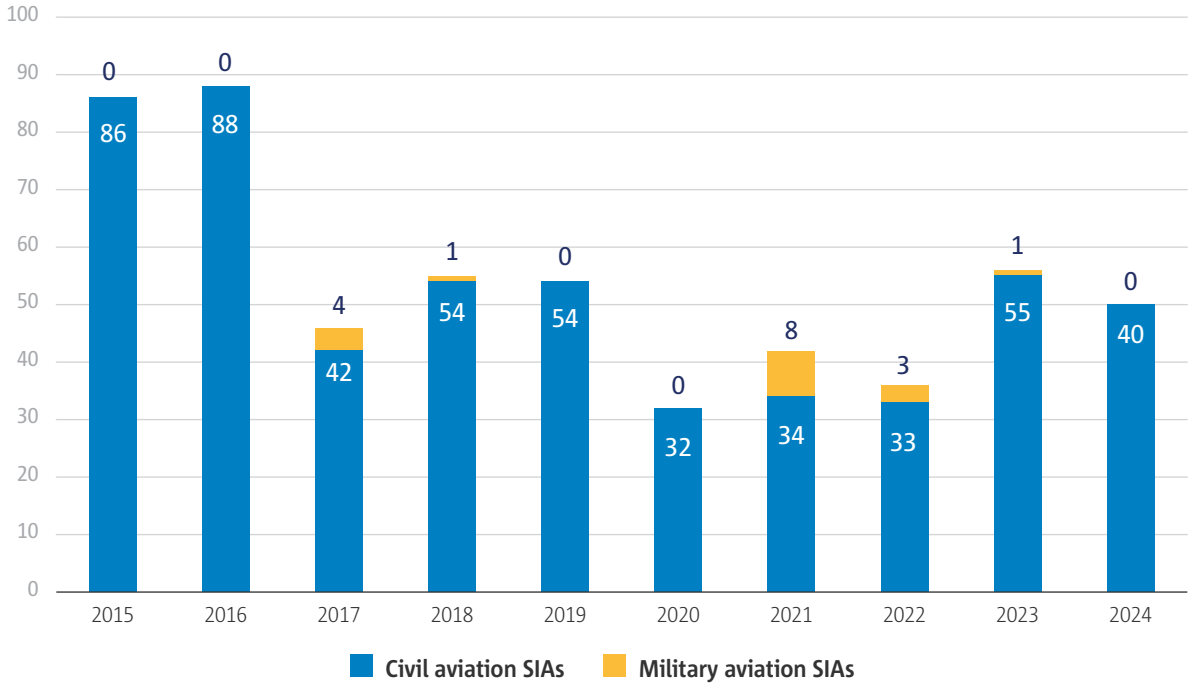
Safety Recommendations addressed to EASA in 2024

3.1 Overview of Safety Recommendations received in 2024

In 2024, a total of 40 safety recommendations were addressed to EASA.

Figure 1 shows the total number of safety recommendations addressed to EASA over the last decade, by civil aviation SIAs and military aviation SIAs. The follow-up of safety recommendations and the role of EASA is mandated by Regulation (EU) No 996/2010. The issuance of safety recommendations addressed to EASA started to develop shortly before this regulation entered into force in 2010. Until 2016, the number of safety recommendations addressed to EASA remained relatively high, in the order of 80 – 100 per year. 2017 proved to be a turning point, when the number fell by around half. In subsequent years, the number of safety recommendations addressed to EASA has remained relatively stable, fluctuating in the range 30 – 60 per year.

Figure 1: SRs addressed to EASA per year, by Civil / Military SIAs

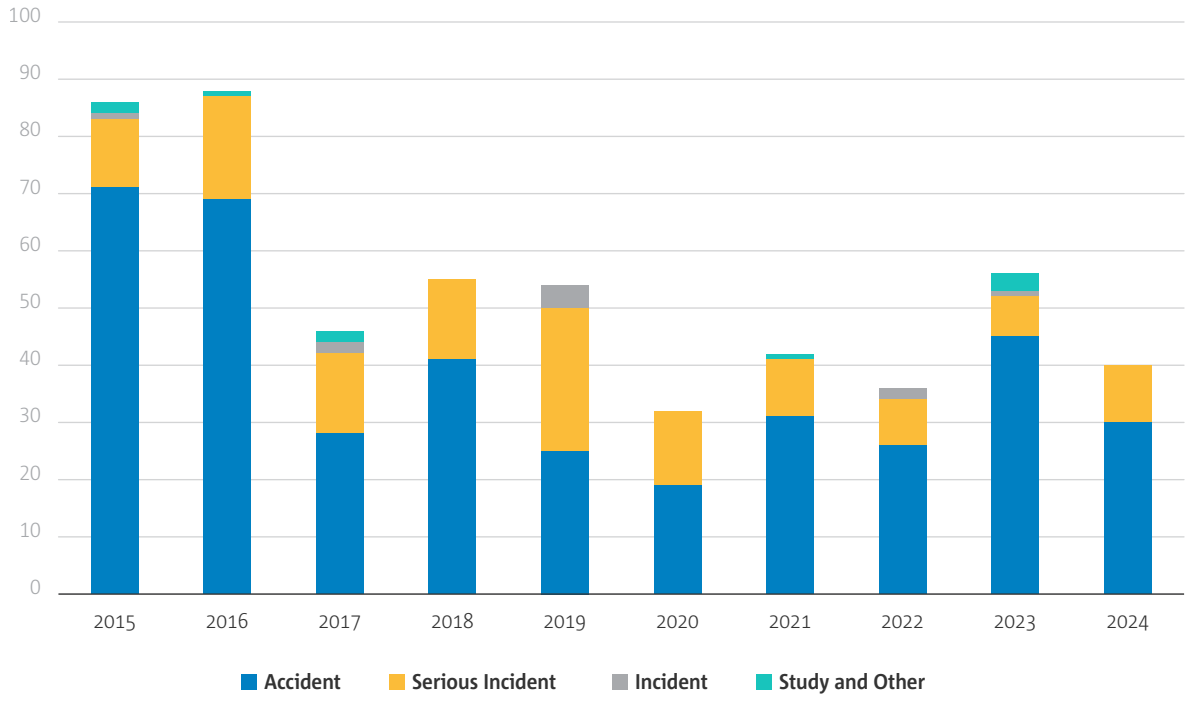


The overall reduction in the number of safety recommendations addressed to EASA over the last 15 years can be attributed in part to the proactive identification and mitigation of safety concerns through safety actions at an earlier stage, before it becomes necessary to raise them during an investigation, as well as EASA's active support of investigations during the report drafting phase, leading to draft safety recommendations being discussed in advance and where possible rendered more effective.

In 2024, the safety recommendations addressed to EASA related to 26 occurrences, comprising 18 accidents (giving rise to 30 safety recommendations) and 8 serious incidents (giving rise to 10 safety recommendations). No safety recommendations were issued as an outcome of a study; nor as a result of investigations into incidents.

Figure 2 shows the total number of safety recommendations addressed to EASA over the past decade, by occurrence class.

Figure 2: SRs addressed to EASA per year, by Occurrence Class



The 40 safety recommendations addressed to EASA in 2024 stemmed from 26 occurrences involving the aircraft categories and operation types detailed in the table below.

Figure 3: SRs addressed to EASA in 2024 by Type of Operation and Aircraft Category

Type of Operation	Aircraft Category				
	Fixed Wing			Rotorcraft	Grand Total
	Large Aeroplane	Small Aeroplane	Glider	Small Helicopter	
Commercial Air Transport	**9**	**0**	**0**	**0**	**9**
Airline	9				**9**
Non-Commercial Operations	**4**	**16**	**7**	**0**	**27**
Business		1			**1**
Flight Training/Instructional		2			**2**
Pleasure	4	10	7		**21**
Test Flight		2			**2**
Relocation		1			**1**
Specialised Operations (Aerial Work)	**0**	**1**	**0**	**3**	**4**
Aerial survey		1	0		**1**
Construction sling/load				3	**3**
State Operations	**0**	**0**	**0**	**0**	**0**
Grand Total	**13**	**17**	**7**	**3**	**40**

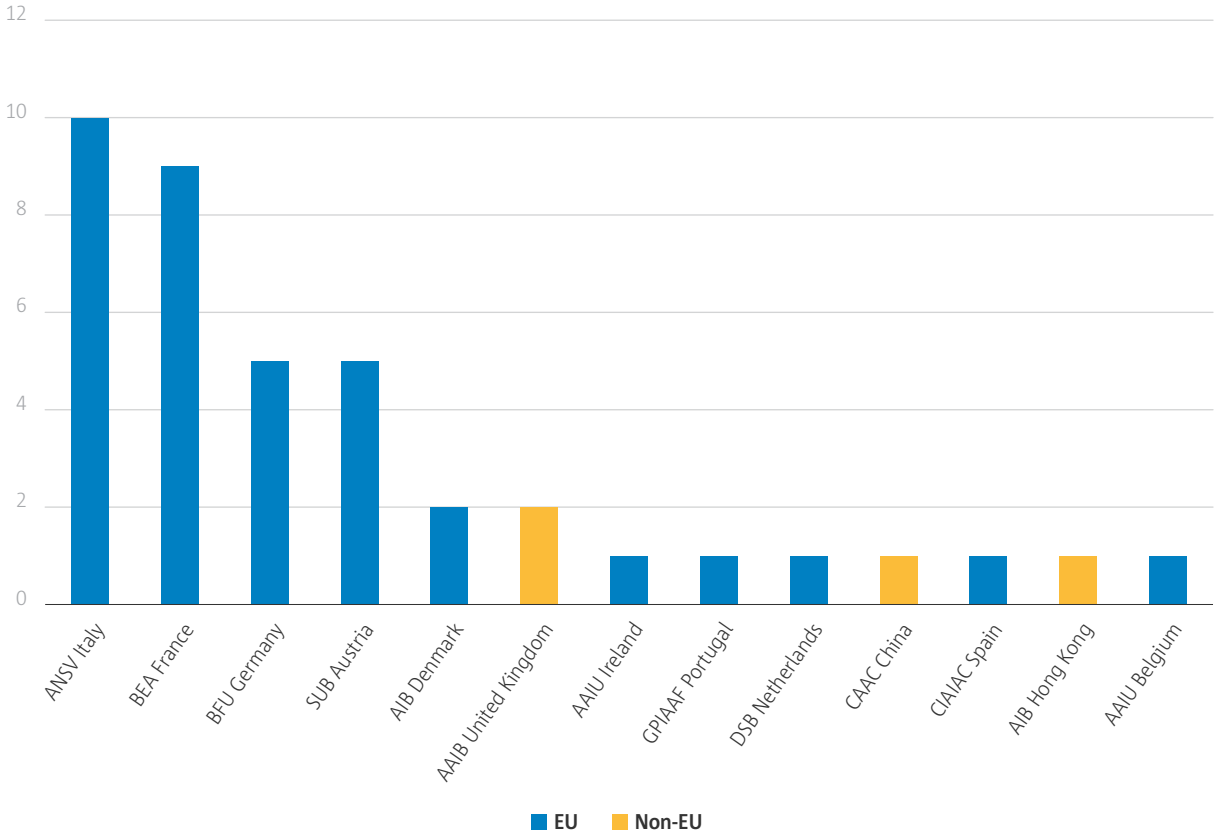
In 2024, no safety recommendations pertaining to UAVs were addressed to EASA.

3.2 Origin of Safety Recommendations received in 2024

In 2024, as in previous years, a significant majority of safety recommendations addressed to EASA were issued by EU-based SIAs. Specifically, 10 SIAs within the EU and 3 SIAs outside the EU addressed a total of 40 safety recommendations to EASA. The total number of safety recommendations addressed to EASA is in line with the trend seen in recent years.

Figure 4 shows which SIAs addressed safety recommendations to EASA in 2024.

Figure 4: Origin of SRs addressed to EASA in 2024, by SIA



The details of these Safety Recommendations can be found in Appendix A.

3.3 Involvement in accident and serious incident investigations in 2024

EASA provided technical expertise in support of a number of investigations into notable occurrences in 2024. Selected occurrences are listed below:

Accident involving an Airbus A350, registration JA13XJ on 02/01/2024, in Japan

- An Airbus A350, collided with Japanese Coast Guard Dash 8-300, JA722A, resulting in five fatalities on the Dash-8-300 and the destruction of both aircraft. EASA appointed a Technical Advisor to the BEA Accredited Representative and travelled on site together with the EU Go-Team.

Accident involving an EMB-195, registration OY-GDC on 18/02/2024, in Serbia

- A scheduled flight with 106 pax on board (45 EU citizens) and 5 crew members. There were no injuries. Runway overrun during take-off, ground ILS antenna collision. Several warnings were triggered in the cockpit due to aircraft damage, including a fuel leak from the LH hand wing. The EASA Technical Advisor attended the FDR/CVR read-out carried out in Paris (BEA).

Accident involving an ATR 72-500, registration PS-VPB on 09/08/2024, in Brazil

- Scheduled flight from Cascavel to Guarulhos with 58 pax and 4 crew. Loss of control before starting descent; all on-board fatally injured. EASA Technical Advisor travelled to the accident site with the French Go-Team (BEA and ATR).

Accident involving a Boeing B737 (freight flight), registration EC-MFE on 25/11/2024, in Lithuania

- Communication with ATC was routine until the final approach, when the crew failed to contact the tower after handoff. The aircraft crashed 0.87 nautical miles from the runway at 05:28 local time. 1 fatality on board. EASA appointed a Technical Advisor to the Investigator-in-Charge and travelled to the BFU for the FDR read out.

Accident involving an Airbus A220, registration HB-JCD, on 23/12/2024, in Austria

- An Airbus A220-300 suffered an engine failure and a smoke event during cruise flight. After an emergency diversion to Graz Airport, Austria, two cabin crew members were rushed to the hospital; one of them died on December 30. EASA appointed a Technical Advisor who was involved directly in different examinations.

Accident involving a Boeing 737, registration HL-8088, on 29/12/2024, in South Korea

- Collision with the ILS localizer antenna array that was installed on a concrete platform during an emergency landing after bird ingestion in both engines. Of the 181 occupants, two flight attendants seated in the tail section survived the accident. EASA appointed a Technical Advisor and is involved in the engine examination phase.

In addition, multiple investigations launched in previous years were still ongoing or completed in 2024 and were actively supported by EASA either through the monitoring of progress and / or provision of technical expertise.

Safety actions that were taken during or immediately following an investigation do not appear in this publication unless the SIA issued an associated, formal safety recommendation to EASA in 2024.

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Chapter 4

Safety Recommendation replies issued in 2024

Safety Recommendations replies issued in 2024

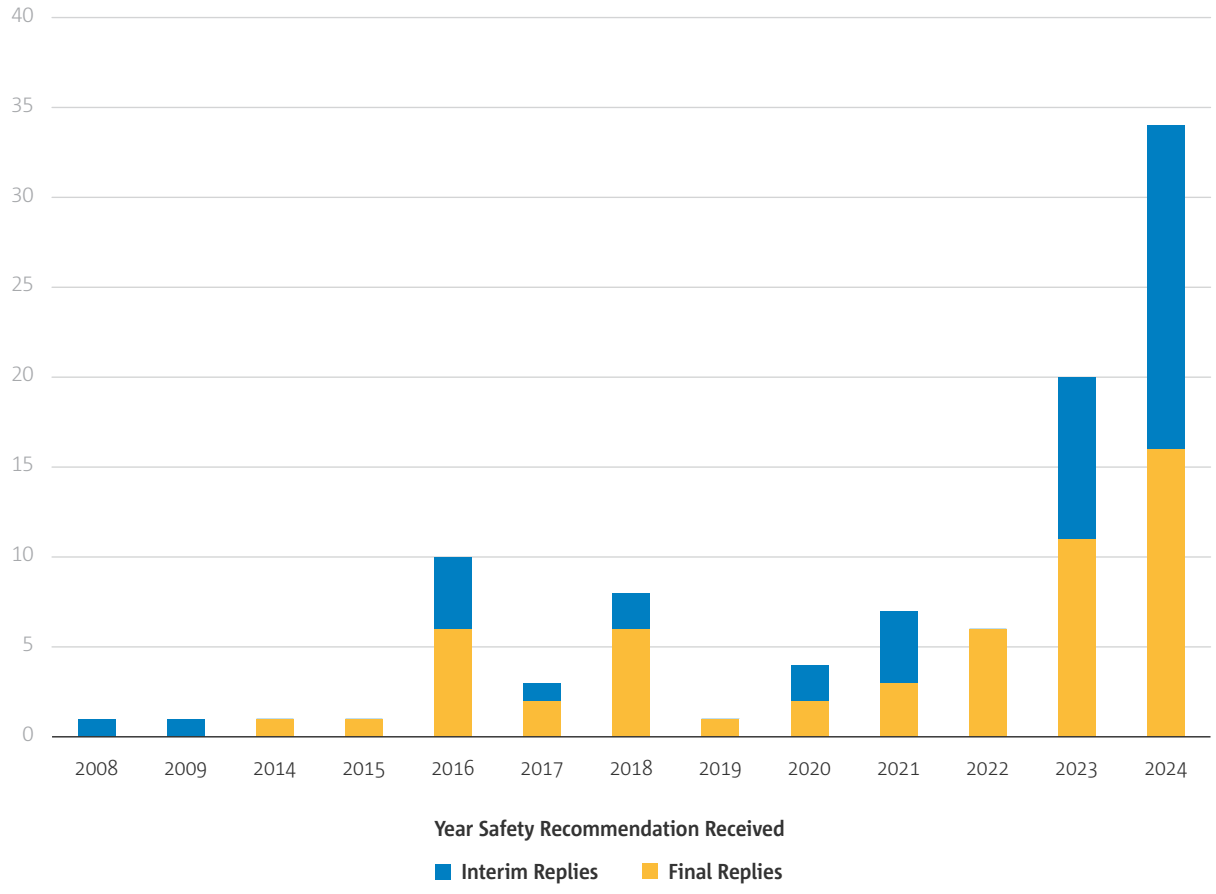
4.1 Overview of Safety Recommendation replies issued in 2024

In 2024, EASA issued 97 formal replies to 92 safety recommendations. As updates are provided, multiple replies may be issued for the same recommendation within a calendar year. Most of the replies issued in 2024 were EASA's responses to safety recommendations first received that year.

However, replies to recommendations from earlier years were also issued, as illustrated in figure 5 below, for those cases where follow-up actions and conclusions were reached, or which required updates and/or closure of the safety recommendation.

Of the 97 replies provided in 2024, 96 were in response to safety recommendations issued by civil aviation SIAs and 1 was in response to a safety recommendation issued by a military aviation SIA.

Figure 5: EASA replies issued in 2024, by year of receipt of SR



4.2 Assessment of Safety Recommendation replies in 2024

Each final reply EASA issues closing a safety recommendation, as well as each SIA assessment of an EASA reply, is classified according to the categories[2] set out in Annex C.

Of the 97 replies issued by EASA in 2024, 55 were final replies which closed safety recommendations. These replies were classified as follows:

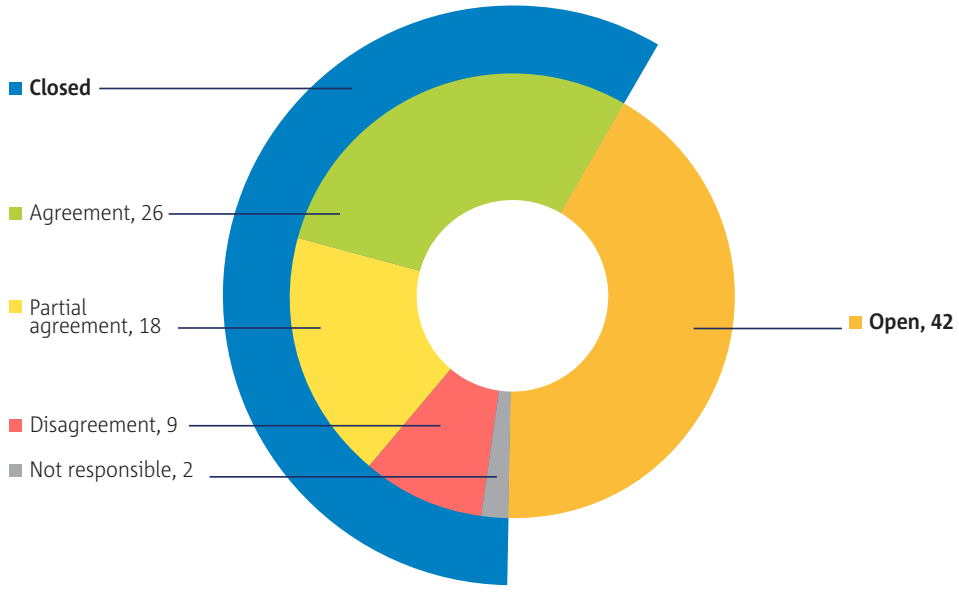
- **EASA agreed to take corrective action in 80% of cases**, either by directly applying the recommended course of action as was the case for 26 safety recommendations or, in a further 18 cases, by partially agreeing but undertaking corrective actions other than those recommended.
- The actions proposed by 9 safety recommendations (**16%**) were **not agreed**, and in these cases any alternative actions were deemed either not viable or not to provide a net safety benefit.
- The actions proposed by 2 safety recommendations (**4%**) were found to be **outside of EASA's remit** of responsibility.

This demonstrates progress compared with 2023, a year in which the corresponding percentages stood at 68% (EASA agreed to take corrective action), 27% (the actions proposed were not agreed) and 5% (outside EASA's remit) respectively.

This development indicates greater alignment between SIAs and EASA in terms of consensus on which actions are most likely to result in a net safety benefit, and also suggests an improved understanding among SIAs of EASA's remit of responsibility, in part thanks to information-sharing forums such as EASA's annual meeting with EU SIAs, bilateral meetings between EASA and individual SIAs, and ENCASIA.

Figure 6 illustrates the above figures in more detail.

Figure 6: SR replies issued in 2024, by EASA assessment



2 These definitions of classification categories were developed in collaboration with ENCASIA and are part of a taxonomy aimed at facilitating the management of safety recommendations.

EASA continuously monitors its progress towards closing safety recommendations, but only considers them closed once all related actions have been undertaken and completed, and a final reply has been issued.

In addition to the 55 final replies (closing the related safety recommendations), 42 updating replies (termed "intermediate", or interim responses) were issued. These updating replies provided information on the progress of the actions decided upon by EASA but for which the related activities had not yet been completed.

To monitor whether SIAs consider EASA's replies to be Adequate, Partially Adequate or Not Adequate, EASA has implemented procedures in line with Regulation (EU) No 996/2010.

Figure 7 depicts the assessments received each year on all EASA replies (both intermediate and final replies). This shows a significant year-on-year increase in the number of SIA assessments received in 2024. EASA welcomes this positive development which, if it continues in years to come, will strengthen an important feedback loop between SIAs and one of the main recipients of their safety recommendations.

Figure 7: SIA assessments of all EASA replies since 2020 (both intermediate and final replies)

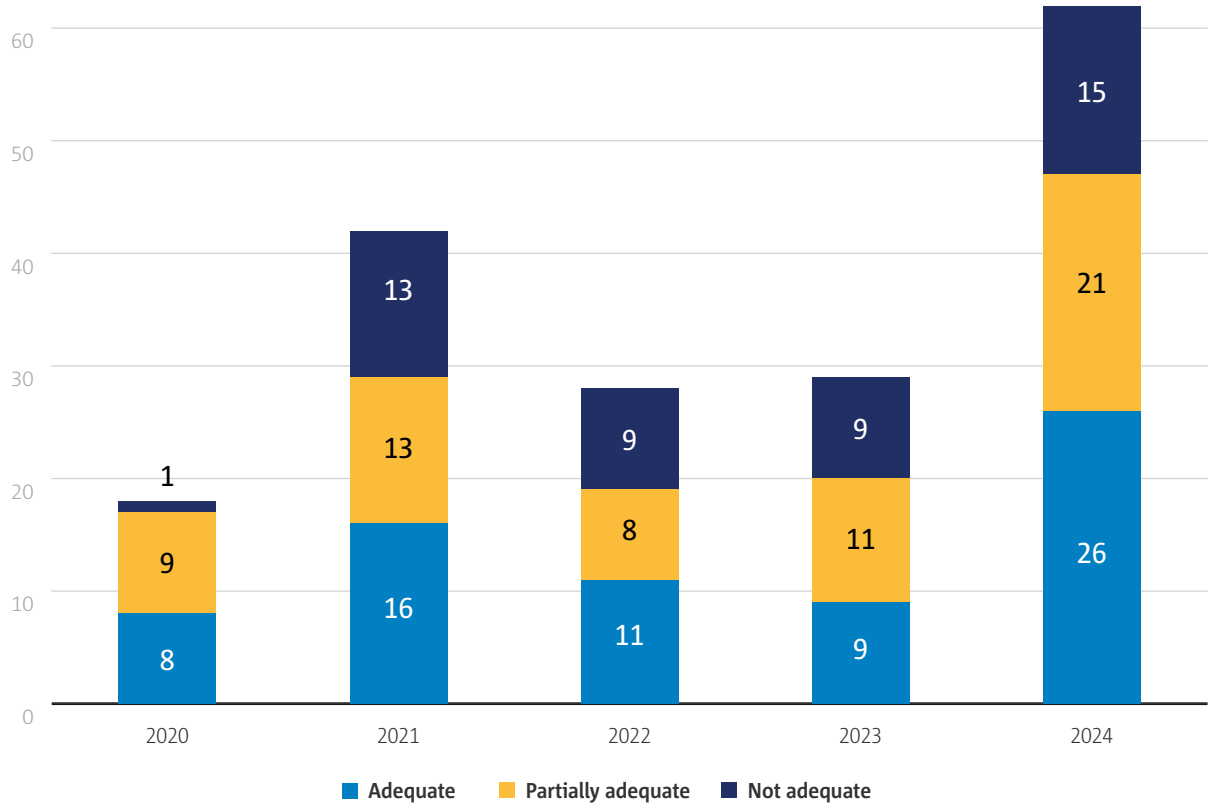
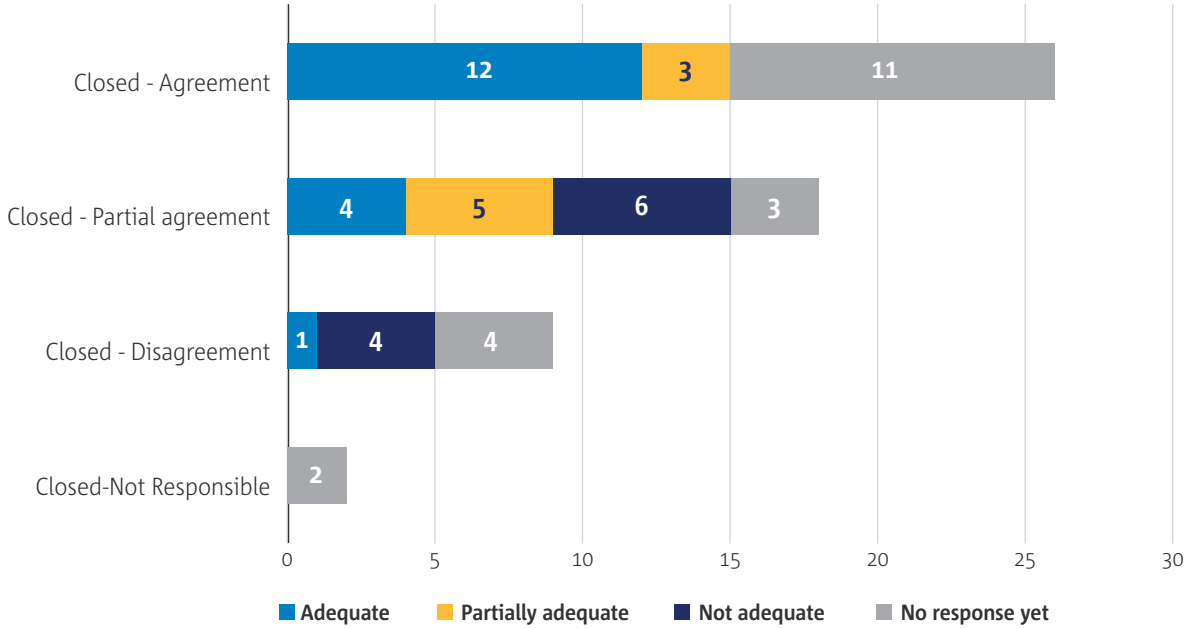


Figure 8 depicts the total number of assessments that EASA received from SIAs of the 55 final replies (not interim replies) issued in 2024. As assessed, 17 replies were assessed as Adequate (shown in light blue), 8 replies were assessed as Partially Adequate (in yellow) and a further 10 replies were assessed as Not Adequate (in dark blue).

With respect to the remaining 20 replies EASA sent in 2024, SIA assessments were still pending at the end of 2024 (shown in grey). Although this is a significant improvement over previous years, it still represents a large proportion of replies (36%), reflecting the time required for meaningful evaluation. While Article 18 of Regulation (EU) No 996/2010 calls for SIAs to assess EASA's replies within 60 days of receipt, the fact that this deadline is not consistently met may suggest that it is challenging to meaningfully assess the impact of EASA's actions on safety outcomes within this timeframe.

Figure 8: SIA assessments of Final Replies sent in 2024 (not intermediate replies)



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Chapter 5

Key Safety Topics and Actions Undertaken in 2024

Key Safety Topics and Actions Undertaken in 2024

In 2024, 10 SIAs within the EU and 3 SIAs outside the EU addressed a total of 40 safety recommendations to EASA. These 40 safety recommendation were categorised as pertaining to safety recommendation topics, in line with the standard ECCAIRS2 – SRIS2 taxonomy. The distribution across the various safety recommendation topics was substantially similar to that seen in previous years, with a significant majority of safety recommendations primarily relating to procedures and regulations, followed by aircraft / equipment / facilities and personnel, in order of precedence.

Figures 9 provides an overview, and Figure 10 a more detailed breakdown, of the safety recommendation topics to which the 40 safety recommendations received in 2024 were attributed.

Figure 9: SRs addressed to EASA in 2024, by SR topic

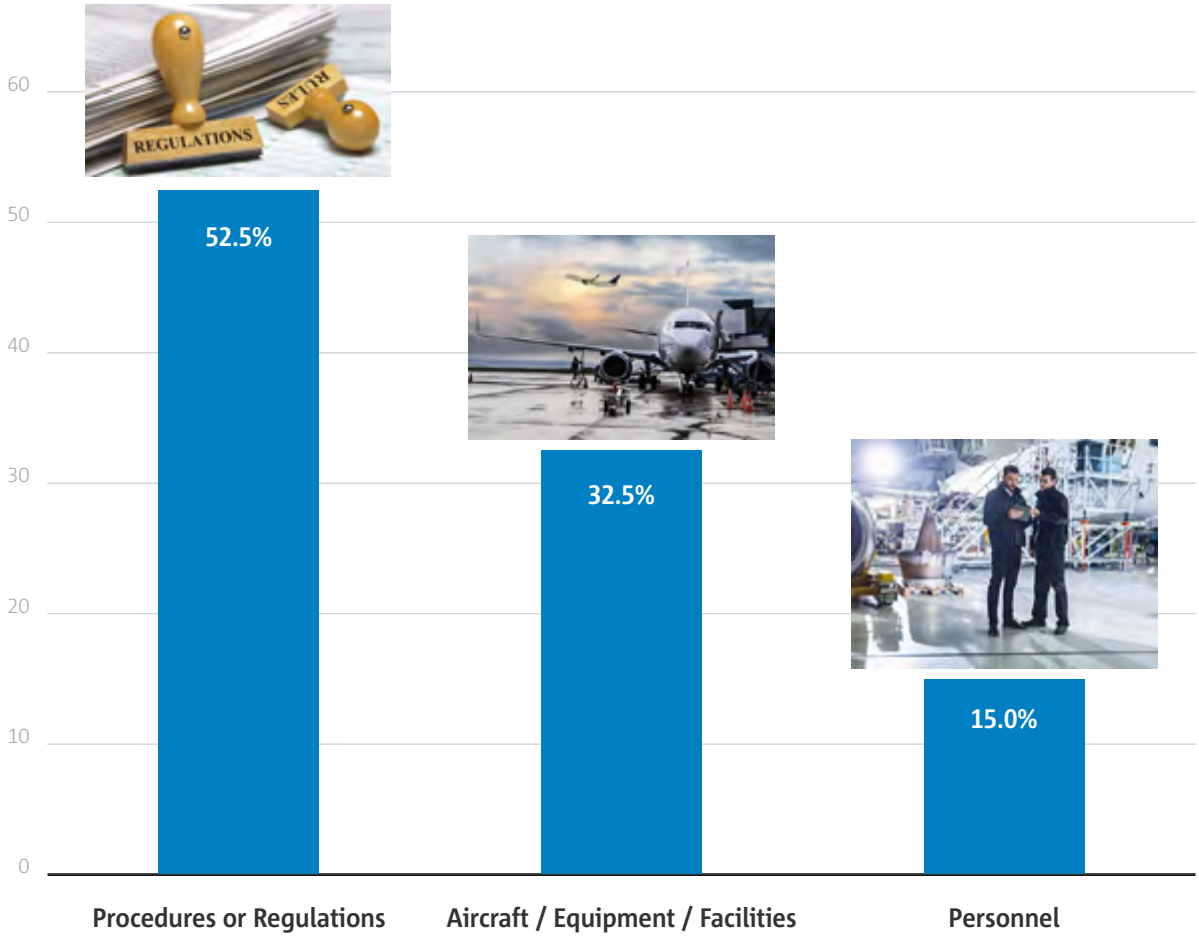
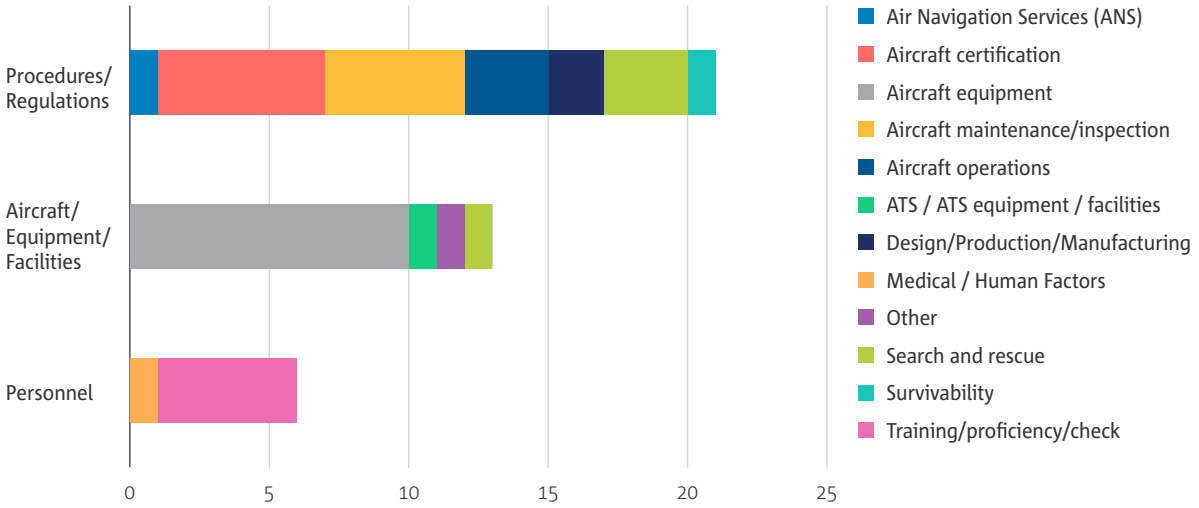


Figure 10: SRs addressed to EASA in 2024, by SR topic in detail



Five selected areas where EASA is actively working to improve aviation safety, as set out in 2024 through its replies to safety recommendations, are summarised below:

5.1 Regulatory Updates & Certification Enhancements

EASA has been actively revising certification standards and enhancing regulatory frameworks to address safety concerns. Many responses in 2024 indicated a commitment to updating Certification Specifications (CS) and refining Acceptable Means of Compliance (AMC). For example, in response to UNKG-2023-002, EASA recognised the risk of premature rolling contact fatigue failure in rotorcraft bearings and proposed clarifying the scope of AMC1 29.571 to ensure that all critical bearings are properly assessed. Similarly, FRAN-2023-024 counselled a review of pressurised oxygen system risks, prompting EASA to undertake a design review of Airbus Single Aisle aircraft oxygen systems to evaluate overpressure risks.

5.2 Operational Safety & Training Initiatives

EASA has placed significant emphasis on promoting safety awareness throughout the aviation community, including where this pertains to pilot training as well as standardised operational procedures to mitigate human error. In response to AUST-2024-001, EASA acknowledged the need for recurrent winch launch failure training for glider pilots, and subsequently reviewed the existing regulatory framework, demonstrating how it ensures that pilots maintain proficiency, while upholding adherence to high safety standards uniformly across all aircraft categories and types. Additionally, SWED-2023-003, which focused on unanticipated yaw risks in rotorcraft, led to the EASA Rotorcraft Committee launching a targeted safety awareness campaign, featuring educational videos, workshops, and training materials to inform pilots and operators about the phenomenon.

5.3 Maintenance & Continued Airworthiness

Aviation safety relies on robust maintenance practices and ongoing airworthiness evaluations. EASA has taken steps to enhance oversight of maintenance procedures and address risks associated with aging components. In response to PORT-2023-001, which questioned the continued airworthiness of Aerazur AIR 12A towing hooks,

EASA concurred with the investigator's assessment that poor maintenance had contributed to component failure. While no unsafe condition was formally identified, EASA issued Safety Information Bulletin (SIB) 2024-11 to warn operators about risks associated with improper maintenance. Similarly, UNKG-2021-018 and UNKG-2021-019 led to a proposal—to be implemented under rulemaking task RMT.0735—to include in the list of data sources used to identify critical maintenance tasks EASA Safety Information Bulletin (SIB) 2020-06, which deals with biocide treatment of fuel systems.

5.4 Fire Safety & Risk Mitigation

Fire hazards, particularly those linked to pressurized oxygen systems, were a recurring safety concern in 2024. EASA has undertaken several design and procedural reviews to enhance fire safety measures. In response to FRAN-2023-025, EASA initiated an assessment of cockpit fire and smoke procedures, evaluating whether existing procedures adequately prepare pilots to identify and respond to oxygen-fed fires. Additionally, FRAN-2023-026 prompted EASA to review the risk of cigarette ignition in cockpits, leading to a proposal for a new European Safety Risk Management (SRM) process entry on "Oxygen-fed fires in flight decks", which could result in future regulatory changes.

5.5 Ground Handling & Infrastructure Improvements

Although a smaller category, ground handling safety and infrastructure management received regulatory attention in 2024. In response to GERF-2018-002, which called for greater regulatory control over aircraft de-icing operations, EASA integrated de-icing procedures into a broader rulemaking effort to improve ground handling safety (Opinion 01/2024). The new framework introduces formal requirements for de-icing service providers, including training, safety management systems, and fluid quality control.

Viewed collectively, EASA's replies to safety recommendations in 2024 reflect a multi-faceted approach to upholding and improving aviation safety, combining initiatives such as regulatory updates, operational enhancements, maintenance oversight, fire safety measures, and improved ground handling regulations. These actions demonstrate a strong commitment to continuous safety improvement and proactive risk management.

EASA
European Union Aviation Safety Agency

ANNUAL SAFETY RECOMMENDATIONS REVIEW 2025

Chapter 6

Conclusions

Conclusions

In 2024, EASA continued its mission to uphold and improve aviation safety across the European Union and beyond, through the diligent monitoring and follow-up of safety recommendations issued by national and international Safety Investigation Authorities (SIAs). These recommendations, arising from accident and incident investigations, represent a critical feedback loop that informs regulatory decisions, operational procedures, and long-term strategic planning. EASA's role in this domain, as defined under Regulation (EU) No 2018/1139 and Regulation (EU) No 996/2010, places it at the heart of Europe's aviation safety architecture.

In 2024, 10 SIAs within the EU and 3 SIAs outside the EU addressed a total of 40 safety recommendations to EASA. The total number of safety recommendations addressed to EASA is in line with the trend seen in recent years.

The majority, 52.5% of the safety recommendations were related to procedures or regulations. Recommendations related to aircraft, equipment, or facilities constituted 32.5%. Recommendations related to personnel constituted 15%. There were no safety recommendations which primarily concerned QMS, SMS, and SSP topics.

The themes identified collectively highlight systemic challenges in aviation safety, ranging from certification gaps and operational risks to maintenance vulnerabilities and fire hazards. The safety recommendations addressed to EASA in 2024 provide valuable insights for improving regulatory frameworks, enhancing training programmes, and ensuring that aviation safety continues to evolve in response to emerging risks.

In 2024, EASA provided 97 replies in response to 92 safety recommendations:

- 55 of these were final replies, 80% of which closed the related safety recommendations through corrective actions either as recommended (in 26 cases) or by taking alternative measures other than those recommended (in 18 cases).
- The remaining 42 replies were updates providing information on the progress of the actions decided upon by EASA and for which the relevant activities were not yet completed.
- As assessed by SIAs, 25 of EASA's final replies were deemed to be "adequate" or "partially adequate" and 10 responses was deemed as "not adequate". With respect to the remaining replies sent in 2024, the SIA assessments remained pending at the end of 2024.

The number of replies to safety recommendations issued by EASA in 2024 exceeded that of previous years. The actions taken by EASA 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 identified within the European safety risk management process.

2024 witnessed a significant year-on-year increase in the number of assessments received. EASA welcomes this positive development which, if it continues in years to come, will strengthen an important feedback loop between SIAs and one of the main recipients of their safety recommendations.

There was also greater alignment between SIAs and EASA in 2024 in terms of which actions are most likely to result in a net safety benefit, in part thanks to information-sharing forums such as EASA's annual meeting with EU SIAs, bilateral meetings between EASA and individual SIAs, and ENCASIA.

Viewed collectively, EASA's replies to safety recommendations in 2024 reflect a multi-faceted approach to upholding and improving aviation safety, combining initiatives such as regulatory updates, operational enhancements, maintenance oversight, fire safety measures, and improved ground handling regulations. These actions demonstrate a strong commitment to continuous safety improvement and proactive risk management.

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ANNUAL SAFETY RECOMMENDATIONS REVIEW 2025

Annex A

Safety Recommendations Received and Replies Sent in 2024

AUST-2017-001

Schweizer 269C, OE-XRL, 09/08/2014

Safety Recommendation received on 07/03/2017:

EASA should require for helicopter pilots a flight simulation training including a sufficient and dedicated training on “Loss of tail rotor effectiveness” (LTE) and recovery actions for all training, examination and proficiency check flights (on appropriate and certified simulators).

Interim reply sent on 28/11/2024:

For the training, test and check flights of helicopter pilots, the European Union Aviation Safety Agency (EASA) was asked to require that the practice of the occurrence and elimination of Loss of tail-rotor effectiveness (LTE) should be performed on suitable and certified simulators. The Certification Specifications for Helicopter Flight Simulation Training Devices (CS-FSTD(H)) already address antitorque device ineffectiveness in Helicopter Full Flight Simulators with subjective testing of the loss of anti-torque effectiveness.

Nevertheless, EASA has reviewed the requirements for helicopter Flight Simulation Training Devices (FSTD) within the context of rulemaking task RMT.0196 ‘Update of flight simulation training devices requirements’, which was launched on 15 July 2016 with the objective of enhancing LTE simulation aspects on Helicopter Full Flight Simulators.

The RMT concluded in the publication of a Noticed of Proposed Amendment, (NPA) 2020-15, available at https://www.easa.europa.eu/en/document-library/notices-of-proposed-amendment/npa-2020-15. Following consultation on the NPA, EASA intends to publish an Opinion, which is currently expected in Q2 2025. Subsequently, a Decision is expected one year after publication of the Opinion, in Q2 2026. A further reply will be provided by EASA once the adoption process has run its course.

Status: Open

AUST-2022-004

MD900, OE-XWF, 01/08/2017

Safety Recommendation received on 11/08/2022:

It was noted that Figure 2-2 from the MD900 Flight Manual, Chapter 2 “Limitations”, was properly approved by the civil aviation authorities, but some information may be misinterpreted. It is recommended that the information in Figure 2-2 should be reevaluated and, in cooperation with the FAA and the manufacturer, that consideration be given to whether and how the relevant information in this chart can be presented more clearly, taking into account the possibility of misinterpretations. This may include, among other things, extending the text “TAKEOFF AND LANDING WAT LIMIT” to include the word “HIGE”, introducing safety margins, especially around the operating limit of 12400 ft, clarifying that wind from the front can also have a negative effect, or, if necessary, changing the title, as “[...] For Crosswind Operations” could give the wrong impression that the chart is only to be used in crosswinds conditions.

Final reply sent on 19/12/2024:

The European Union Aviation Safety Agency (EASA) has formally requested Technical Assistance from the State of Design (Federal Aviation Administration of the United States of America, hereinafter the FAA) in the domain of Continuing Airworthiness for Safety Recommendation (SR) AUST-2022-004 on 10th July 2024.

In accordance with the Technical Implementation Procedures (TIP) for Airworthiness and Environmental Certification between the FAA of the United States of America and the EASA of the European Union, Revision 7, Section VIII, para. 4.1.1 and 4.1.2, the FAA is responsible for resolving in-service safety issues related to the design or product of MD900 helicopters.

Considering that this SR calls for an update of the Rotorcraft Fight Manual, EASA's expectation is that the FAA will share information on manual changes as per Section VIII, para. 4.3.5 of the TIP and proceed with the necessary steps for obtaining EASA validation.

On 15th July 2024 the FAA Aviation Safety Recommendation Branch acknowledged EASA's request for Technical Assistance.

On 29th October 2024, the FAA directly informed the Austrian Sicherheitsuntersuchungsstelle des Bundes (SUB) that the FAA's Aircraft Certification Service was currently reviewing the final investigation report in order to determine an appropriate action plan to address the safety recommendations.

On 30th October 2024 the SUB acknowledged the FAA feedback and assessed it to be adequate, waiting for further response, declaring the SR 24.027 (SUB number SE/SUB/LF/8/2022) OPEN.

Based on the above, it can be concluded that the FAA in its role as State of Design is addressing the SR initially submitted to EASA by the SUB.
EASA, in its role of validating authority, will process any further request to approve design changes through the normal process under the TIP.

EASA considers that there is no more action on AUST-2022-004 that is de-facto replaced by FAA 24.027.

Status: Closed – Not Responsible

AUST-2022-005

MD900, OE-XWF, 01/08/2017

Safety Recommendation received on 11/08/2022:

OSD (Operational Suitability Data) for the MD900 helicopter are not available from the type certificate holder at EASA, nor does a legal obligation exist for the MD900 type to require such. However, the operating limit regarding the aerodynamic controllability (flight manual Figure 2-2) is a peculiarity of this helicopter model and the NOTAR system, which is uncommon in this form compared to helicopter models with conventional tail rotor according to FAR Part 27 or CS-27. It is recommended to examine options, in cooperation with FAA and the type certificate holder, to make pilots aware of the aerodynamic and operational peculiarities of MD900 type helicopters.

Final reply sent on 19/12/2024:

The European Union Aviation Safety Agency (EASA) has formally requested Technical Assistance from the State of Design (Federal Aviation Administration of the United States of America, hereinafter the FAA) in the domain of Continuing Airworthiness for Safety Recommendation (SR) AUST-2022-005 on 10th July 2024.

In accordance with Technical Implementation Procedures (TIP) for Airworthiness and Environmental Certification between the FAA of the United States of America and the EASA of the European Union, Revision 7, Section VIII, para. 4.1.1 and 4.1.2, the FAA is responsible for resolving in-service safety issues related to the design or product of MD900 helicopters.

On 15th July 2024 the FAA Aviation Safety Recommendation Branch acknowledged EASA's request for Technical Assistance.

On 29th October 2024, the FAA informed directly the Austrian Sicherheitsuntersuchungsstelle des Bundes (SUB) that the FAA's Aircraft Certification Service was currently reviewing the final investigation report in order to determine an appropriate action plan to address these safety recommendations.

On 30th October 2024 the SUB acknowledged the FAA feedback and assessed it to be adequate, waiting for further response, declaring the SR 24.028 (SUB number SE/SUB/LF/9/2022) OPEN.

Based on the above it can be concluded that the FAA in its role as State of Design is addressing the SR initially submitted to EASA by the SUB.

EASA, in its role of validating authority, will process any further request to approve design changes through the normal process under the TIP.

EASA considers that there is no more action on AUST-2022-005 that is de-facto replaced by FAA 24.028.

Status: Closed – Not Responsible

AUST-2023-001

Theo Schröder Fire Balloons G60/24, OE-RTS, 12/11/2022

Safety Recommendation received on 06/09/2023:

Take appropriate measures to prevent the pilot from falling out of the basket during landing. It is recommended to equip and retrofit all balloons with a restraint system, no matter in which function and equipment the balloon is operated. Furthermore, it would be necessary to equip balloons used in a DTO for training pilots with restraint systems for student pilots and flight instructors as well.

Interim reply sent on 22/03/2024:

The balloon type involved in the subject occurrence has a separate compartment for the pilot and was consequently equipped with a pilot restraint system in accordance with BOP.BAS.320 of Annex II (Part-BOP) to Regulation (EU) 2018/395. However, the restraint system was not used during this occurrence (as is mandated by BOP.BAS.175). Therefore, the European Union Aviation Safety Agency (EASA) concludes that the current operational rules for balloons would have been effective in preventing the occurrence.

The current formulation of BOP.BAS.320, which extended the requirement for a pilot restraint system to include balloons equipped with turning vents, resulted from a consultation with relevant subject matter experts and stakeholders as a part of Rulemaking Task 0674. According to Article 4, paragraph 2, of Regulation (EU) 2018/1139, the measures taken under this Regulation, which include the rules for balloon operations, shall correspond and be proportionate to the nature and risk of each particular activity to which they relate. Specifically, regulations shall also take into account the type, scale, and complexity of the operation or activity, including, where relevant, the size and type of the traffic handled by the responsible organisation or person. EASA highlights that the majority of commercial operations, which may constitute a higher risk, are carried out with large baskets equipped with multiple compartments for which the use of a pilot restraint system is mandated by the current rules.

Furthermore, EASA has reviewed the available safety data for balloon operations in the EU since the entry into force of the current rules. The review highlighted a decreasing trend of accidents related to pilot ejection during landing between 2018 and 2023. Consequently, EASA could not identify a safety issue that would justify the retrofitting of a pilot restraint system on all approved balloons. EASA concludes that the current formulation of the balloon operational rules is adequate and proportionate.

Notwithstanding the above, EASA noted that in the majority of fatal accidents on record the pilot restraint system was not worn even if its use was mandatory. Therefore, EASA intends to issue a Safety Information Bulletin to raise awareness on the risks of a balloon pilot ejection during landing, with the recommendation to use a pilot restraint system whenever one is installed. Additionally, EASA intends to enhance its safety promotion activities to foster the engagement of the balloon community and highlight the benefits of wearing a pilot restraint system during the critical flight phases.

Status: Open

AUST-2023-004

ROBIN DR400, D-EWLA, 25/06/2023

Safety Recommendation received on 07/12/2023:

During a glider tow flight, the cockpit canopy of the Schempp-Hirth Duo Discus glider opened after take-off at low altitude. The glider on a 30 m tow rope climbed over the tow plane, lifted its tail and caused it to crash. The aircraft manufacturer Schempp-Hirth published the Technical Note No. 396 -6 dated 02.07.2004, LBA approved 15.07.2004, approved by EASA 27.07.2004 as a replacement for the issue dated 04.07.2001 concerning canopy locking. With regard to urgency, the aircraft manufacturer states “Recommended until the next annual inspection”.

In the case of the aircraft in question, the implementation of Technical Note No. 396 -6 dated 02.07.2004 recommended by the aircraft manufacturer was not carried out. The Austrian Federal Safety Investigation Authority recommends that EASA orders to change the implementation of Technical Note No. 396 -6 dated 02.07.2004 from "Recommended" to "Mandatory".

Interim reply sent on 06/02/2024:

In accordance with regulatory framework established under Regulation (EU) 2018/1139, the European Union Aviation Safety Agency (EASA) shall determine corrective actions in response to safety issues for entities in respect of which it acts as the competent authority. In the domain of airworthiness, provided that an unsafe condition is determined, EASA can only mandate corrective actions through an airworthiness directive (AD), as outlined in point 21.A.3B of Annex I (Part-21) to Regulation EU) 748/2012, and not by changing the implementation status of a technical document. EASA finds that the issue addressed by the

Technical Note No. 396 -6 does constitute an unsafe condition. Therefore, EASA intends to mandate its implementation with an Airworthiness Directive.

Final reply sent on 26/04/2024:

In accordance with regulatory framework established under Regulation (EU) 2018/1139, the European Union Aviation Safety Agency (EASA) shall determine corrective actions in response to safety issues for entities in respect of which it acts as the competent authority. In the domain of airworthiness, provided that an unsafe condition is determined, EASA can only mandate corrective actions through an airworthiness directive (AD), as outlined in point 21.A.3B of Annex I (Part-21) to Regulation EU) 748/2012, and not by changing the implementation status of a technical document.

EASA finds that the issue addressed by the Technical Note No. 396 -6 does constitute an unsafe condition. EASA has therefore mandated its implementation with AD 2024-0059 issued on 05/03/2024, and published here: https://ad.easa.europa.eu/ad/2024-0059.

Status: Closed – Agreement

AUST-2024-001

Discus-2c, OE-5300, 22/05/2023

Safety Recommendation received on 04/03/2024:

In accordance with Implementing Regulation 2018/1976 Annex III (SFCL), glider pilots are not required to perform launch method-depending continuous training for dangerous situations during launches, once they have completed their initial training. Pilots must be continuously trained for rejected winch launches in order to be able to take the correct action in dangerous situations. As this is generally known, several flying clubs and airfield operators in Austria, including all flying clubs based at Innsbruck Airport since the accident in question, require pilots to practice rejected winch launches on a regular basis.

Furthermore, the launch method is not prescribed for the training flights required every 24 months in accordance with SFCL.160 (a)(1)(ii). If a glider pilot has several launch type ratings (e.g. winch launch and powered aircraft tow launch), it is possible under the current legal situation that the pilot will never complete a training flight with the winch launch type.

The European Union Aviation Safety Agency (EASA) is therefore recommended, in addition to SFCL.155 (c) and SFCL.160 (a), require recurrent and compulsory practical exercises of rejected winch launches to maintain proficiency in dangerous situations after initial training. Furthermore, it should be ensured that training flights in accordance with SFCL.160 (a) are completed at regular intervals in each approved launch method.

Interim reply sent on 31/05/2024:

The European Union Aviation Safety Agency (EASA) is examining the existing body of regulatory provisions and guidance material as they pertain to training and proficiency requirements of sailplane pilots and will provide a detailed update in Q3 2024.

Final reply sent on 19/07/2024:

Point SFCL.130 of Annex III (Part-SFCL) to Commission Implementing Regulation (EU) 2018/1976 of 14 December 2018 lays down requirements for the initial training of sailplane pilots. The associated

Acceptable Means of Compliance (AMC) AMC2 SFCL.130 SPL – Training Course and Experience Requirements outlines the details of the training syllabus, including exercises for rejected winch take-offs (cf. Exercise 11A). Furthermore, the Practical Skill Test, detailed in AMC1 SFCL.145 SPL – Practical Skill Test, point (d)(1), Section 2A, incorporates this exercise, underscoring its significance.

According to SFCL.115.SPL (c) and SFCL.155.SPL (c), it is the responsibility of the sailplane licence holder (SPL) to exercise their privileges only if they comply with the applicable recency requirements.

If SPL holders do not comply with the recency requirement of SFCL.155(c) for a launching method, in order to renew their privileges they shall perform the additional number of launches flying dual or solo under the supervision of an instructor.

Further to this, to maintain currency of SPL privileges in accordance with SFCL.160 SPL – Recency Requirements, the alternative to the conditions in SFCL.160(a)(1) is a proficiency check with a Flight Examiner for Sailplanes FE(S) on a sailplane, excluding Touring Motor Glider (TMGs). This proficiency check aligns with the skill test for Sailplane Pilot Licence (SPL), granting the examiner FE(S) a risk-based flexibility to select exercises. The European Union Aviation Safety Agency (EASA) deems this method safer, allowing the examiner to tailor assessments based on a thorough review of the pilot's logbook, encompassing past exercises and operational activities. Furthermore, embracing Threat and Error Management (TEM), the examiner may use exercises for discussion and, if identified as high risk, incorporate them into the proficiency check to ensure applicant proficiency levels are met.

In view of the above, EASA considers that the current regulatory framework, as outlined in Part – SFCL, adequately addresses these training and proficiency requirements. The inclusion of the exercise in both initial training, as specified in AMC2 SFCL.130 SPL – Training Course and Experience Requirements (Exercise 11A), and the Practical Skill Test, as detailed in AMC1 SFCL.145 SPL – Practical Skill Test, point (d)(1), Section 2A, underscores the regulatory emphasis on the importance of this manoeuvre.

The European Union Aviation Safety Agency (EASA) believes that this regulatory approach is the most appropriate for the revalidation of licenses and the fulfillment of recency requirements. This approach is consistently applied across all aircraft categories and types, ensuring uniformity and adherence to high safety standards.

Status: Closed – Partial Agreement

AUST-2024-002

Diamond DA 42M, OE-VPW, 06/06/2009

Safety Recommendation received on 22/04/2024:

The training program for test pilots who are used in aircraft as part of flight test programs does not provide for any testing of the personality structure of prospective test and test pilots. In view of the course of the accident in question, it seems advisable to check the personal suitability of applicants with regard to non-technical skills.
The Federal Safety Investigation Board recommends that the European Aviation Safety Authority (EASA) examine the requirements for testing non-technical skills and the suitability of applicants for acceptance as pilots in flight test programs and propose guidelines and procedures for this purpose.

Final reply sent on 19/07/2024:

The European Union Aviation Safety Agency (EASA) has examined the existing regulatory framework and in particular the requirements pertaining to the proficiency of test pilots within flight test programmes. For any amendments to the regulatory material, clear and substantial evidence must be provided to demonstrate a necessity for change. As of now, EASA believes that the existing measures are adequate to ensure the safety and proficiency of test pilots within flight test programmes.

In this regard, the provisions included in the Acceptable Means of Compliance to Regulation (EU) No 1178/2011 (Annex I – Part FCL) AMC1 FCL.820 are comprehensive, ensuring that Flight Test rating training is competency-based. This includes a pre-assessment to evaluate the applicant's capability to successfully complete the course. Additionally, any instances of misconduct are addressed within the cultural framework of the Training Organization's Safety Management System (SMS).

Therefore, EASA considers that the existing regulatory framework is sufficiently robust to ensure the competence and suitability of test pilots and find no evident deficiencies in accordance with the content of the safety recommendation.

Status: Closed – Disagreement

AUST-2024-008

Cirrus SR20 G1, D-ESFB, 02/11/2023

Safety Recommendation received on 18/11/2024:

The warning placards on aircraft prescribed by EASA are not sufficiently suitable for warning rescue services from a safe distance of the presence of an installed ballistic parachute system (BPS) on an aircraft involved in an accident.

It is suggested to EASA that all registered aircraft within the EASA member states fitted with ballistic parachute system (BPS) be recorded in a central aircraft register and these data made available to the national search and rescue centers (SAR) in the event of an accident. In the event of an aircraft accident, this would enable the rescue services to carry out a query by telephone or online with the respective national search and rescue center (SAR) and, if necessary, request experts for the de-activation or removal of ballistic rescue systems (BPS) at an early stage.

Status: Open

AUST-2024-009

Cirrus SR20 G1, D-ESFB, 02/11/2023

Safety Recommendation received on 18/11/2024:

It is difficult for rescue services to locate ballistic parachute system (BPS) rocket motors at accident sites because they are not colour coded. It is therefore proposed that BPS rocket motors be colour coded in the same way as flight data recorders (FDR), cockpit voice recorders (CVR) or emergency locator transmitters (ELT).

Status: Open

AUST-2024-010

Cirrus SR20 G1, D-ESFB, 02/11/2023

Safety Recommendation received on 18/11/2024:

The only way to deactivate the rocket motor of a ballistic parachute system (BPS) in an aircraft is by installing a safety pin on the release handle, which is connected to the BPS- system via a Bowden cable. Structural deformations, such as those that occur in aircraft accidents, could alter the Bowden cable and lead to uncontrolled activation of the rocket motor.

It is suggested to introduce a mechanical deactivation option directly on the rocket motors of ballistic parachute systems (BPS) in the course of certifications to ensure that the BPS- system can be deactivated safely, quickly and without special tools.

Status: Open

BELG-2021-003

CESSNA 172S, D-EPCE, 29/05/2019

Safety Recommendation received on 09/09/2021:

It is recommended that EASA incorporates in the projected EASA FEM:

- a thorough description on which items to be included in the pre-flight briefing (such as the designation of the PIC, handover of controls, the roles in the event of an actual emergency, method of simulated emergencies..)
- the guidelines (that were part of the former JAA FEM) and a formalized prior risk assessment on performing simulated emergency landings during PPL test and SEP check flights.

Final reply sent on 09/09/2024:

The European Union Aviation Safety Agency (EASA) has developed the Flight Examiner Manual (FEM) which was published on the EASA website on 02 November 2021.

In October 2023 the existing Flight Examiner Manuals have been updated and the scope was extended to cover Rotorcraft.

Having allowed the industry a period of review and feedback, EASA is satisfied that the changes are now fully accepted by the training community. The manuals cover the broadest possible range of licenses and ratings. The specific items covered in the Safety Recommendation are included in Paragraph 6 of each document, entitled “Skill Test Items”. This provides a checklist of all the items that should be included. The FEM can be downloaded at:
https://www.easa.europa.eu/en/document-library/general-publications/flight-examiners-manual-fem

Status: Closed – Agreement

BELG-2024-001

Alexander Schleicher ASK-13, D-0019, 17/05/2022

Safety Recommendation received on 31/10/2024:

It is recommended that EASA introduces a design requirement for sailplanes in order to alleviate the risk of unwanted opening of the canopy in flight.

Final reply sent on 19/12/2024:

The European Union Aviation Safety Agency (EASA) considers that the design of sailplanes canopy locking systems must remain sufficiently simple to ensure compliance with the applicable certification specifications in CS-22 (Certification Specifications for Sailplanes and Powered Sailplanes) in particular CS 22.777 (Cockpit controls) and CS 22.807 (Emergency exit).

CS 22.777(a) requires that each cockpit control must be located to provide convenient operation, and to prevent confusion and inadvertent operation. CS 22.777(d) requires that controls must maintain any desired position without requiring constant attention by the pilot(s), and must not tend to creep under system loads or vibration.
CS 22.807(a) requires that the cockpit must be so designed that unimpeded and rapid escape in emergency situations during flight and in any normal or crash attitude on the ground is possible with the occupant wearing a parachute.
CS 22.807(c) requires that the opening system must be designed for simple and easy operation. It must function rapidly and be designed so that it can be operated by each occupant strapped in his seat and also from outside the cockpit.

Imposing additional design features to increase the robustness of the securing of the locking system in the 'locked' position could result in the failure of the canopy emergency opening (and jettisoning where applicable) in some emergency situations where the pilots have very limited time to perform the opening action(s).

Furthermore, the design of the system must also be simple enough such that a passenger is able to use it in emergency situations. On this aspect, Annex II (Part SAO) to Commission Implementing Regulation (EU) 2018/1976 on rules for the operation of sailplanes, point SAO.OP.110 requires a briefing of passengers on emergency procedures, and the corresponding Acceptable Means of Compliance (AMC) AMC1 point SAO.OP.110 specifies that this should include the 'location and use of emergency canopy opening'.

EASA's position is that the above-mentioned CS-22 provisions have resulted in adequate designs providing an adequate level of safety when pilots follow applicable checklists and procedures to ensure adequate closing and locking of the canopy before starting the flight. Regarding the risk of inadvertent operation in flight, CS 22.777(a) and (d) already contain corresponding specifications to ensure designs mitigate this risk.

Hence EASA concludes that there is no need to amend CS-22 on this topic.

Status: Closed – Disagreement

CHIN-2024-002

Airbus A330-300, B-5958, 27/08/2019

Safety Recommendation received on 21/10/2024:

EASA, in coordination with other primary certification authorities, to do related research on control measures and design standards considering the fire risk and the risk of the presence of grease, pollutants, and other foreign substances in hidden areas.

Final reply sent on 19/12/2024:

The European Union Aviation Safety Agency (EASA) conducted a thorough review of the investigation report, identifying three key aspects to address this safety recommendation:

A) Ignition of the fire: The Civil Aviation Administration of China (CAAC) report determined that the probable cause of the incident was internal heating and high temperatures within the electrical terminal block, exacerbated by a pre-existing defect and factors like degraded fire resistance of electrical components, grease, pollutants, and other foreign substances. This issue is closely related to the Electrical Wiring Interconnection System (EWIS) installation and maintenance. Point CS 25.1713 of Certification Specification for Large Aeroplanes (CS-25) addresses the fire protection aspects of EWIS, particularly the requirement for self-extinguishing properties (as per Part I of Appendix F to CS-25). Continued Airworthiness Maintenance Instructions, such as cleaning, are mandated by CS 25.1729 and CS 25 Appendix H “Instructions for Continued Airworthiness.” The Federal Aviation Administration (FAA) Advisory Circular (AC) 25-27A also provides information to improve EWIS maintenance practices. EASA believes that no additional research is needed, as the current design standards are sufficient and appropriate.

B) Propagation of the fire: To reduce the likelihood of fire propagation due to degraded fire resistance properties from grease, pollutants, and other foreign substances, a proper maintenance program is essential. CS 25 Appendix H outlines the required maintenance instructions, including inspection and cleaning of each part of the aircraft. The Enhanced Zonal Analysis for the A330 did identify the wiring and the risk of accumulation of combustible materials in this zone and resulted in a corresponding cleaning task and inspection of the wire routes in the Maintenance Review Board Report (MRBR). EASA believes that no further research is necessary, as the existing design standards and analysis methods are sufficient and appropriate.

C) Material qualification in hidden areas: Part I of CS 25 Appendix F applies to all materials installed in compartments occupied by crew or passengers, as required by CS 25.853(a). Part I of Appendix F also applies to certain materials/parts installed in hidden areas, e.g. electrical conduit and air ducting. Furthermore, CS 25.856(a) requires that thermal/acoustic insulation material installed in the fuselage must meet the flame propagation test requirements of Part VI of Appendix F to CS-25, In 2023 and 2019, the FAA published a Notice of Proposed Rulemaking (NPRM) and a Supplemental Notice of Proposed Rulemaking (SNPRM) (ref. Docket No.: FAA–2019–0491; Notice No.23–12) proposing the introduction of a new and more stringent test method, the Vertical Flame Propagation test, to evaluate the performance of materials installed in inaccessible areas. The new test method has been developed by the FAA Tech Center in cooperation with the International Aircraft Materials Fire Test Forum (IAMFTF). EASA has been significantly involved in the design of the new structure of the flammability requirements proposed by the NPRM and is closely following the FAA's activities and actively participating in the International Aircraft Materials Fire Test Forum (IAMFTF) meetings, along with the CAAC. EASA intends to harmonise with the FAA’s new regulation once finalised and believes that no additional research effort is needed for design standards of materials in hidden areas.

Status: Closed – Partial Agreement

CHNH-2024-001

Airbus A350-1041, B-LXI, 02/09/2024

Safety Recommendation received on 03/09/2024:

It is recommended that the European Union Aviation Safety Agency (EASA) requires Rolls-Royce Deutschland Ltd & Co KG to develop continuing airworthiness information, including but not limited to, inspection requirements of the fuel secondary manifolds of Airbus A350 Aircraft Rolls-Royce Trent XWB Engines to ensure their serviceability.

Final reply sent on 30/10/2024:

The European Union Aviation Safety Agency (EASA) and Rolls-Royce have developed and mandated appropriate Continued Airworthiness actions to ensure the airworthiness and serviceability of the affected fleet. Rolls-Royce has issued the Non-Modification Service Bulletin (NMSB) Trent XWB 72-AL165 to provide inspection and corrective action instructions for certain Trent XWB engines, and on September 5, 2024, EASA issued EASA Emergency Airworthiness Directive AD 2024-0174-E mandating the NMSB and requiring a one-time visual and dimensional inspection of the fuel manifold main fuel hoses on Trent XWB-97 engines. AD 2024-0174-E can be downloaded at https://ad.easa.europa.eu/ad/2024-0174-E.

Since EASA issued AD 2024-0174-E, in-service and in-shop inspections have identified that a specific cleaning process available during engine refurbishment may lead to fuel manifold main fuel hose degradation. Additionally, it was determined that Trent XWB-75, Trent XWB-79, Trent XWB-79B and Trent XWB-84 engines were also the subject of the suspect cleaning process, and therefore are potentially affected by the unsafe condition addressed by the AD.

Prompted by this development, the affected cleaning process was discontinued by maintenance organisations as instructed by Rolls-Royce Maintenance Repair and Overhaul Quality Alert No. MRO 2024-21 issue 1. Additionally, Rolls-Royce issued the NMSB Trent XWB 72-AL167, and EASA issued on September 19, 2024 the Airworthiness Directive (AD) 2024-0182, which partially retained the requirements of AD 2024-0174-E, which was superseded, and requires repetitive inspections and corrective actions for affected populations of engines. This AD also introduces restrictions for installation of the affected parts, engines equipped with the affected parts, and requires reporting of inspection results. AD 2024-0182 can be downloaded at https://ad.easa.europa.eu/ad/2024-0182.

Status: Closed – Agreement

DENM-2021-001

DASSAULT - FALCON900EX, OE-IMI, 29/11/2021

Safety Recommendation received on 29/11/2021:

In order to prevent landings with frozen brakes, the AIB recommends that EASA in cooperation with the aircraft manufacturer modify in a more directive and explicit manner the AFM normal procedures (including the use of the brake heating system) and that the aircraft manufacturer accordingly modifies the CODDE 2.

Final reply sent on 22/03/2024:

The European Union Aviation Safety Agency (EASA) and the manufacturer reviewed the content of the Aircraft Flight Manual (AFM) and concluded that the use of the Brake Anti-Ice System is already correctly documented. In fact, the contexts in which the use of the Brake Anti-Ice System is deemed “necessary” are operational considerations and those are clarified in the dedicated operational documentation (CODDE 2).

Notwithstanding this, in cooperation with EASA, the manufacturer has modified the operational manual (CODDE 2) to include more explicit and more direct instruction on the usage of the Brake Anti-Ice System. The manual temporary revision was released on 7th July 2023 under Change Project publication #183 (CP-PUB-0183), for integration in subsequent AFM issue 19.

Status: Closed – Agreement

DENM-2024-001

Airbus A320-214, CS-TNV, 08/04/2022

Safety Recommendation received on 20/02/2024:

To prevent engine thrust reverser(s) not stowing on an A320 family aircraft during an aborted landing after ground contact, the AIB recommends EASA to ensure that the aircraft and engine manufacturer modifies the CFM56-5B ECU software, and that the software modification is mandated and embodied on the entire CFM56-5B fleet when ready for entry into service estimated in 2025.

Interim reply sent on 26/04/2024:

Airbus is expected to modify the CFM56-5B Engine Control Unit (ECU) software standard by introducing an enhancement of the thrust reverser stowing logic to be robust against similar incidents.

There are around 3700 aircraft from the A320 family (i.e. A318/A319/A320/A321) fitted with CFM56-5B engines in operation (in-service or stored), which can be equipped with two different ECU F1+ and F3 standards, equally distributed.

- For the F1+ standard, the design change supporting the ECU software update is planned to be certified during 2027.

Note: Due to a specific design configuration (a few engines accommodate an ECU logic for which no software standard upgrade is possible), 11 engines will remain non-retrofitted.

- For the F3 standard, the design change supporting the ECU software update is planned to be certified by end 2025.

The Airbus Service Bulletins supporting those software updates will be mandated by European Union Aviation Safety Agency (EASA) airworthiness directives.

Status: Open

DENM-2024-002

Airbus A320-214, CS-TNV, 08/04/2022

Safety Recommendation received on 20/02/2024:

To prevent future aircraft designs from incorporating an engine thrust reverser design that will not stow during an aborted landing, the AIB recommends EASA to revise the certification requirement (CS-25/AMC) to include evaluation of the serious incident aborted landing after thrust reverser selection during a bounced landing scenario (in its most aggravated form).

Interim reply sent on 26/04/2024:

The Certification Specifications for Large Aeroplanes (CS-25) specify in Subpart B – Controllability and manoeuvrability – paragraph CS 25.143(a) that the aeroplane must be safely controllable and manoeuvrable during take-off, approach and go-around, approach and landing.

In addition, according to CS 25.143(b) it must be possible to make a smooth transition from one flight condition to any other flight condition without exceptional piloting skill, alertness, or strength under any probable operating conditions. This includes configuration changes, including deployment or retraction of deceleration devices, and go-around manoeuvres with all engines operating.

The European Union Aviation Safety Agency (EASA) understands these specifications as including go-around following touch down and selection of reverse thrust. This operating condition is however not specifically addressed in Subpart E Powerplant of CS-25, in particular CS 25.933 Reversing systems.

Taking into account the lessons learnt from this incident, EASA will emphasise the need for CS-25 applicants to consider appropriate operating conditions and factors that can influence the correct functioning of thrust reversers during go-around after an aborted landing, such as flight/ground and ground/flight transitions, aeroplane rebounds, and thrust asymmetries.

EASA plans to issue a generic Certification Review Item (CRI) providing Interpretative Material (IM) and Means of Compliance (MoC). It is expected that the IM and MoC will be used to show compliance with CS 25.143(a) and (b) (Controllability and manoeuvrability – General), CS 25.933 (Reversing systems), CS 25.901 (Powerplant installation), CS 25.1301 (Function and installation), and CS 25.1309 (Equipment systems and installation).

CS-25 should be amended later on once the above IM/MoC CRI content becomes mature.

The response to this safety recommendation will be updated once progress is made with the above actions.

Status: Open

FRAN-2008-328

Study on the Use of Erroneous Parameters at Takeoff, containing several occurrences between 2004 and 2006

Safety Recommendation received on 01/09/2008:

The DGAC shall in liaison with FAA and EASA improve the certification norms so that computers trigger crew warnings or activate protection systems when inconsistent data are inputted, obviously erroneous or far from usual values.

Interim reply sent on 19/07/2024:

On-board computer functions rejecting or alerting flight crew to erroneous take-off performance data input already exist in some modern large aeroplanes, however they are not mandated by EU regulations.
On 30 August 2023, the European Union Aviation Safety Agency (EASA) published the Terms of Reference (ToR) for Rulemaking Task RMT.0741:
https://www.easa.europa.eu/en/document-library/terms-of-reference-and-rulemaking-group-compositions/tor-rmt0741

The ToR refers to this safety recommendation.

The objective of this RMT is to mitigate, using on-board design means of protection, the risk of large aeroplane accidents or incidents caused by the use of erroneous take-off performance parameters, and by erroneous take-off positions.

Taking into account design solutions that have been developed by industry to date, this objective should be achieved through the introduction of design requirements aiming at detecting and preventing these errors by providing means of informing or alerting the flight crew in a timely manner.

This should include errors in the input and selection of the take-off performance parameters in the aeroplane systems, thereby addressing this safety recommendation.

A Notice of Proposed Amendment (NPA) is being drafted with publication for consultation currently expected in Q4 2024.

Status: Open

FRAN-2016-002

Dassault Falcon 7X, HB-JFN, 24/05/2011

Safety Recommendation received on 15/02/2016:

The BEA recommends that EASA, in coordination with FAA, SAE and EUROCAE, evaluate and propose alternative or additional methods to the FMEA for electronic equipment and software.

Final reply sent on 07/06/2024:

The European Union Aviation Safety Agency (EASA) coordinated with the Federal Aviation Administration (FAA), but also Transport Canada Civil Aviation (TCCA) and the Agência Nacional de Aviação Civil (ANAC), and was involved with SAE International and the European Organisation for Civil Aviation Equipment

(EUROCAE) as part of the SAE S-18 and EUROCAE WG-63 Working Groups for the improvement of the industry standards SAE ARP4761 “Guidelines and Methods for Conducting the Safety Assessment Process on Civil Airborne Systems and Equipment” and also SAE ARP 4754A “Guidelines for Development of Civil Aircraft and Systems”.

The activities of these Working Groups were broader in scope and ambition than focusing on evaluating and amending the specific methods related to Failure Modes and Effects Analysis (FMEA).

Indeed, an effective safety assessment process is achieved through different specific assessments at aircraft and systems level which have to be conducted by applying distinct types of safety analysis methods. The various possible safety analysis methods to be used complement one another, and their combination is essential to assess aircraft and system architectures from different perspectives.

The FMEA is one of a set of safety analysis techniques that support a more comprehensive safety assessment process, which also includes, among others, Fault Tree Analyses and Common Cause Analyses – such as Common Mode Analyses (CMAs), Particular Risk Analyses, and Zonal Safety Analysis.

Concurrent updates of industry standards ARP 4754B (revised) and harmonised EUROCAE ED-79B (revised), as well as SAE ARP4761A (revised) and harmonised EUROCAE ED-135 (new), have been published in December 2023. These bring significant improvements, all aimed at enhancing the safety assessment process in a global manner and, as far as ARP4761A/ED-135 is concerned, several steps of progress and clarification are introduced. Namely:

- emphasis of the integration of safety assessment processes with system development processes, so that to ensure safety considerations are also addressed throughout the entire lifecycle of the aircraft system,
- expanded guidance for addressing safety assessment in complex systems, including more detailed methods for analysing system interactions and interdependencies,
- improvement of the CMA appendix M, and the role of this specific analysis in safety assessments at each stage of the systems development process,
- also a greater emphasis on risk assessment and mitigation strategies, to provide more comprehensive methods for identifying, analysing, and mitigating potential hazards and risks associated with aircraft systems,
- introduction of a new Appendix N dedicated to Model-Based Safety Analysis (MBSA).

With the newly developed standards now applicable, aircraft system designers should better appreciate the limitations inherent to the FMEA technique. Especially when used on complex system architectures with a high degree of integrated aircraft level functions, where development errors that may trigger undesirable or unintended system behaviours present a greater safety risk, which require therefore an in-depth evaluation of the interdependency between systems and their channels - command and monitor - to ensure redundancy and independence principles through conducting several combined analysis methods (to include in particular CMAs as detailed in the enhanced Appendix M of ARP4761A/ED-135).

Overall, the recently released industry standards build upon the foundation laid by previous editions to provide a more comprehensive and up-to-date guidance for ensuring the safety of civil aircraft systems. The use of development assurance processes now described in ARP 4754B/ED-79B and its association with the safety analysis methods in ARP4761A/ED-135 ensures that development errors are minimised, and independence requirements are better evaluated to meet the safety objectives. The changes introduced reflect advancements in technology, industry best practices, and regulatory requirements, enhancing the effectiveness and reliability of safety assessment processes in the aerospace industry.

It is EASA's opinion that the industry standards evolution results in adequately addressing the intent of the safety recommendation.

Status: Closed – Agreement

FRAN-2016-004

Dassault Falcon 7X, HB-JFN, 24/05/2011

Safety Recommendation received on 15/02/2016:

The BEA recommends that EASA, in coordination with FAA, SAE and EUROCAE, develop means or methods that make it possible to consolidate, during safety analyses, checks on the independence of system control and the monitoring of said system.

Final reply sent on 07/06/2024:

Since JAR 25 (Joint Airworthiness Requirements for Large Aeroplanes) change 16, JAR/CS 25.1309(b)(1)(ii) requires explicitly that catastrophic failure conditions must not result from a single failure. Systems with an architecture with independent control and monitoring is one of the available means to comply with this requirement.

The current AMC (Acceptable Means of Compliance) 25.1309 (System design and analysis) clarifies that a single failure also consists in any set of failures, which cannot be shown to be independent from each other. The AMC therefore drives aircraft system designers to perform their safety assessment process with the aim of ensuring that adequate system redundancy or independence is maintained. This is achieved through different types of Common Cause Analyses to be conducted in accordance with the industry standard SAE ARP4761 "Guidelines and methods for conducting the safety assessment process on civil airborne systems and equipment" (as referenced in the AMC 25.1309). Namely, Particular Risk Analysis, Common Mode Analysis (CMA), and Zonal Safety Analysis.

Carrying out an effective CMA is considered genuine "means or methods" in support of the safety assessment at an aircraft and systems level intended to identify a possible lack of redundancy or independence between control and monitoring functions. Indeed, the CMA Appendix of the SAE ARP4761 standard is "based on analysing design and implementation for elements that may defeat the redundancy or independence of functions within the design". When required redundancy or independence is compromised, a justification for the acceptability or elimination of the compromise is necessary.

For this reason, the European Union Aviation Safety Agency (EASA) participated in the activities of the European Organisation for Civil Aviation Equipment (EUROCAE) WG-63 and SAE S-18 Working Groups, whose goal was to revise the SAE ARP4761 standard and particularly improve the CMA Appendix thereof.

In this framework, EASA coordinated with the Federal Aviation Administration (FAA), but also Transport Canada Civil Aviation (TCCA) and the Agência Nacional de Aviação Civil (ANAC), and was involved with SAE International and EUROCAE in the development of "means or methods" that make it possible to consolidate, during safety analyses, checks on the independence between the control and monitoring of safety-critical systems. Industry standards as SAE ARP4761A (revised) and harmonised EUROCAE ED-135 (new) have been published in December 2023. Both standards contain an enhanced CMA Appendix M addressing the subject matter and intent of this safety recommendation, especially with respect to common mode failures.

Finally, in its coordination effort with the FAA, EASA also advocated for the harmonisation of the "no-single failure" criteria between the two regulators at the level of the currently misaligned FAR (Federal Aviation Regulation) 25.1309 and CS (Certification Specification) 25.1309 certification requirements.

The FAA has published, under Docket Number FAA-2022-1544, a Notice of Proposed Rulemaking (NPRM) on "System Safety Assessments" on December 8, 2022, in which amendments to certain airworthiness requirements of FAR 25 are proposed. These include standardised criteria for conducting system safety assessments and in particular the introduction of a non-single failure criterion, in order to align with EASA on the current CS 25.1309(b)(1)(ii), which, as previously stated above, explicitly requires that catastrophic failure conditions must not result from a single failure.

Status: Closed – Agreement

FRAN-2016-006

Piper Aircraft PA31T, OE-FKG, 28/10/2011

Safety Recommendation received on 05/04/2016:

The BEA recommends that EASA evaluate the possibility of developing an alternative programme for complex high performance single-pilot aeroplanes for which there is no adequate flight simulator, for example by using a flight simulator from a similar aeroplane.

Interim reply sent on 28/11/2024:

To evaluate the possibility of developing an alternative programme for complex high performance single-pilot aeroplanes for which there is no adequate flight simulator, for example by using a flight simulator from a similar aeroplane, the European Union Aviation Safety Agency (EASA) conducted Rulemaking Task (RMT).0196 'Improve flight simulation training devices (FSTDs) fidelity' to make the necessary changes to the Certification Specification for Aeroplane Flight Simulation Training Devices (CS-FSTD(A)) as well as the associated Acceptable Means of Compliance (AMC) / Guidance Material (GM).

The RMT concluded in the publication of a Notice of Proposed Amendment, (NPA) 2020-15, available at https://www.easa.europa.eu/en/document-library/notices-of-proposed-amendment/npa-2020-15.

Following consultation on the NPA, EASA intends to publish an Opinion, which is currently expected in Q2 2025. Subsequently, a Decision is planned one year after publication of the Opinion, in Q2 2026. A further reply will be provided by EASA once the adoption process has run its course.

Status: Open

FRAN-2018-022

Boeing 777, F-GUOC, 22/05/2015

Safety Recommendation received on 21/12/2018:

The BEA recommends that EASA, in the scope of an update of its impact assessment, assess the safety benefit of TOPMS-type systems, taking into account, in particular, the existing systems (Airbus TOM).

Final reply sent on 19/07/2024:

In 2022, the European Union Aviation Safety Agency (EASA) decided to revisit the Best Intervention Strategy (BIS) 'Entry of aircraft performance data' with a specific focus on recent and mature technological developments and to reassess the added value of those available design solutions to address the safety issue.

The developments under consideration included:

- On Board Weight and Balance Systems (OBWBS),
- Take-Off Performance Monitoring Systems (TOPMS) (for example the Airbus TOM function),
- Position Checking Systems.

The analysis of reported accidents and incidents (85 occurrences involving large aeroplanes operated in commercial air transport) over a 15 years period concluded that:

- 80 out of the 85 events under study (94%) could have been prevented with the use of available design mitigation solutions;
- Considering the relative effectiveness of a single design mitigation solution, the following values have been obtained:
  - TOPMS: 46%
  - Position checking system (Airbus TOS2 or similar system): 43%
  - OBWBS: 31%;
- The Position checking system tackles different types of errors than the TOPMS and the OBWBS. Therefore, these systems can be combined to obtain a higher rate of effectiveness in terms of preventing accidents and incidents:
  - TOPMS + Position checking system (TOS2 or equivalent): 90%
  - OBWBS + Position checking system (TOS2 or equivalent): 74%.

Based on this safety benefit and a high-level economic impact assessment, the BIS proposed a new action "New design specifications for the installation on large aeroplanes of mitigation means to protect against erroneous take-off performance parameters and position errors".

After consultation of the BIS proposal with EASA's Advisory Bodies in April 2023, the above proposed action was agreed owing to the positive support received.

On 30 August 2023, EASA published the Terms of Reference (ToR) for Rulemaking Task RMT.0741: https://www.easa.europa.eu/en/document-library/terms-of-reference-and-rulemaking-group-compositions/tor-rmt0741

The objective of this RMT is to mitigate, using on-board design means of protection, the risk of large aeroplane accidents or incidents caused by the use of erroneous take-off performance parameters, and by erroneous take-off positions.

Taking into account design solutions that have been developed by industry to date, this objective should be achieved through the introduction of design requirements aiming at detecting and preventing these errors by providing a means of informing or alerting the flight crew in a timely manner.
This should include the monitoring of real-time aeroplane performance during the take-off roll (TOPMS types of systems, for example addressed by the Airbus TOM function).

A Notice of Proposed Amendment (NPA) is being drafted with a publication for consultation currently expected in Q4 2024.

Status: Closed – Agreement

FRAN-2018-023

Boeing 777, F-GUOC, 22/05/2015

Safety Recommendation received on 21/12/2018:

The BEA recommends that EASA, in the scope of an update of its impact assessment, assess the safety benefit of gross error detection/warning systems, taking into account, in particular, existing systems (Airbus TOS, Boeing FMS/EFB messages and protections, Lufthansa Systems LINTOP, etc.).

Final reply sent on 19/07/2024:

In 2022, the European Union Aviation Safety Agency (EASA) decided to revisit the Best Intervention Strategy (BIS) 'Entry of aircraft performance data' with a specific focus on recent and mature technological developments and to reassess the added value of those available design solutions to address the safety issue.
The developments under consideration included:

- On Board Weight and Balance Systems (OBWBS),
- Take-Off Performance Monitoring Systems (TOPMS),
- Position Checking Systems.

The analysis of reported accidents and incidents (85 occurrences involving large aeroplanes operated in commercial air transport) over a 15 years period concluded that:

- 80 out of the 85 events under study (94%) could have been prevented with the use of available design mitigation solutions;
- Considering the relative effectiveness of a single design mitigation solution, the following values have been obtained:
  - TOPMS: 46%
  - Position checking system (Airbus TOS2 or similar system): 43%
  - OBWBS: 31%;
- The Position checking system tackles different types of errors than the TOPMS and the OBWBS. Therefore, these systems can be combined to obtain a higher rate of effectiveness in terms of preventing accidents and incidents:
  - TOPMS + Position checking system (TOS2 or equivalent): 90%
  - OBWBS + Position checking system (TOS2 or equivalent): 74%.

Based on this safety benefit and a high-level economic impact assessment, the BIS proposed a new action "New design specifications for the installation on large aeroplanes of mitigation means to protect against erroneous take-off performance parameters and position errors".

After consultation of the BIS proposal with EASA's Advisory Bodies in April 2023, the above proposed action was agreed owing to the positive support received.

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The objective of this RMT is to mitigate, using on-board design means of protection, the risk of large aeroplane accidents or incidents caused by the use of erroneous take-off performance parameters, and by erroneous take-off positions.

Taking into account design solutions that have been developed by industry to date, this objective should be achieved through the introduction of design requirements aiming at detecting and preventing these errors by providing a means of informing or alerting the flight crew in a timely manner.

This should include errors in the input and selection of the take-off performance parameters in the aeroplane systems (for example addressed by Airbus TOS1 and TOS2 functions).

A Notice of Proposed Amendment (NPA) is being drafted with a publication for consultation currently expected in Q4 2024.

Status: Closed – Agreement

FRAN-2018-024

Boeing 777, F-GUOC, 22/05/2015

Safety Recommendation received on 21/12/2018:

The BEA recommends that EASA, in coordination with the FAA, incite manufacturers to develop, for commercial aeroplanes which are the most prevalent and the most exposed to this risk, systems adapted to the characteristics of each aeroplane family, providing increased protection against the use of erroneous parameters at take-off.

Final reply sent on 19/07/2024:

On 30 August 2023, the European Union Aviation Safety Agency (EASA) published the Terms of Reference (ToR) for Rulemaking Task RMT.0741:
https://www.easa.europa.eu/en/document-library/terms-of-reference-and-rulemaking-group-compositions/tor-rmt0741

The objective of this RMT is to mitigate, using on-board design means of protection, the risk of large aeroplane accidents or incidents caused by the use of erroneous take-off performance parameters, and by erroneous take-off positions.
Taking into account design solutions that have been developed by industry to date, this objective should be achieved through the introduction of design requirements aiming at detecting and preventing these errors by providing a means of informing or alerting the flight crew in a timely manner.

Design requirements will be considered to address new large aeroplane designs. An analysis and impact assessment will be conducted to assess the feasibility and the benefit of design requirements applicable to existing (already type certificated) large aeroplane designs.

EASA held three workshops with stakeholders (industry and foreign partner authorities, which included the participation of the Federal Aviation Administration (FAA)) between November 2023 and May 2024.

During these workshops, EASA presented proposed draft new certification specifications and discussed with industry the option of retroactive design requirements.

It appears that some large aeroplane manufacturers have developed or are developing some or all of the envisaged functions to be mandated by design requirements.

For those manufacturers which have not yet started a design function development phase, these workshops served as a means of encouraging them to take action regarding their aeroplane designs, hence meeting the intent of this safety recommendation. It should be acknowledged that in the absence of a regulatory mandate some manufacturers may decide not to develop new protection functions.

A Notice of Proposed Amendment (NPA) is being drafted with a publication for consultation currently expected in Q4 2024.

Status: Closed – Agreement

FRAN-2023-024

BEA safety study on cockpit fires fed by pressurized oxygen

Safety Recommendation received on 29/12/2023:

The BEA recommends that EASA, in collaboration with the manufacturers, carry out additional risk analyses to take into account the hypothesis of an overpressure in the distribution system and its consequences in terms of failure mechanisms. The results should be analysed with regard to the potential factors explaining the scenario of the accident that occurred in flight [the accident is de-identified due to the ongoing investigation]. These analyses may require additional testing as part of a research program.

Interim reply sent on 18/03/2024:

The European Union Aviation Safety Agency (EASA) considers that there is no need to conduct research to characterise oxygen fire ignition mechanisms in presence of overpressure in the distribution system, as this risk is well known and taken into account in the current applicable Certification Specifications for Large Aeroplanes CS-25 (see paragraph below).

1) Initial airworthiness
New oxygen system designs installed on large aeroplanes must comply with the corresponding certification specifications provided in CS-25, in particular CS 25.1441 ‘Oxygen equipment and supply’.
Sub-paragraph (b) requires: ‘The oxygen system must be free from hazards in itself, in its method of operation, and in its effect upon other components’.

A corresponding Acceptable Means of Compliance (AMC) 25.1441(b) ‘Risk assessment related to oxygen fire hazards in gaseous oxygen systems’ exists since CS-25 Amdt 21 (Executive Director Decision 2018/005/R).
This AMC stipulates that the applicant should demonstrate that the oxygen systems and their components are designed so that the occurrence of an uncontrolled oxygen fire at the aircraft level is extremely improbable and does not result from a single failure.
To assess the consequences of system/component failures, the applicant should conduct an oxygen hazards analysis (OHA) in either a qualitative or a quantitative manner, and include the conclusions of the OHA in the oxygen systems system safety analysis (SSA).
The applicant should provide an OHA with a detailed assessment of the potential ignition and combustion mechanisms.
The AMC details in chapter 4 the items expected to be addressed by the OHA. The list includes the assessment of the possible internal ignition mechanisms. As a minimum, the following mechanisms should be assessed:

- adiabatic compression (pneumatic impact),
- frictional heating,
- mechanical impact
- particle impact
- fresh metal exposure
- static discharge
- electric arc
- chemical reaction
- resonance.

The applicant should evaluate each ignition mechanism under the worst-case operating conditions, including equipment failures, to determine whether the ignition mechanism exists in the component and in the system considered. This evaluation includes the assessment of failure cases leading to 'overpressure in the distribution system'.
Therefore, EASA considers that CS-25 contains adequate provisions meeting the intent of this safety recommendation for new oxygen system designs.

2) Continuing airworthiness
EASA will review the in-service experience related to oxygen system leakages on all Airbus Types and perform a design review of the oxygen system of the Airbus Single Aisle Type (A318, 319, 320, 321).
The design review will be conducted taking into account the elements contained in AMC 25.1441(b) (introduced at CS-25 Amdt 21). This will include checking the susceptibility of the system to overpressure.
EASA may extend the scope of these continuing airworthiness actions to other large aeroplane manufacturers once the investigation report has been officially published.

Status: Open

FRAN-2023-025

BEA safety study on cockpit fires fed by pressurized oxygen

Safety Recommendation received on 29/12/2023:

The BEA recommends that EASA assess the appropriateness of cockpit fire/smoke procedures incorporating the recognition of an oxygen fire (identifiable by a characteristic noise comparable to that of a blowtorch) and the need for the immediate cutting off of the oxygen supply in this case, and if applicable, review the requirements for installing and carrying protective equipment independent of the oxygen distribution system.

Interim reply sent on 18/03/2024:

1) Continuing airworthiness
The European Union Aviation Safety Agency (EASA) will review the in-service experience related to oxygen system leakages on all Airbus Types and perform a design review of the oxygen system of the Airbus Single Aisle (SA) Type (A318, 319, 320, 321).

The design review will include, but will not be limited to:

- The means of shutting off oxygen flow,
- Operational procedures associated with oxygen leakage, oxygen fire, including checking that fire-fighting procedures do not direct aircrew to use a fire extinguisher in case of oxygen fire,
- The number and location of portable breathing equipment,
- The number and location of fire extinguishers that may be used to fight a cockpit fire after the oxygen leakage has been stopped.

Depending on the outcome of this review, actions may be decided to develop missing procedures (e.g. to help identify oxygen leakage or an oxygen fire, to shut off oxygen flow etc), modify existing procedures, require modification of available protective equipment, as deemed necessary.
EASA may extend the scope of these continuing airworthiness actions to other large aeroplane manufacturers once the investigation report has been officially published.

2) Initial airworthiness
The certification specifications for large aeroplanes (CS-25) do not require the presence of a means of shutting off oxygen systems.

Taking into account the result of the continuing airworthiness review, EASA may envisage the following actions:

- For new certification project applications, EASA may raise Special Conditions and Interpretative Material,
- In parallel, the creation of a new safety issue 'Oxygen fed fire in the flight deck' to be identified in the European Safety Risk Management (SRM) process. The assessment of the safety issue may lead to newly-proposed risk mitigation actions that would go through an impact assessment before a decision to add them to the European Plan for Aviation Safety (EPAS).

The above actions may include mandating a means of shutting off oxygen flow, methods for the identification and management of oxygen leakage and oxygen fires, and / or protective and firefighting equipment, as deemed appropriate.

Status: Open

FRAN-2023-026

BEA safety study on cockpit fires fed by pressurized oxygen

Safety Recommendation received on 29/12/2023:

The BEA recommends that EASA ensure that:

- the danger represented by a glowing cigarette in the cockpit be taken into account and the associated risks assessed;
- certification and operational regulations be amended where applicable.

Interim reply sent on 18/03/2024:

1) Air Operations regulation
Regulation (EU) 965/2012 laying down technical requirements and administrative procedures related to air operations, contains very restrictive rules concerning smoking on board applicable to commercial air transport (CAT) (c.f. Annex IV (Part-CAT),, point CAT.OP.MPA.240), Non Commercial operations with Complex motor-power aircraft (NCC) (c.f. Annex VI (Part-NCC),, point NCC.OP.175), and Non Commercial operations with other-than complex motor-powered aircraft (NCO) (c.f. Annex VII (Part-NCO),, point NCO.OP.155).

Point CAT.OP.MPA.240 reads:
'The commander shall not allow smoking on board:
(a) whenever considered necessary in the interest of safety;
(b) during refuelling and defuelling of the aircraft;

(c) while the aircraft is on the surface unless the operator has determined procedures to mitigate the risks during ground operations;
(d) outside designated smoking areas, in the aisle(s) and lavatory(ies);
(e) in cargo compartments and/or other areas where cargo is carried that is not stored in flame-resistant containers or covered by flame-resistant canvas; and
(f) in those areas of the passenger compartment where oxygen is being supplied.'
Provisions in points NCC.OP.175 and NCO.OP.155 are similar to those in point CAT.OP.MPA.240.

Therefore, the European Union Aviation Safety Agency (EASA) considers that the current provisions applicable to EU operators are already sufficiently restrictive to address the identified risk of smoking on board.

Regarding third country operators operating in the EU, article 59 of Regulation (EU) 2018/1139 establishes that they need to comply with the International Civil Aviation Organization (ICAO) standards, and to the extent that such standards do not exist, the essential requirements for airworthiness, aircrew and air operations established in Annexes II, IV and V to that Regulation.

ICAO standards do not prohibit smoking on board an aircraft, neither in the passenger cabin, nor in the cockpit. Similarly, there are no provisions in Annex V to Regulation (EU) 2018/1139 concerning this specific issue, although there is a provision granting the pilot-in-command the authority 'to give all commands and take any appropriate actions for the purpose of securing the operation and the safety of the aircraft and of persons and/or property carried therein'. Under this legal framework, it is doubtful that requirements regarding smoking on board the aircraft could be enforced on third country operators operating in the EU unless ICAO adopts dedicated standards.

Notwithstanding the above, EASA may endeavour to raise awareness of the dangers of oxygen fire in the cockpit through Safety Promotion activities.

2) Initial airworthiness
The certification specifications for large aeroplanes (CS-25) do not contain provisions addressing specifically the risk represented by the presence of a cigarette in the cockpit. This is not taken into account in the oxygen hazards analysis to be performed according to Acceptable Means of Compliance (AMC) 25.1441(b) 'Risk assessment related to oxygen fire hazards in gaseous oxygen systems'.
EASA intends to propose the creation of a new safety issue 'Oxygen fed fire in the flight deck' to be identified in the European Safety Risk Management (SRM) process. The assessment of the safety issue may lead to newly-proposed risk mitigation actions that would go through an impact assessment before a decision to add them to the European Plan for Aviation Safety (EPAS). This may include a rulemaking action to create new certification specifications and / or acceptable means of compliance on oxygen systems in order to better consider the risk of fire triggered by a cigarette present in the cockpit.

3) Continuing airworthiness
EASA decided to review the in-service experience related to oxygen system leakages on all Airbus Types and to perform a design review of the oxygen system of the Airbus Single Aisle (SA) Type (A318, 319, 320, 321).

For the purpose of mitigating the risk represented by a cigarette, the design review is intended to include an analysis of the current options for the installation of ashtrays in the cockpit and their proximity to the oxygen mask stowage box or other source of oxygen leakage.

EASA may extend the scope of these continuing airworthiness actions to other large aeroplane manufacturers once the investigation report has been officially published.

Status: Open

FRAN-2024-003

Beech 1900-D, F-GLNH, 10/12/2021

Safety Recommendation received on 08/02/2024:

The BEA recommends that:

- whereas the manufacturer's solution of greasing and replacing the elevator trim actuators, imposed by mandatory Service Bulletin SB 27-3032 appears to be a risk mitigation solution that has reduced the frequency of these events without making them disappear;
- whereas there have been new occurrences in connection with a fault on the elevator control system on the Beech 1900, subsequent to the introduction of mandatory Service Bulletin SB 27-3032;

EASA ensure that the manufacturer and the FAA are well informed of the occurrences in Europe involving European operators, including the occurrences identified in this report, that it is informed of the analysis made of these occurrences, of the actions taken by the manufacturer and the FAA, and that it draw the consequences in the event of no measures or insufficient measures being taken.

Interim reply sent on 26/04/2024:

The European Union Aviation Safety Agency (EASA) highlights that a Bilateral Agreement on aviation safety between the European Community and the United States of America is in force, and is published here: https://www.easa.europa.eu/en/document-library/bilateral-agreements/eu-usa

Subsection 3.3 of Annex I to the Bilateral Agreement regulates the continued airworthiness process. In particular, point 3.3.1 establishes the commitment of the Technical Agents to "take action to address unsafe conditions in products that they have certificated". Point 3.3.2(a) further explains that the Federal Aviation Administration (FAA) “shall carry out the continued airworthiness State of Design functions applicable to the United States under Annex 8 of the Chicago Convention for aircraft".

In the case of the Textron BEECH-1900-D, EASA has informed the Type Certificate Holder of the occurrences mentioned in the safety investigation report via the FAA, as per paragraph 4.1.5 of the Technical Implementation Procedures (TIP) applicable to the Bilateral Agreement. EASA will review the conclusions drawn by the FAA.

Status: Open

FRAN-2024-004

ISSOIRE AVIATION APM30, F-HHOP, 02/08/2020

Safety Recommendation received on 29/04/2024:

The BEA recommends that EASA ensure with Issoire Aviation that relevant examinations of the collected screws are carried out, and that the results are analysed in order to determine whether or not the risk of failure persists, and impose new preventive measures, including a review of the design of the link between the flap arm and its control rod, should these prove necessary.

Interim reply sent on 19/07/2024:

The European Union Aviation Safety Agency (EASA) has been monitoring the issue and coordinating actions with the Type Certificate Holder (TCH) since the early phases after the accident. The TCH has already implemented a scheme to collect the flap screws of the fleet in service in order to analyse them in a laboratory. The action was mandated by Emergency Airworthiness Directive (AD) No. 2023-0096-E dated 09 May 2023. Since then, all flap lever screws collected by the TCH have been substituted with new ones. The collected screws were subject to destructive testing. Some screws showed cracks of varying lengths and depths. However, the preliminary analysis of the tests could not establish a link between the estimated cumulated flight hours, flight cycles and the extent of the observed damage. A design change is being developed to minimise the consequences of an erroneous installation of the flap lever screws. EASA highlights that the above-mentioned actions were undertaken as part of its regular continuing airworthiness oversight process.

Status: Open

FRAN-2024-005

ISSOIRE AVIATION APM30, F-HHOP, 02/08/2020

Safety Recommendation received on 29/04/2024:

The BEA recommends that EASA ensures that Issoire Aviation develops a robust solution for the installation of a distress beacon and its accessories on board APM aircraft and that this solution is also implemented for aircraft already in service.

Interim reply sent on 19/07/2024:

The Type Certificate Holder is developing a design change to prevent inadvertent damage to the Emergency Locator Beacon (ELT) of the affected APM fleet.

Status: Open

FRAN-2024-008

Airbus A320, 9H-EMU, 23/05/2022

Safety Recommendation received on 11/07/2024:

The BEA recommends that EASA require that air traffic control units can systematically detect an incorrect altimeter setting, in particular in the towers and approach units and define the associated phraseology for the air traffic controllers.

Interim reply sent on 09/09/2024:

The European Union Aviation Safety Agency (EASA) will consider the need for regulatory changes as a result of this safety recommendation as part of the regular amendments of Regulation (EU) 2017/373 laying down common requirements for providers of air traffic management/air navigation services (conducted in rulemaking task 0719) and Regulation (EU) No 923/2012 laying down the common rules of the air (conducted in rulemaking task 0476).

As a result of the analysis, which will be based on the assessment made by EASA during the draft report reply process, and of the applicable regulatory processes EASA may update the affected regulatory material as and if required. Afterwards EASA will update the reply to this safety recommendation accordingly.

Status: Open

FRAN-2024-009

Airbus A320, 9H-EMU, 23/05/2022

Safety Recommendation received on 11/07/2024:

The BEA recommends that EASA, in coordination with the FAA and RTCA, study the revision of the Minimum Operational Performance Specifications (MOPS) applicable to TAWS for Premature Descent Alerts (PDA), in order to take into account at least a standard 3° vertical profile offset by around 280 ft to the published vertical profile, representing an error of 10 hPa on a barometric approach.

Interim reply sent on 09/09/2024:

At the request of the Federal Aviation Administration (FAA) and the European Union Aviation Safety Agency (EASA), the RTCA Program Management Committee (PMC) has given Special Committee (SC) 231 a mandate to study the feasibility of an update to the Terrain Avoidance and Warning System (TAWS) Minimum Operational Performance Specifications (MOPS), including, amongst other changes, an update to the Premature Descent Alert (PDA) envelope. The topic is on the agenda of the first plenary meeting of SC-231 on 27-29 August 2024. Both EASA and FAA will be represented in SC-231.When the SC-231 agrees to propose a PDA envelope update and include it in the SC-231 Terms of Reference (ToR) (currently being drafted), and the Programme Management Committee approves the ToR, the MOPS revision work will be planned.

The response to this safety recommendation will be updated once new information is available.

Status: Open

FRAN-2024-013

Cessna 172, F-OOOO, 18/02/2022

Safety Recommendation received on 26/07/2024:

The BEA recommends that EASA identify all aeroplane types operated by the Member States likely to be equipped with flight control cable attach fittings made of AISI 303 Se stainless steel and, for those, impose appropriate corrective actions, where appropriate in coordination with primary certification authorities.

Interim reply sent on 16/10/2024:

The European Union Aviation Safety Agency (EASA) has published, on its Safety Publication Tool, the Safety Information Bulletin (SIB) 2019-12 (available at https://ad.easa.europa.eu/ad/2019-12) endorsing the recommendations of the Federal Aviation Administration's (FAA) specified in the Special Airworthiness Information Bulletin (SAIB) CE-19-13.

Such mentioned recommendations alert owners, operators, maintenance technicians and inspectors of the airworthiness concern. In the interests of safety, these actors are expected to regularly review safety publications. Nonetheless, EASA is evaluating a revision of the SIB to further increase its visibility by including a list of aeroplanes that are known to have flight control cable fittings made of AISI 303 Se steel.

EASA is also carrying out a review of occurrences involving a rupture or corrosion of flight control cables of small aeroplanes operated by organisations registered in an EU Member State or in another State participating in the work of EASA in accordance with Article 129 of Regulation (EU) 2018/1139 (i.e. EASA Member State). If the analysis reveals a systemic safety issue across different aeroplane types equipped with cable fittings made of steel AISI 303 Se, or a recurring critical concern with its use in a particular design, EASA will proceed in accordance with point 21.A.3B of Annex I (Part-21) to Regulation (EU) 748/2012. In its analysis, EASA will consider the guidance of paragraph 2.5 of GM1 to 21.A.3B(b). Furthermore, in the context of the bilateral agreement on cooperation in the regulation of civil aviation safety between the United States of America and the European Union, EASA will coordinate with the Federal Aviation Administration (FAA) to establish if an unsafe condition related to the use of AISI 303 Se steel exists on the Textron Cessna 172 type.

To the above extent, in coordination with the FAA, EASA is reviewing the Aircraft Maintenance Manual (AMM) of the Textron Cessna 172 to verify if Instruction for Continuing Airworthiness (ICA) recommendations contained in the FAA SAIB CE-19-13 were implemented.

An update to this interim reply can be expected in Q4 2024.

Status: Open

FRAN-2024-014

Piper PA46 350P (Malibu Mirage), N9190X, 14/09/2022

Safety Recommendation received on 28/11/2024:

The BEA recommends that EASA establish regulatory requirements in order to guarantee the safety of passengers carried on-demand for remuneration outside commercial air transport operations (Part CAT of European regulation AIR OPS).

Status: Open

FRAN-2024-017

Piper PA28RT, HB-PNP, 23/07/2020

Safety Recommendation received on 27/12/2024:

The BEA recommends that EASA, in coordination with the FAA, ensure that the risk of fire following a short-circuit at the diode device attaching points is controlled by aircraft manufacturers using a diode device similar to that on HB-PNP.

Status: Open

FRAN-2024-018

Hirth Janus CM, F-CVAS, 25/08/2022

Safety Recommendation received on 27/12/2024:

The BEA recommends that EASA, in coordination with the manufacturers, Schempp Hirth and Rotax, clarifies the situation and status of aircraft and engines whose type certificates are still valid, but for which spare parts are no longer available.

Status: Open

GERF-2018-002

FOKKER - F28, HB-JVE, 20/01/2015

Safety Recommendation received on 09/02/2018:

The European Aviation Safety Agency (EASA) should continue and expand the current activities regarding aircraft de-icing. In addition, due to the importance of aircraft de-icing for flight safety, EASA should consider placing aircraft de-icing under regulatory authority similar to aircraft maintenance.

Interim reply sent on 22/03/2024:

Following the publication of the Terms of Reference for Rulemaking Task RMT.0728 'Development for requirements for groundhandling' on 22 November 2019, the European Union Aviation Safety Agency (EASA) initiated the development of the ground handling (GH) requirements with the aim of setting up a regulatory framework for ground handling service providers (GHSP) to increase the overall safety level of the aviation system and reduce the damages to aircraft and vehicles recorded yearly.

The first draft proposed requirements for GH were developed between 2019 and 2022 by EASA with the support of an expert group composed of members from all affected stakeholders, i.e., national competent authorities, GHSP, aircraft operators and aerodrome operators. The draft proposed requirements were included in the 'Working Paper on the draft EU Ground Handling Regulation'. The Working Paper and its annexes were presented during an online public event organised by EASA on 30 June 2022 and open for consultation until 30 September 2022 (see https://www.easa.europa.eu/en/newsroom-and-events/events/webinar-eu-ground-handling-regulation).

Following several rounds of additional consultations in 2022 and 2023 with all the affected stakeholders, EASA published Opinion 01/2024 "Ground handling requirements" on 16 Jan 2024 [see Opinion No 01/2024]. This Opinion contains the proposed draft regulation for the GHSP, their oversight by Member States' competent authorities, and the interfaces with air operators and aerodromes where the services are being provided.

The proposed regulation is expected to increase the level of safety in ground operations by enabling effective communication and common interaction between GH and the other areas with which it interacts as a perfect interface – air operations and aerodrome operations.

Regarding de-icing, the following requirements are included in this Opinion: The GH organisations shall be responsible for the safe provision of GH services, including de-/anti-icing services. These organisations shall ensure that:

- They develop and implement a management system, including the main components of a safety management system;
- The relevant parts of their safety management system are compatible and complementary with those of the aerodrome operator and aircraft operator;
- Their personnel are trained and competent to perform their tasks in a safe manner, including for de-/anti-icing services;
- The de-icing/anti-icing services are performed in accordance with the operational procedures of the aircraft operator or, when so agreed with the aircraft operator, in accordance with their own operational procedures;
- They identify the interfaces with the other stakeholders involved in the same GH activities and ensure mutual communication and sharing of safety relevant information, as relevant;
- The quality of the fluids used for de-/anti-icing complies with the fluid quality standards and that periodic testing is performed;
- The equipment used for the de/anti-icing services is properly maintained in accordance with a maintenance programme and is compliant with the relevant requirements on ground support equipment;
- They comply with the applicable de-icing/anti-icing requirements of Regulation (EU) 965/2012 on air operations;
- They appoint a de-icing coordinator and implement proper communication procedures for de-/anti-icing at remote platforms and stands.

Opinion 01/2024 has been notified to the European Commission which will manage from this point onwards the adoption process.

Furthermore, EASA has organised the 'Winter Readiness Week', an online public event between 09-10 August 2023 in collaboration with aircraft operators, GHSP and aerodrome operators. The aim of the event was to share information on some of the potential winter challenges expected for 2023 and best practices. In addition to winter readiness and aerodrome snow clearance, the event hosted a dedicated session on aircraft de-icing (see https://www.youtube.com/watch?v=8Vlb1djACKI).

Subject to the European Commission's adoption of Opinion 01/2024, EASA intends to issue Acceptable Means of Compliance (AMC) and Guidance Material (GM). A further reply will be provided once the European Commission's adoption process has run its course and, assuming the Opinion is adopted, the corresponding AMC / GM have been issued.

Status: Open

GERF-2020-004

Diamond DA40, D-EESU, 02/03/2018

Safety Recommendation received on 28/12/2020:

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

Final reply sent on 19/12/2024:

The European Union Aviation Safety Agency's (EASA) Safety Promotion Plan for General Aviation (GA) has identified the following Key Decision Points to focus on:

- Manage Your Flight – Prepare thoroughly and stay alert at all stages.

- Stay in Control – Practice your emergency reactions to maintain control even in stressful situations.
- Cope with Weather – Don't take chances! Know how to handle tricky weather conditions.
- See and be Seen - Avoid mid-air collisions by keeping good awareness of where you are and where other aircraft are.

The Key Decision Points for GA were covered in a series following the EASA Annual Safety Review published on 31 October 2024 - https://www.easa.europa.eu/community/topics/annual-safety-review-2024-ga-elements

Status: Closed – Agreement

GERF-2024-001

Olympia Meise, D-1348, 05/09/2022

Safety Recommendation received on 25/04/2024:

The European Aviation Safety Agency (EASA) should, in the scope of the further development of the current European Plan for Aviation Safety (EPAS), develop the point 3. 1. 2. 3 Address safety risks in GA in a proportionate and effective manner within the framework of Volume I 3. Strategy to the effect that safety campaigns are to be developed, implemented and, adapted to the development of accident occurrences, continuously updated to counteract accidents as a result of unsafe acts and their (pre-) conditions in the rigging and following check of gliders.

Interim reply sent on 19/07/2024:

The European Union Aviation Safety Agency (EASA) has a specific Safety Promotion Task, SPT.0125, to promote the most important safety issues in General Aviation. This is detailed on page 123 of Volume II of the 2024 edition of the European Plan for Aviation Safety (published at https://www.easa.europa.eu/en/document-library/general-publications/european-plan-aviation-safety-epas-2024).

The topics that are then covered in the Safety Promotion Plan for General Aviation, which includes Gliders and Balloons, are then decided upon based on the European Safety Risk Management process and then further discussion at the EASA General Aviation Community/ Technical Advisory Body (TeB) meeting with National Aviation Authorities and other stakeholders. Currently, within this plan is the topic of glider rigging and filming of a video and development of associated promotion will take place in August and September 2024. This will then be promoted over the winter and then form a major part of EASA "Ready for the Season" Campaign for Gliders in 2025.

A further update will be provided once the planned safety promotion material has been published.

Status: Open

GERF-2024-002

Olympia Meise, D-1348, 05/09/2022

Safety Recommendation received on 25/04/2024:

The European Aviation Safety Agency (EASA) should demand a check and its documentation after the rigging of sailplanes.

Interim reply sent on 19/07/2024:

The European Union Aviation Safety Agency (EASA) has a specific Safety Promotion Task, SPT.0125, to promote the most important safety issues in General Aviation. This is detailed on page 123 of Volume II of the 2024 edition of the European Plan for Aviation Safety (published at https://www.easa.europa.eu/en/document-library/general-publications/european-plan-aviation-safety-epas-2024).

The topics that are then covered in the Safety Promotion Plan for General Aviation, which includes Gliders and Balloons, are then decided upon based on the European Safety Risk Management process and then further discussion at the EASA General Aviation Community/ Technical Advisory Body (TeB) meeting with National Aviation Authorities and other stakeholders. Currently, within this plan is the topic of glider rigging and filming of a video and development of associated promotion will take place in August and September 2024. This will then be promoted over the winter and then form a major part of EASA "Ready for the Season" Campaign for Gliders in 2025.

A further update will be provided once the planned safety promotion material has been published.

Status: Open

GERF-2024-003

Airbus A320, D-AICP, 11/07/2021

Safety Recommendation received on 02/05/2024:

The European Aviation Safety Agency (EASA) should prompt airline operators to ensure that pilots have clear guidelines in their operations manual or any other documentation to help them report key issues to maintenance personnel in case of a "High Load Event" so that mechanics have sufficient information to apply the appropriate AMM inspection. Furthermore, this should clarify to pilots the importance of their report as the primary means detection "High Load Events".

Interim reply sent on 07/06/2024:

The European Union Aviation Safety Agency (EASA) recognises the safety issue referred in the safety recommendation (SR) and agrees in principle with the SR objectives. Therefore, EASA intends to perform an assessment in line with its Strategic Risk Management processes and keep the German Federal Bureau of Aircraft Accident Investigation updated of its actions.

Status: Open

GERF-2024-004

Discus 2cT, D-KABC, 19/09/2019

Safety Recommendation received on 01/08/2024:

To prevent Loss of Control In-flight (LOC-I) sailplane accidents, the European Union Aviation Safety Agency (EASA) should amend the Certification Specification for sailplanes and powered sailplanes (CS-22) to the effect that, in addition to the existing requirements (CS 22.207), a stall warning device becomes mandatory.

Interim reply sent on 16/10/2024:

The European Union Aviation Safety Agency (EASA) will analyse potential actions to reduce the risk of sailplane and powered sailplane accidents triggered by Loss of Control In-flight (LOC-I) after a stall. This will be done in the context of the Sailplanes portfolio (see the European Plan for Aviation Safety (EPAS) 2024, Vol. III) which includes the Key Risk Area 'Aircraft upset'. This is published here: https://www.easa.europa.eu/en/document-library/general-publications/european-plan-aviation-safety-epas-2024
The possibility to mandate in the Certification Specifications for Sailplanes and Powered Sailplanes (CS-22) the installation of a stall warning device will be considered.

EASA also brought the topic and this safety recommendation to the attention of the OSTIV (International Scientific and Technical Soaring Organisation) SDP (Sailplane Development Panel, on which more information is available here: https://ostiv.org/sections/technical-section/sailplane-development-panel.html).

The SDP is one of three panels within OSTIV. The SDP members are representatives of sailplane manufacturers and aviation authorities (including EASA) as well as experts and scientists from all over the world. During a plenary meeting held on 17-18 August 2024, the SDP decided to create a sub-group that will work on this topic and provide recommendations, which could be an input for further assessment of actions in the EPAS, such as safety promotion and rulemaking. This activity should include a review and an evaluation of mature technical solutions available on the market.

The response to this safety recommendation will be updated when new information is available on the above-mentioned actions.

Status: Open

GERF-2024-005

Discus 2cT, D-KABC, 19/09/2019

Safety Recommendation received on 01/08/2024:

To prevent Loss of Control In-flight (LOC-I) sailplane accidents, the European Union Aviation Safety Agency (EASA) should undertake corresponding research and evaluate whether a requirement of a stall warning device as mandatory minimum equipment for certified sailplanes and powered sailplanes is justified. Based on these results, EASA should decide whether to amend Regulation (EU) No 2018/1976 Part-SAO.

Interim reply sent on 16/10/2024:

The European Union Aviation Safety Agency (EASA) will analyse potential actions to reduce the risk of sailplanes and powered sailplanes accidents triggered by Loss of Control In-flight (LOC-I) after a stall. This will be done in the context of the Sailplanes portfolio (see the European Plan for Aviation Safety (EPAS) 2024, Vol. III) which includes the Key Risk Area 'Aircraft upset'. This is published here: https://www.easa.europa.eu/en/document-library/general-publications/european-plan-aviation-safety-epas-2024
The possibility to mandate the installation of a stall warning device on already certified sailplanes/powered sailplanes will be considered.

EASA also brought the topic and this safety recommendation to the attention of the OSTIV (International Scientific and Technical Soaring Organisation) SDP (Sailplane Development Panel, on which more information is available here: https://ostiv.org/sections/technical-section/sailplane-development-panel.html).

The SDP is one of three panels within OSTIV. The SDP members are representatives of sailplane manufacturers and aviation authorities (including EASA) as well as experts and scientists from all over the world. During a plenary meeting held on 17-18 August 2024, the SDP decided to create a sub-group that will work on this topic and provide recommendations, which could be an input for further assessment of actions in the EPAS, such as safety promotion and rulemaking. This activity should include a review and an evaluation of mature technical solutions available on the market.

The response to this safety recommendation will be updated when new information is available on the above-mentioned actions.

Status: Open

IRLD-2023-001

Boeing 737-800, EI-EMM, 11/12/2021

Safety Recommendation received on 18/08/2023:

EASA undertakes a safety promotion campaign to highlight to passengers and crew, the behaviours which will minimise their personal risk of falling whilst embarking or disembarking an aircraft.

Final reply sent on 28/11/2024:

The European Union Aviation Safety Agency (EASA) has now completed two promotion items to the industry on this topic. The ability of EASA and other regulatory authorities to influence passengers is minimal, therefore the best method of promotion is through the operators.

An initial promotion was done in the Learning from Occurrences part of the Conversation Aviation Magazine 2-2024, published at https://www.easa.europa.eu/community/topics/conversation-aviation-2-2024-summer-reflection (Page 35). More in-depth promotion has just been completed for the Winter 2024 Edition of Conversation Aviation Magazine. This includes a dedicated article in the magazine that is then used by many operators to promote safety to their own staff.

The article will also be published on the Air Ops Community as a standalone article with additional promotion to reinforce the message for operators to promote the topic to passengers and also to encourage their cabin crew to intervene and support passengers when situations arise that might result in a

fall (such as passengers trying to carry too many things while supervising children or elderly family members or during bad weather).

Status: Closed – Agreement

IRLD-2024-001

VULCANAIR P68 Observer 2, EI-ODA, 18/03/2022

Safety Recommendation received on 19/03/2024:

EASA should review its Supplemental Type Certificate approval process to ensure that firefighting capability is considered whenever additional electrical equipment associated with a Supplemental Type Certificate is installed.

Final reply sent on 07/06/2024:

The rules applicable for the classification and approval of Major Changes and Supplemental Type Certificates (STC) are provided in Section A, Subparts D and E as applicable, of Annex I (Part-21) to Regulation (EU) 748/2012. Regarding Major Changes, point 21.A.101 - also named 'Changed Product Rule (CPR)' - of the Part-21 approval process, details how to determine the type certification basis applicable for the design change and areas affected by the change(s).

The corresponding CPR process itself includes the identification of the areas of the product affected by the change, the identification of new design features and associated hazards, the evaluation of the adequacy of the applicable certification specifications to cover and mitigate those features and hazards, and potentially the issuance of additional special conditions or amendment of special conditions if it is found that the applicable certification specifications are not adequate (point 21.A.101(d)).

The European Union Aviation Safety Agency (EASA) considers that the above-mentioned change approval rules of Part-21 are sufficiently robust for the purpose of identifying hazards and prescribing certification mitigations for new risks resulting from the proposed Major Change(s).

When properly designed, installed and operated, the addition of equipment to an aircraft electrical system should not introduce a new hazard compared to the initial type certification hypotheses. However, the design and installation of the payload equipment of the occurrence aircraft was not approved.

The current airworthiness certification specifications applicable to the occurrence aircraft type (Certification Specifications for Normal-Category Aeroplanes (CS-23) Amendment 6) already contain provisions for fire protection. In particular, CS 23.2325(a)(1) prescribes that "The aeroplane is designed to minimise the risk of fire initiation due to anticipated heat or energy dissipation or system failures or overheat that are expected to generate heat sufficient to ignite a fire;[…]". Additionally, CS 23.2325(b)(1) requires that "The aeroplane is designed to minimise the risk of fire propagation by providing adequate fire or smoke awareness and extinguishing means when practical".

The lessons learnt from past accidents highlight that firefighting and fire resistance should only be considered as a last line of defence, to mitigate the residual risk after fire prevention measures are applied. It should also be noted that an excessive use of firefighting equipment in a small and confined space during flight might even have a negative safety impact as a result of the emission of powders, liquids, foams and/or gases. EASA believes that these considerations are already adequately taken into account in the currently applicable CS-23, which are also found consistent with the principles outlined in Article 4((2) of Regulation (EU) 2018/1139 of the European Parliament and of the Council which require that measures

taken by EASA under this Regulation must correspond and be proportionate to the nature and risk of each particular activity to which they relate.

In view of the above considerations, EASA finds that for CS-23 aeroplanes with fewer than 6 passengers, only one fire extinguisher, reachable by the minimum crew on board (the pilot), is considered sufficient and proportionate.

In conclusion, EASA agrees that the STC approval process should consider firefighting capability as a mitigating factor whenever new hazards are introduced. EASA considers that the current Part-21 approval process, including the CPR, is adequate for this purpose. Furthermore, EASA considers that to ensure an adequate level of safety, the certification focus should be on means of fire prevention and fire retardation before considering additional firefighting capabilities.

Status: Closed – Partial Agreement

ITAL-2016-013

Airbus A320, G-EZTC, 12/08/2013

Safety Recommendation received on 06/12/2016:

ANSV recommends EASA to highlight to civil aviation national authorities that when certifying the maintenance organization it must be ascertained that the organization MOE procedures, safety policy and safety standards adequately indicate and encompass requirements and methods to use the applicable technical documentation during maintenance activities.

Final reply sent on 28/11/2024:

The European Union Aviation Safety Agency (EASA) has now completed two pieces of promotion on this topic as key aspects of preventing maintenance error and mitigating risks coming from this domain.

Firstly, an article was published in the Conversation Aviation Magazine 1-2024, published at https://www.easa.europa.eu/community/topics/conversation-aviation-1-2024-dirty-dozen-edition (Page 23) on 29 February 2024.

The topic was also covering in a specific article 1 July 2024 with an article on Preventing Maintenance Error, published at https://www.easa.europa.eu/community/topics/preventing-maintenance-error.

The topic has also been discussed in the Safety Promotion Network (SPN) that is the collaborative group with EASA and the National Aviation Authorities (NAAs) that coordinates safety promotion across Europe. This is to ensure that the NAAs are also aware of the work carried out and promote it to both their own staff and maintenance organisations in their jurisdiction.

Status: Closed – Agreement

ITAL-2016-151

AGUSTA AW609, N609AG, 30/10/2015

Safety Recommendation received on 23/06/2016:

The ANSV recommends, in the framework of the certification process, to verify that the aerodynamic behaviour of the aircraft at high-speed conditions will be reviewed, if necessary, making use of wind tunnels tests in addition to updated models and simulations that can be representative of the complex flight conditions of this peculiar aircraft.

Interim reply sent on 19/07/2024:

The European Union Aviation Safety Agency (EASA), in its capacity as validating authority, is finalising a draft tiltrotor Special Condition (SC) for the AW609. This includes special detailed technical specifications derived mainly from Certification Specifications CS-25 (Large Aeroplane) and CS-29 (Large Rotorcraft). These CSs are complemented by specific requirements for tiltrotor design. Among these requirements, the draft tiltrotor SC TR.253, directly addresses high-speed characteristics. Additionally, the draft tiltrotor (TR) SC includes evaluating extreme conditions outside the normal operational envelope. The EASA certification basis for the AW609 specifically includes SC TR regulations SC TR.141, SC TR.143, SC TR.145, SC TR.147, SC TR.171, SC TR.173, SC TR.175, SC TR.177, SC TR.181, and SC TR.191, among others, which directly address items such as flight control input, flight mode transition, controllability and manoeuvrability, and stability. Compliance with the requirements listed previously requires assessment of the control laws, and unexpected and un-commanded coupling effects.

In addition, EASA intends to publish a dedicated Acceptable Means of Compliance (AMC) with SC TR.253 and with other SC TR requirements addressing flight stability demonstration which advise supporting the flight test activity with dedicated analysis/methodology aimed at assessing the robustness of the stability margins through:

- Verification of the aerodynamic model with wind tunnel data and available flight test data;
- Verification that the Automatic Flight Control System (AFCS) model accurately matches the one installed in the aircraft;
- Analysis ensuring the full understanding and confidence in the aircraft response under crew inputs or perturbations.

All the above regulatory material will be applicable to certification of tiltrotor products. Therefore, the intent of the Safety Recommendation is fulfilled by ensuring that key aspects of the airworthiness of the product are thoroughly addressed by the Applicant and verifiable by the Certification Authority.

Status: Open

ITAL-2016-152

AGUSTA AW609, N609AG, 30/10/2015

Safety Recommendation received on 23/06/2016:

The ANSV recommends, in the framework of the certification process, to verify that the control laws of the aircraft will be reviewed in the management of the extreme flight conditions in which the aircraft could possibly fly. That verification should be addressed to ensure the effectiveness of the flight controls inputs given by the pilot avoiding the possibility of unexpected and un-commanded coupling effects.

Interim reply sent on 19/07/2024:

The European Union Aviation Safety Agency (EASA), in its capacity as validating authority, is finalising a draft tiltrotor Special Condition (SC) for the AW609. This includes special detailed technical specifications derived mainly from Certification Specification CS-25 (Large Aeroplane) and CS-29 (Large Rotorcraft). These CSs are complemented by specific requirements for tiltrotor design. Among these requirements, the draft tiltrotor SC TR.253, directly addresses high-speed characteristics. Additionally, the draft tiltrotor (TR) SC includes evaluating extreme conditions outside the normal operational envelope. The EASA certification basis for the AW609 specifically includes SC TR regulations SC TR.141, SC TR.143, SC TR.145, SC TR.147, SC TR.171, SC TR.173, SC TR.175, SC TR.177, SC TR.181, and SC TR.191, among others, which directly address items such as flight control input, flight mode transition, controllability and manoeuvrability, and stability. Compliance with the requirements listed previously requires assessment of the control laws, and unexpected and un-commanded coupling effects.

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- Analysis ensuring the full understanding and confidence in the aircraft response under crew inputs or perturbations.

All the above regulatory material will be applicable to certification of tiltrotor products. Therefore, the intent of the Safety Recommendation is fulfilled by ensuring that key aspects of the airworthiness of the product are thoroughly addressed by the Applicant and verifiable by the Certification Authority.

Status: Open

ITAL-2022-009

AS350 B3, I-AMVV, 07/01/2020

Safety Recommendation received on 07/12/2022:

ANSV recommends [EASA] to request the manufacturer DART Aerospace to evaluate the possibility of modifying the closing mechanisms of its baskets, in order to remove protrusions potentially dangerous during ground operations around helicopters equipped with such products.

Final reply sent on 19/07/2024:

As Transport Canada Civil Aviation (TCCA) is the Primary Certification Authority for DART Aerospace baskets design, following this Safety Recommendation (SR), the European Union Aviation Safety Agency (EASA), acting as Validating Authority, proactively initiated coordination in January 2023 with both TCCA and DART Aerospace (i.e. the basket design holder) to evaluate the possibility of modifying the basket closing mechanism, in order to protect the hook of the opening lever or remove protrusions that are potentially dangerous during ground operations. In March 2023, TCCA confirmed to EASA that DART was ready to modify the current design as a safety improvement to their product.

Following that, in August 2023, DART designed a lower profile basket handle to reduce the risk of snagging (ref. DSI 9913) and issued DART Service Instruction (ref. SB23-1) for embodiment of the modification for the

fleet in-service. DART has contacted all their known customers to raise awareness of this design improvement. With this specific product release initiative, DART is highlighting the input received from EASA, hence it is assumed that Operators would voluntarily apply the design improvement.

EASA considers that this design of the basket closing mechanism was not a key factor contributing to this specific accident and, therefore, the safety concern highlighted in this SR is still not considered to be a design deficiency that would warrant Airworthiness Directive (AD) action under point 21.A.3B of Annex I (Part-21) to Regulation (EU) no. 748/2012.

EASA is also satisfied with the awareness campaign put in place by DART and therefore does not consider it necessary to launch additional safety promotion initiatives (i.e. Safety Information Bulletin).

In conclusion, based on the above actions, EASA considers that all the necessary steps are now in place to minimise risks during ground operations of helicopters equipped with DART utility baskets.

Status: Closed – Agreement

ITAL-2024-001

Pilatus PC12/47E, YR-PDV, 03/10/2021

Safety Recommendation received on 21/06/2024:

The ANSV recommends introducing the requirement for non-professional pilots qualified for the SET class and, in particular for the PC-12, recurrency training. This could preferably take place on the simulator, emphasising the aspects defined by the OE-GM Flight Crew (in particular by the TASE area) as well as the notions exposed as part of the HPA preparatory course. This training, of a recurring nature, should include a review of the normal, abnormal and emergency procedures, a periodic review of the on-board systems, not least the avionics system. This is to ensure constant updates on the contents of the OE-GM Flight crew. This recurrent training could therefore culminate with the proficiency check.

Final reply sent on 17/09/2024:

The European Union Aviation Safety Agency (EASA) considers that the current system is robust enough for the operations of Single-Engine Turboprop High Performance (SPHP) aircraft. This is because there is already a renewal training system in place referenced in FCL.740 and FCL.710 to Regulation (EU) No 1178/2011 laying down technical requirements and administrative procedures related to civil aviation aircrew, and there are proficiency checks outlined in Appendix 9, thereof.

Repeated differences training and proficiency checks as per points FCL.710 and FCL.740 can be considered as an evaluation of the pilot to ensure that pilots maintain the skills and knowledge that are necessary to safely operate the aircraft.

Therefore, EASA considers that the existing training and proficiency check system is sufficient to ensure the safe operation of SPHP aircraft and does not find it necessary to amend the existing rules or create additional requirements as recommended.

Status: Closed – Disagreement

ITAL-2024-002

Pilatus PC12/47E, YR-PDV, 03/10/2021

Safety Recommendation received on 21/06/2024:

The ANSV recommends considering the development of single resource management (SRM) courses for single pilot HPA pilots, making both initial and recurrent training compulsory, as a prerequisite for achieving and maintaining the class rating SET PC-12 and similar HPA aircraft.

Interim reply sent on 17/09/2024:

The European Union Aviation Safety Agency (EASA) is open to considering the inclusion of additional Crew Resource Management (CRM) for Single Pilot High Performance (SPHP) aircraft within the current Acceptable Means of Compliance (AMC), contingent on approval following consultations with advisory bodies.

A further update will be provided after consultation with the advisory bodies in 2025.

Status: Open

ITAL-2024-003

Pilatus PC12/47E, YR-PDV, 03/10/2021

Safety Recommendation received on 21/06/2024:

The ANSV recommends considering the development of specific training for the recognition and recovery from unusual positions (UPRT), making it compulsory, both initial and recurrent training, as a prerequisite for achieving and maintaining the SET PC class rating -12 and similar HPA aircraft.

Final reply sent on 17/09/2024:

The European Union Aviation Safety Agency (EASA) acknowledges that the implementation of Upset Prevention and Recovery Training (UPRT) for the High-Performance Aeroplanes (HPA) was not anticipated, despite the discussions during Rulemaking Task (RMT) RMT.0581 which led to Opinion 06/2017. It was determined by the expert group that UPRT should be mandated solely for complex airplanes, multi-pilot (MP) airplanes, and any airplane operated in Multi-Pilot Operations (MPO). Beyond this specification, EASA believes that the elements of general UPRT are already integrated into the EU regulatory framework as follows:

- Commercial Pilot Licence (CPL) courses incorporate basic UPRT elements within the flight training syllabus, as per the Acceptable Means of Compliance (AMC1 to Appendix 3, Section C to E).
- For the Airline Transport Pilot Licence (ATPL) integrated courses and the multi-pilot airplane courses, an advanced UPRT course, described in point FCL.745.A of Annex I (Part-FCL) to Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew, is included within these training programmes. App. 3. Section A, point 4.(d) and AMC1 App. 3, Section A, point (d)(5).
- Instrument Rating Training (IR) courses also incorporate UPRT elements within Appendix 7, Section 2 (C) “Recovery unusual attitudes” to Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew.

Considering the circumstances of the accident and the fact that the applicable regulation already incorporates relevant UPRT provisions, EASA also maintains its position and does not intend to propose further regulatory changes.

Status: Closed – Disagreement

ITAL-2024-004

Pilatus PC12/47E, YR-PDV, 03/10/2021

Safety Recommendation received on 21/06/2024:

The ANSV recommends making mandatory the recommendations in ICAO Annex 6 Part II, International General Aviation in points 2.4.16.1.2.1 and 2.4.16.2.1 in terms of on-board recording devices.

Final reply sent on 09/09/2024:

The European Union Aviation Safety Agency (EASA) considers that the current EU Instruments, Data and Equipment requirements (IDE) Non-Commercial Operations with Other-than Complex Motor Powered Aircraft (NCO) operation are adequate.

The assessment on the need to fit aeroplanes involved in non-commercial operations with on-board devices has been performed as part of Rulemaking Task RMT.0392 (Regular update of Regulation (EU) 965/2012) and making the recommendations in points 2.4.16.1.2.1 and 2.4.16.2.1 of ICAO Annex 6 Part II mandatory in the EU regulatory framework was not supported.

EASA would consider amending the current IDE requirements should the International Civil Aviation Organisation (ICAO) mandate the fitting of on-board devices in Annex 6 Part II. EASA would further support any regulatory change in the EU framework.

Status: Closed – Disagreement

ITAL-2024-005

AS350B3e, I-LGLG, 30/12/2020

Safety Recommendation received on 21/06/2024:

It is recommended to provide for the introduction of specific mandatory training requirements also for pilots who intend to operate NCO.HESLO.

Final reply sent on 09/09/2024:

The European Union Aviation Safety Agency (EASA) must facilitate that the EU regulatory framework for civil aviation, including the requirements in Annex VII (Part-NCO) of Commission Regulation (EU) No 965/2012, is appropriate for the level of activity and risk to third parties involved.

EASA published guidance material (GM) to NCO.SPEC.HESLO.100 to Annex VII (Part-NCO) to Regulation (EU) 965/2012, namely GM1 NCO.SPEC.HESLO.100, which refers to guidance for initial pilot training contained in

GM1 SPO.SPEC.HESLO.100 associated to said point of Annex VIII (Part-SPO) of the same Regulation. EASA considers this guidance as adequate considering the level of HESLO activities being conducted under Part-NCO.

In view of the above, EASA considers that introducing specific mandatory training requirements for pilots who intend to operate NCO.HESLO would not bring about additional safety benefits.

Status: Closed – Disagreement

ITAL-2024-006

AS350B3e, I-LGLG, 30/12/2020

Safety Recommendation received on 21/06/2024:

It is recommended to provide for the introduction of limitations regarding the presence of passengers on board for operations carried out with external loads.

Final reply sent on 09/09/2024:

Article 5(7) of Regulation (EU) No. 965/2012 laying down technical requirements and administrative procedures related to air operations, stipulates that flights taking place immediately before, during or immediately after specialised operations and directly connected to those operations shall be operated in accordance with paragraphs 3, 4 and 6 of said Article, as applicable. Except for crew members, persons other than those indispensable to the mission shall not be carried on board.

Article 5(7) of said Regulation does not differentiate between specialised operations conducted for commercial or non-commercial purposes. As such this Article prohibits the carriage of persons other than those indispensable to the mission. Therefore, the European Union Aviation Safety Agency (EASA) considers that the intent of the Safety Recommendation (SR) is already addressed by the existing and applicable Commission Regulation (EU) No 965/2012.

Status: Closed – Disagreement

ITAL-2024-007

AS350B3e, I-LGLG, 30/12/2020

Safety Recommendation received on 21/06/2024:

It is recommended to provide for the introduction of requirements that make the use of CRFS systems mandatory on newly produced helicopters operated in European member states.

Final reply sent on 09/09/2024:

In the context of rulemaking task RMT.0710, the European Union Aviation Safety Agency (EASA) published Opinion No 05/2024 on 21 June 2024:

https://www.easa.europa.eu/en/document-library/opinions/opinion-no-052024

This Opinion proposes to amend Regulation (EU) 2015/640 (on additional airworthiness specifications for a given type of operations) to mandate the installation of a crash-resistant fuel system (CRFS) on some existing helicopter designs that are still in production and the retrofit of some in-service helicopters, as follows:

- newly manufactured helicopters with a compliance date of 2 years after the entry into force of the amending regulation;
- in-service helicopters with 6 or more occupants certified after 2 October 1994 with a compliance date of 7 years after the entry into force of the amending regulation;
- in-service helicopters with 5 or less occupants certified after 2 October 1994 with a compliance date of 15 years after the entry into force of the amending regulation; and
- helicopters imported from a non-EU Member State.

Status: Closed – Agreement

ITAL-2024-008

Pilatus PC-6 NG, I-HSKC, 14/05/2021

Safety Recommendation received on 30/10/2024:

EASA is recommended, in light of the evidence that has emerged, to provide guidance to the manufacturer Pilatus to evaluate the opportunity to introduce a life limit for the relays that make up the electric pitch trim system of the PC-6T.

Interim reply sent on 19/12/2024:

The European Union Aviation Safety Agency (EASA) and the manufacturer Pilatus agree on the need to introduce a lifetime limit for the relays part of the PC-6T's electric pitch trim system as a preventive maintenance action. A scheduled relay replacement will be introduced in the Airplane Maintenance Manual (AMM) in Q1 2025.

Status: Open

ITAL-2024-009

Pilatus PC-6 NG, I-HSKC, 14/05/2021

Safety Recommendation received on 30/10/2024:

EASA is recommended to provide guidance to the manufacturer Pilatus to reconsider, in light of the evidence that has emerged, the Aircraft Level Functional Hazard Assessment (FHA), with reference to the Horizontal trimmable stabilizer adjustment system of the PC-6/B2-H4, with particular attention to any risk mitigation actions associated with the pitch trim runaway.

Interim reply sent on 19/12/2024:

The European Union Aviation Safety Agency (EASA) concurs with this safety recommendation. The manufacturer Pilatus has reviewed the Functional Hazard Assessment (FHA) for Pitch Trim Runaway (ER-06-000078) in light of the safety recommendation. The outcome of the review confirmed that the conclusion of the FHA ER-06-000078 is still valid. However, Pilatus will revise the FHA to expand the rationale provided in the Failure Condition “pitch trim runaway” following the review above.

Status: Open

ITAL-2024-010

Tecnam P2008-JC, I-CNTA, 20/03/2022

Safety Recommendation received on 27/09/2024:

The ANSV recommends that EASA, in coordination with the manufacturer Rotax, develop a protocol that allows the acquisition of sufficient data containing at least:

- Aircraft model
- Aerodynamic and engine parameters
- Symptomatology
- Flight phase of the event (with trim, speed and altitude)
- Areological and meteorological conditions
- Fuel characteristics
- s/n of carburettors and ignition boxes
- outcomes of troubleshooting (e.g., presence of water in carburettors, gascolators, dirt).

It also recommends that suitable initiatives be taken, also through dedicated working groups, to address the problem of Rotax 912 engine malfunctions through in-depth investigations aimed at identifying and understanding their nature.

Final reply sent on 28/11/2024:

The European Union Aviation Safety Agency (EASA) is leading a working group, the “Rotax occurrence task force”, including National Aviation Authority (NAA) representatives, which is analysing mitigation actions to the common root cause problems with Rotax 912 engines power losses. The group is meeting quarterly to ensure the latest findings and insights of investigations from concurrent engine and airframe Type Certificate Holder (TCH) occurrence investigations are considered.

In addition, EASA is reviewing all of the power loss occurrences in EASA-Rotax-airframe TCH meetings, starting with the most affected airframe TCHs (Tecnam, Aquila, BRM Aero). These in-depth analyses have already identified the main contributing factors and possible causes for the majority of the unexplainable cases of engine power loss, engine vibrations and engine piston damage. Although the in-depth analyses have found that the root cause is invariably a combination of many concurrent contributing factors, a common factor is the Rotax engine 912 itself.

As an output from this work, Rotax has taken the initiative to issue an engine Service Bulletin SB-912-079 dated 11 November 2024. The SB provides information on the background, including airframe installation and operator, and specifies recommended maintenance requirements. Compliance will be monitored and the task force and working group will continue to develop lessons-learned, extending to certification, installation, operation, maintenance and governance and will continue to co-ordinate with all stakeholders.

Status: Closed – Partial Agreement

MALI-2016-012

McDonell Douglas DC-9-83 (MD-83), EC-LTV, 24/07/2014

Safety Recommendation received on 22/04/2016:

The Commission d'Enquête sur les Accidents et Incidents d'Aviation Civile du Mali and the BEA recommend that the FAA and EASA ensure that this modification is implemented by the operators concerned.

Final reply sent on 09/09/2024:

Point M.A.302 of Annex I (Part-M) to Regulation (EU) No 1321/2014, published on 17 December 2014 (after the accident), already requires that the maintenance of each aircraft is organised in accordance with an aircraft maintenance programme which is periodically reviewed taking into account new or modified maintenance instructions issued by the type certificate and supplemental type certificate holders and any other organisation that publishes such data in accordance with Annex I (Part-21) to Regulation (EU) No 748/2012. Furthermore, according to point 145.A.45 of Annex II (Part-145) to Regulation (EU) No 1321/2014, the maintenance organisation shall hold and use applicable current maintenance data in the performance of maintenance and that the organisation shall establish a procedure to ensure that maintenance data it controls is kept up to date.

Therefore, after Boeing updated the Aircraft Maintenance Manual (AMM) with respect to the maintenance check procedure for Cockpit Voice Recorders on the MD-80, all EU Approved Maintenance Organisations have to use this latest maintenance data.

Status: Closed – Agreement

NETH-2020-001

Boeing 777, VT-JEW, 21/04/2017

Safety Recommendation received on 15/10/2020:

To European Union Aviation Safety Agency and the Federal Aviation Administration: 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.

Interim reply sent on 19/07/2024:

On 30 August 2023, the European Union Aviation Safety Agency (EASA) published the Terms of Reference (ToR) for Rulemaking Task RMT.0741:
https://www.easa.europa.eu/en/document-library/terms-of-reference-and-rulemaking-group-compositions/tor-rmt0741

The objective of this RMT is to mitigate, using on-board design means of protection, the risk of large aeroplane accidents or incidents caused by the use of erroneous take-off performance parameters, and by erroneous take-off positions.

Taking into account design solutions that have been developed by industry to date, this objective should be achieved through the introduction of design requirements aiming at detecting and preventing these errors by providing a means of informing or alerting the flight crew.

Design requirements will be considered to address new large aeroplane designs. An analysis and impact assessment will be conducted to assess the feasibility and the benefit of design requirements applicable to existing (already type certificated) large aeroplane designs.

EASA held three workshops with stakeholders (including all major large aeroplane manufacturers (including Boeing) and foreign partner authorities) between November 2023 and May 2024.

During these workshops, EASA presented proposed draft new certification specifications and discussed with industry the option of retroactive design requirements.

It appears that some large aeroplane manufacturers have developed or are developing some or all of the envisaged functions to be mandated by design requirements.

For those manufacturers which have not yet started a design function development phase, these workshops served as a means of encouraging them to take action regarding their aeroplane designs.

In parallel, the European Organisation for Civil Aviation Equipment (EUROCAE) created Working Group WG-129 ‘Take-off Performance Monitoring System Strategy’ that held a first meeting on 30 April 2024 with the participation of EASA. The WG is tasked with developing a minimum operational performance standard (MOPS) and/or a minimum aviation system performance standard (MASPS) in order to facilitate the introduction of a take-off performance monitoring system (TOPMS). A close relationship with RTCA is also ensured by EUROCAE in view of issuing a common standard. EASA will take into account the work done by this WG and ultimately consider any issued standard that could support the compliance demonstration with new EASA certification specifications.

A Notice of Proposed Amendment (NPA) is being drafted with a publication for consultation currently expected in Q4 2024.

Status: Open

NETH-2024-001

Cessna 172, D-EBTO & N98825, 15/06/2022

Safety Recommendation received on 20/11/2024:

To the International Civil Aviation Organisation and to the European Union Aviation Safety Agency:
For the purpose of accident and incident investigation, amend the retention period of background communication and aural environment recordings in air traffic services from 24 hours of operation to 30 days (ICAO annex 11, Commission Implementing Regulation (EU) 2020/469, ATS.OR.460).

Status: Open

NORW-2018-001

EUROCOPTER EC225, LN-OJF, 29/04/2016

Safety Recommendation received on 05/07/2018:

The Accident Investigation Board Norway recommends that the European Aviation Safety Agency (EASA) commission research into crack development in high-loaded case-hardened bearings in aircraft applications. An aim of the research should be the prediction of the reduction in service life and fatigue strength as a consequence of small surface damage such as micro-pits, wear marks, and roughness.

Final reply sent on 09/09/2024:

The European Union Aviation Safety Agency (EASA) has completed the research project into “Integrity Improvement of Rotorcraft Main Gear Box (MGB) - Research into crack development in high-loaded case-hardened bearings in aircraft applications”.
The outcome of the research project is published at https://www.easa.europa.eu/en/research-projects/integrity-improvement-rotorcraft-main-gear-box-mgb.

In parallel, EASA issued Acceptable Means of Compliance (AMC) in AMC1 27.571 to CS-27 (Certification Specifications for Small Rotorcraft) at Amdt. 10 and AMC1 29.571 to CS-29 (Certification Specifications for Large Rotorcraft) at Amdt. 11. These AMCs address rolling contact fatigue taking into consideration information from the research as well as from initial and continued airworthiness discussions held with rotorcraft Type Certificate Holders (TCHs).

Building on the conclusions of this research project, EASA plans to host a web conference to discuss the AMC on rolling contact fatigue with key stakeholders, including National Civil Aviation Authorities and rotorcraft TCHs. This initiative is part of an ongoing dialogue with the expert community. Any necessary follow-up actions will be planned and implemented accordingly.

Status: Closed – Agreement

NORW-2018-005

EUROCOPTER EC225, LN-OJF, 29/04/2016

Safety Recommendation received on 05/07/2018:

The Accident Investigation Board Norway recommends that the European Aviation Safety Agency (EASA) develop MGB certification specifications for large rotorcraft to introduce a design requirement that no failure of internal MGB components should lead to a catastrophic failure.

Final reply sent on 09/09/2024:

The European Union Aviation Safety Agency (EASA) has completed research to better understand the significance and impacts of design choices that would support the objective of this safety recommendation, i.e. that no failure of internal Main Gear Box (MGB) components should lead to a catastrophic failure. The outcome of the research project, which is published at https://www.easa.europa.eu/en/research-projects/integrity-improvement-rotorcraft-main-gear-box-mgb, led to the following conclusions:

- Design solutions exist to eliminate the possibility of catastrophic consequences resulting from the failure of individual internal MGB components.
- However, these design solutions address specific failure causes, and MGB internal components may be subject to failure from several causes. This would result in different design solutions having to be implemented simultaneously on the same component, which may not be viable.
- Furthermore, it could not be confirmed that all failure causes that may lead to catastrophic consequences can be designed out.
- In addition, all of these design solutions result in added weight and complexity of the MGB design, which could have a detrimental impact on the reliability of the MGB with a significant economic impact.

In summary, EASA considers it is neither feasible nor practical to ensure that no failure of internal MGB components should lead to a catastrophic failure. Consequently, EASA does not concur with the need to introduce certification specifications for this purpose.

Finally, the rotor drive system design assessment specified by CS 29.917 (Certification Specifications for Large Rotorcraft) requires that adequate compensating provisions shall be in place for failures that may preclude continued flight and landing. As per Federal Aviation Administration (FAA) Advisory Circular (AC) 29 29.917, used as acceptable means of compliance, these compensating provisions aim to mitigate the severity of MGB failures or minimise their likelihood of occurrence. As part of this certification exercise, EASA makes sure applicants pursue the minimisation of the number of catastrophic failures in their MGB designs wherever this is technically feasible and practical to implement. In addition, as specified in CS 29.601, the rotorcraft may have no design features or details that experience has shown to be hazardous or unreliable. This is deemed to include experience from past accidents and, therefore, an applicant for any new CS-29 rotorcraft Type Certificate (TC) would be required to adequately demonstrate that any failure such as the one experienced by the subject aircraft is adequately addressed within the CS 29.917 design assessment. Nevertheless, it is not considered appropriate to systematically require the mitigation by design of this and any other failures that may result from internal MGB components which could lead to a catastrophic failure. Thus, for certain failures, ensuring a safe design may have to rely on minimising the likelihood of occurrence. This may be due to, for example, the complexity of fail-safe design solutions, multiple possible failure mechanisms requiring different mitigation solutions, etc.

Status: Closed – Partial Agreement

NORW-2018-013

AEROSPATIALE AS350 B3, LN-OSG, 30/04/2016

Safety Recommendation received on 13/11/2018:

It is recommended that the European Union Aviation Safety Agency study the opportunity to mandate the solutions developed by Airbus Helicopter in cooperation with Safran Helicopter Engines.

Final reply sent on 19/07/2024:

The European Union Aviation Safety Agency (EASA) has been cooperating with Airbus Helicopters (AH) and Safran Helicopter Engines (SHE) to study technical solutions aiming at reducing the risk of unwanted Power Turbines (PT) blade shedding occurrences on rotorcraft equipped with ARRIEL 2 engines and, hence, reducing the potential for post-impact fire.

The result of this effort has been the implementation of an electronic over-speed protection function that, if still operational after the impact, is intended to limit occurrence of PT blade shedding by early detection of an over-speed condition and subsequent rapid fuel flow shut-off. This new function has been introduced through a Full Authority Digital Engine Control (FADEC) software modification and a wiring modification at helicopter level as detailed below:

- EASA Major Change Approval 10065664 (i.e. FADEC software DM 116271) developed by SHE, applicable to AS350 B3 and EC130 T2 helicopter models equipped with ARRIEL 2D engines and made available for new helicopter deliveries or, as a retrofit kit, for helicopters already in service via the SHE SB ref. 292-73-2210.
- EASA Major Change Approval 10066998 (i.e. wiring modification 074831) developed by AH, applicable to AS350 B3 and EC130 T2 helicopter models equipped with ARRIEL 2D engines and made available for new helicopter deliveries or, as a retrofit kit, for helicopters already in service via the AH Service Bulletins (SBs) ref. AS350-76.00.23 and EC130-76-006.

These modifications are already part of the baseline for AS 350 B3 and EC 130 T2 helicopters (the two models still in production), hence are implemented on all newly-built helicopters since late 2019.

Based on the review of in-service experience and available occurrence data, EASA did not consider it necessary to mandate the modifications above to the AS 350 B3 and EC 130 T2 helicopters already in service.

However, in 2019, via the release of the EASA Safety Information Bulletin (SIB) ref. 2019-10 (“Power Turbine Over-Speed Protection on ARRIEL 2D Engines”) dated 22/08/2019, EASA has recommended that operators implement a voluntary embodiment of the over-speed protection function, promoted by both AH and SHE with a free of charge retrofit campaign.

Subsequently, at the beginning of 2022, EASA certified similar modifications to provide AS350 B3 and EC130 B4 helicopter models equipped with ARRIEL 2B1 engines with an equivalent over-speed protection function. SHE and AH made these modifications available as a retrofit kit for helicopters already in service via the AH SBs. Details on EASA Major Change Approval numbers and applicable AH SBs, are provided in EASA SIB 2019-010R1, issued to expand the applicability and recommendations to all affected helicopters and engines.

In addition to that, EASA and AH have put in place a yearly meeting to monitor implementation of these modifications for the in-service helicopter fleet.

In conclusion, EASA considers that all the necessary actions are now in place to minimise re-occurrence of this accident scenario.

Status: Closed – Partial Agreement

NORW-2022-001

AS350 B3, LN-OFU, 31/08/2019

Safety Recommendation received on 18/03/2022:

The Norwegian Safety Investigation Authority recommends that EASA requires that all helicopters, new and used, delivered or imported to Europe be equipped with crash resistant fuel systems in accordance with CS 27.952 or CS 29.952, regardless of their type certification date.

Final reply sent on 09/09/2024:

In the context of rulemaking task RMT.0710, the European Union Aviation Safety Agency (EASA) published Opinion No 05/2024 on 21 June 2024:
https://www.easa.europa.eu/en/document-library/opinions/opinion-no-052024

This Opinion proposes to amend Regulation (EU) 2015/640 (on additional airworthiness specifications for a given type of operations) to mandate the installation of a crash-resistant fuel system (CRFS) onto some existing helicopter designs that are still in production and the retrofit of some in-service helicopters, as follows:

- newly manufactured helicopters with a compliance date of 2 years after the entry into force of the amending regulation;
- in-service helicopters with 6 or more occupants certified after 2 October 1994 with a compliance date of 7 years after the entry into force of the amending regulation;
- in-service helicopters with 5 or less occupants certified after 2 October 1994 with a compliance date of 15 years after the entry into force of the amending regulation; and
- helicopters imported from a non-EU Member State.

Status: Closed – Agreement

NORW-2022-002

AS350 B3, LN-OFU, 31/08/2019

Safety Recommendation received on 18/03/2022:

The Norwegian Safety Investigation Authority recommends EASA to not permit commercial passenger flights with helicopters not equipped with crash resistant fuel systems in accordance with CS 27.952 or CS 29.952, regardless of their type certification date.

Final reply sent on 09/09/2024:

In the context of rulemaking task RMT.0710, the European Union Aviation Safety Agency (EASA) published Opinion No 05/2024 on 21 June 2024:
https://www.easa.europa.eu/en/document-library/opinions/opinion-no-052024

This Opinion proposes to amend Regulation (EU) 2015/640 (on additional airworthiness specifications for a given type of operations (Annex I – Part 26) to mandate the installation of a crash-resistant fuel system (CRFS) onto some existing helicopter designs that are still in production and the retrofit of some in-service helicopters, as follows:

- newly manufactured helicopters with a compliance date of 2 years after the entry into force of the amending regulation;
- in-service helicopters with 6 or more occupants certified on or after 2 October 1994 with a compliance date of 7 years after the entry into force of the amending regulation;
- in-service helicopters with 5 or less occupants certified on or after 2 October 1994 with a compliance date of 15 years after the entry into force of the amending regulation; and
- helicopters imported from a non- EU Member State.

Before the compliance dates specified in the amendment of Part-26 proposed by Opinion No 05/2024 (new point 26.440), helicopters not equipped with CRFS may continue commercial operations with passengers.

After the compliance dates specified in the amendment of Part-26 proposed by Opinion No 05/2024 (new point 26.440), only a very limited sub-population of helicopters (i.e. type certified before 2 October 1994 and for which the Certificate of Airworthiness was issued by an EU Member State before the entry into force of the Regulation amending Regulation (EU) 2015/640) will be authorised to continue commercial operations with passengers although not equipped with a CRFS.

Status: Closed – Partial Agreement

PORT-2020-001

Aerospatiale AS350 B2, CS-HFT, 05/09/2019

Safety Recommendation received on 14/07/2020:

It is recommended that EASA follow its Rotorcraft Safety Roadmap publication principles, producing rulemaking documentation requiring retroactive application of the current improvements in fuel tank crash resistance for rotorcraft certified before the new certification specification for type design entered into force. Helicopters used for Commercial Operations shall be subject to this additional airworthiness requirement for operations.

Final reply sent on 09/09/2024:

In the context of rulemaking task RMT.0710, the European Union Aviation Safety Agency (EASA) published Opinion No 05/2024 on 21 June 2024:
https://www.easa.europa.eu/en/document-library/opinions/opinion-no-052024

This Opinion proposes to amend Regulation (EU) 2015/640 (on additional airworthiness specifications for a given type of operations) to mandate the installation of a crash-resistant fuel system (CRFS) onto some existing helicopter designs that are still in production and the retrofit of some in-service helicopters, as follows:

- newly manufactured helicopters with a compliance date of 2 years after the entry into force of the amending regulation;
- in-service helicopters with 6 or more occupants certified after 2 October 1994 with a compliance date of 7 years after the entry into force of the amending regulation;
- in-service helicopters with 5 or less occupants certified after 2 October 1994 with a compliance date of 15 years after the entry into force of the amending regulation; and

- helicopters imported from a non-EU Member State.

Before the compliance dates specified in the amendment of Part-26 proposed by Opinion No 05/2024 (new point 26.440), helicopters not equipped with CRFS may continue commercial operations with passengers.

After the compliance dates specified in the amendment of Part-26 proposed by Opinion No 05/2024 (new point 26.440), only a very limited sub-population of helicopters (i.e. type certified before 2 October 1994 and for which the Certificate of Airworthiness was issued by an EU Member State before the entry into force of the Regulation amending Regulation (EU) 2015/640) will be authorised to continue commercial operations with passengers although not equipped with a CRFS.

Status: Closed – Agreement

PORT-2023-001

PZL-Swidnik PW-6U, D-5159, 11/11/2022

Safety Recommendation received on 21/12/2023:

It is recommended that EASA, within 24 months, take all necessary and applicable actions to ensure the continuous airworthiness requirements established by EU Regulation No 1321/2014 on type certified aircraft equipped with Aerazur AIR 12A towing hooks, until they are withdrawn from service.

Final reply sent on 18/03/2024:

Many of the products, parts and appliances currently in service were designed and certified many decades ago, in compliance with the airworthiness standards applicable at the time. The fact that these products, parts and appliances, including their associated documentation, were not developed in compliance with the latest standards (e.g. Certification Specifications) that are applicable today does not make them unsafe. Under the principles of Articles 3 to 5 of Regulation (EU) No 748/2012 products, parts and appliances certificated by EU Member States before the applicability of the common EU airworthiness requirements, namely 28 September 2003, deemed to have a certificate or approval issued in accordance with said Regulation (so called “grandfathering”). Consequently, unless an unsafe condition is identified (as per point 21.A.3B(b) of Annex I (Part-21) to Regulation (EU) 748/2012 and the related AMC1 21.A.3B(b)))) during the in-service life of the product, part or appliance, the European Union Aviation Safety Agency (EASA) cannot mandate a redesign or removal from service. Additionally, point 21.A.101 of Part 21 defines the applicable type certification basis when a change to the formerly approved design is necessary.

The occurrence Aircraft Maintenance Manual (AMM) for the “glider-towing” optional installation requires a functional check of the release control and catch, a periodic inspection of the condition and attachment parts of the catch and control bellcrank, and periodic lubrification of the hinges. The occurrence part was known by the aeroclub to be defective, as clearly stated in the report. Therefore, the non-correct operation of the part cannot be considered as an ‘unnoticed’ or a ‘latent’ condition. Additionally, the investigation revealed the presence of significant amount of dirt on the occurrence part and did not find evidence that the instructions of the maintenance manual, namely cleaning and lubrication, were performed recently (see page 12 of the final report). Eventually, the occurrence part was enclosed in metal sheets held together by staking, thus making it a sealed and non-dismountable component. The user manual of the part also states that any damaged unit should be returned to the manufacturer for repair. However, the occurrence part had a non-approved component (the spring) installed in an incorrect way, hence, the part was opened and refurbished at some point in its life. The report did not present any evidence that this maintenance action was undertaken in accordance with approved design data, hence the part was not

airworthy. EASA considers that the information available in the maintenance manual is sufficient for the level of maintenance expected from an operator.

EASA finds no unsafe condition warranting an Airworthiness Directive (AD) in accordance with Part 21.

Finally, EASA acknowledges that AD 77.76(A), issued by the French Civil Aviation Authority in 1977, was not applied to the occurrence part for unknown reasons. EASA has republished the AD on its Safety Publication Tool to increase its visibility.

Final reply sent on 16/10/2024:

Many of the products, parts and appliances currently in service were designed and certified many decades ago, in compliance with the airworthiness standards applicable at the time. The fact that these products, parts and appliances, including their associated documentation, were not developed in compliance with the latest standards (e.g. Certification Specifications) that are applicable today does not make them unsafe. Under the principles of Articles 3 to 5 of Regulation (EU) No 748/2012 products, parts and appliances certificated by EU Member States before the applicability of the common EU airworthiness requirements, namely 28 September 2003, deemed to have a certificate or approval issued in accordance with said Regulation (so called “grandfathering”). Consequently, unless an unsafe condition is identified (as per point 21.A.3B(b) of Annex I (Part-21) to Regulation (EU) 748/2012 and the related AMC1 21.A.3B(b)) during the in-service life of the product, part or appliance, the European Union Aviation Safety Agency (EASA) cannot mandate a redesign or removal from service. Additionally, point 21.A.101 of Part 21 defines the applicable type certification basis when a change to the formerly approved design is necessary.

The occurrence Aircraft Maintenance Manual (AMM) for the “glider-towing” optional installation requires a functional check of the release control and catch, a periodic inspection of the condition and attachment parts of the catch and control bellcrank, and periodic lubrification of the hinges. The occurrence part was known by the aeroclub to be defective, as clearly stated in the report. Therefore, the non-correct operation of the part cannot be considered as an ‘unnoticed’ or a ‘latent’ condition. Additionally, the investigation revealed the presence of significant amount of dirt on the occurrence part and did not find evidence that the instructions of the maintenance manual, namely cleaning and lubrication, were performed recently. Possibly, the occurrence part was enclosed in metal sheets held together by staking, thus making it a sealed and non-dismountable component. The user manual of the part also states that any damaged unit should be returned to the manufacturer for repair. However, the occurrence part had a non-approved component (the spring) installed in an incorrect way, hence, the part was opened and refurbished at some point in its life. Consequently, the part was not airworthy. EASA considers that the information available in the maintenance manual is sufficient for the level of maintenance expected from an operator.

EASA finds no unsafe condition warranting an Airworthiness Directive (AD) in accordance with Part 21. Nonetheless, EASA has issued Safety Information Bulletin (SIB) 2024-11 to inform owners and operators of aircraft equipped with the Aerazur AIR A2 towing hook about the risks associated with an improperly working and/or improperly maintained part. The SIB is published here: https://ad.easa.europa.eu/ad/2024-11

Finally, EASA acknowledges that AD 77.76(A), issued by the French Civil Aviation Authority in 1977, was not applied to the occurrence part for unknown reasons. EASA has republished the AD on its Safety Publication Tool to increase its visibility.

Status: Closed – Partial Agreement

PORT-2023-002

PZL-Swidnik PW-6U, D-5159, 11/11/2022

Safety Recommendation received on 21/03/2023:

It is recommended that EASA, within 24 months, gives emphasis and detail to flight controls handover during the theoretical and flight instruction of SPL student pilots by amending the AMC & GM to Part-SFCL, as applicable, and engaging in corresponding safety promotion activities.

Interim reply sent on 18/03/2024:

The European Union Aviation Safety Agency (EASA) considers that the modification to the associated Acceptable Means of Compliance and Guidance Material to Annex III (Part-SFCL) to Commission Implementing Regulation (EU) 2018/1976 laying down detailed rules for the operation of sailplanes, may not necessarily improve the procedure for handing over control during the theoretical and flight instruction of sailplane student pilots and would therefore not have an additional safety benefit.

This being said, EASA takes note of the recommendation concerning Safety Promotion activities, and intends to include the topic of flight control hand over in the Safety Promotion plan for 2024 to provide clear, simple material that pilots, instructors and training organisations can use.

Status: Open

PORT-2024-001

Airbus A321 NEO, CS-TJL, 23/10/2023

Safety Recommendation received on 19/12/2024:

GPIAAF recommends, in the framework of the certification process, EASA to specify under CS 25.1189 (f) or other, the design specifications and reliability requirements for the fire switch assembly in order to ensure that the retention system does not rely on the condition of a single pin/mechanism.

Status: Open

SPAN-2024-001

THRUSH S2R-T660, ECMXL, 19/10/2022

Safety Recommendation received on 09/09/2024:

It is recommended that EASA take measures to improve the design of the ELT system in terms of its resistance to the consequences of the very events that warrant its installation and operation on board the aircraft (crashworthiness) in the interest of ensuring that the risk of it being rendered non-operational is minimised as far as possible.

Final reply sent on 28/11/2024:

Industry consensus on the installation of Emergency Locator Transmitters (ELTs) and ELT antennas as documented in Eurocae ED-62B is set in force by the European Union Aviation Safety Agency (EASA) in

ETSO-C126c since amendment 16 of Certification Specifications for European Technical Standard Orders (CS-ETSO) became applicable in 2020.

The installation of ELT systems into Aeroplanes with a Maximum Take-off Mass (MTOM) below 2 730 kg, rotorcraft that are not complex motor-powered aircraft, with a MTOM below 1 200 kg and with 4 occupants or fewer, and any ELA2 aircraft is possible by applying Standard Change CS-SC101c INSTALLATION OF EMERGENCY LOCATOR TRANSMITTER (ELT) EQUIPMENT / SATELLITE PERSONAL LOCATOR BEACON from 2020. This standard change contains the requirement *"It must be ensured that the equipment is installed in a way that, in case of a crash, it is unlikely that the antenna would be detached from the transmitter."* This requirement is applicable since in first issue of Certification Specifications for Standard Changes and Standard Repairs (CS-STAN) in 2015.

EASA Certification Memorandum Installation of ELTs EASA CM–AS-008 Issue 01 issued 12th of December 2016 contains similar but more prescriptive statements, as it asks for *"The antenna should be mounted as close to the respective ELT as practicable. Provision should be taken to protect coaxial cables from disjunction or from being cut. Therefore, installation of the external antenna close to the ELT unit is recommended. Coaxial cables connecting the antenna to the ELT Unit should not cross aircraft production breaks."* and *"When the coaxial cable is installed and the connectors mated, each end should have some slack in the cable, and the cable should be secured to aircraft structures for support and protection."*

EASA considers the above as sufficient to design proper ELT installations. Note that the 2024 edition of the European Plan for Aviation Safety (EPAS) volume III documents a safety issue related to ELT malfunctions (SI-9010). This is published at: https://www.easa.europa.eu/en/document-library/general-publications/european-plan-aviation-safety-epas-2024. Additional actions may be derived in the future from the EU safety risk management process.

Status: Closed – Partial Agreement

SWED-2017-008

BAE AVRO 146RJ 100, SE-DSP, 29/09/2016

Safety Recommendation received on 11/09/2017:

EASA is recommended to encourage that components that require specially approved maintenance facilities are sealed to detect unauthorized manipulation.

Final reply sent on 28/11/2024:

The European Union Aviation Safety Agency (EASA) has produced promotional material on this topic in the Learning from Occurrences part of the Conversation Aviation Magazine 2-2024, published at https://www.easa.europa.eu/community/topics/conversation-aviation-2-2024-summer-reflection (Page 35) where it is specifically mentioned that *"Some aircraft parts are sealed as units before being made available for fitting to aircraft […].When receiving such parts, engineers should check for such anti-tamper seals and make sure they are not damaged before the components are fitted to the aircraft".*

Status: Closed – Agreement

SWED-2020-001

Model GA8-TC 320, SE-MES, 14/07/2019

Safety Recommendation received on 09/09/2020:

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

Interim reply sent on 19/12/2024:

Following incidents related to parachuting operations, a comprehensive Safety Impact Assessment was conducted. As a result, the Best Intervention Strategy (BIS) “Parachuting Operations” Team was established. This team comprises representatives from competent authorities, a parachuting club, and the European Union Aviation Safety Agency (EASA).

The team convened multiple meetings during 2023 and 2024 to collaboratively address safety concerns and develop actionable solutions.

Next Steps:

- Finalisation of the proposed actions in January 2025.
- Subsequent consultation with the Advisory Bodies (AB).
- Finalisation of the BIS is targeted for Q2 2025.

These efforts aim to ensure a comprehensive and effective approach to improving safety within parachuting operations.

Status: Open

SWED-2023-003

Bell 206B, SE-JER, 26/06/2022

Safety Recommendation received on 25/08/2023:

The EASA is recommended to inform concerned parties about the risks of unanticipated yaw in an appropriate way.

Final reply sent on 06/02/2024:

The European Union Aviation Safety Agency (EASA) has now completed the safety promotion activity intended to address this safety recommendation, although the published material will continue to be promoted and publicised throughout January 2024.

The topic of Unintended Yaw was chosen as the Safety Topic of the Year by the EASA Rotorcraft Committee and the work to inform the Rotorcraft community about the risks of unanticipated yaw (termed unintended yaw for the purposes of the promotion campaign) was then developed by the European Safety Promotion Network – Rotorcraft (ESPN-R) that is co-led by EASA, Airbus Helicopters and Nederlands Lucht- en Ruimtevaartcentrum (NLR). The work included a dedicated Vertical Aviation Safety Team (VAST) / ESPN-R Safety Workshop at European Rotors that took place on the afternoon of 29 November 2023.

The event materials can be found on the Event Webpage for the EASA Rotorcraft and VTOL Symposium and associated events at European Rotors: https://www.easa.europa.eu/en/newsroom-and-events/events/easa-rotorcraft-and-vtol-safety-symposium-2023.

The material developed was also used to make a safety promotion article that was published on the EASA Rotorcraft Community site on 1 December 2023, which can be found here: https://www.easa.europa.eu/community/topics/handling-unanticipated-yaw.

There was also a safety video made on Unintended Yaw that was launched at the Workshop at European Rotors that is published on the EASA Together4Safety Youtube Channel here: https://youtu.be/HjN8mm9wtqY?si=GUGwMs9bP0rBRHra.

The material has also been shared with all Rotorcraft manufacturers and with the global rotorcraft community through the VAST - https://vast.aero/safety-library/.

Status: Closed – Agreement

SWTZ-2022-584

DG-Flugzeugbau GmbH DG800, HB-2320, 28/05/2022

Safety Recommendation received on 19/08/2022:

The European Union Aviation Safety Agency (EASA), in cooperation with the aircraft manufacturer DG-Flugzeugbau GmbH, should take measures to ensure that gliders of the DG-800 B type are operated safely with regard to the installation of the rod ends.

Final reply sent on 06/02/2024:

In cooperation with the European Union Aviation Safety Agency (EASA), the manufacturer DG-Flugzeugbau GmbH has evaluated the failure scenario related to unsecured locknuts of the adjustable rod ends for all DG and LS motorgliders. EASA agrees with the manufacturer that the scenario does not constitute an unsafe condition. However, to prevent such events from occurring in the future the manufacturer issued Service Info No. 110/23 which gives instructions to inspect the locknuts and apply securing paint. The instructions are to be complied with by the following annual inspection at the latest.

Status: Closed – Agreement

UNKG-2009-080

Airbus A330-243, G-OJMC, 28/10/2008

Safety Recommendation received on 17/11/2009:

It is recommended that the European Aviation Safety Agency develop a specification for an aircraft takeoff performance monitoring system which provides a timely alert to flight crews when achieved takeoff performance is inadequate for given aircraft configurations and airfield conditions.

Interim reply sent on 19/07/2024:

On 30 August 2023, the European Union Aviation Safety Agency (EASA) published the Terms of Reference (ToR) for Rulemaking Task RMT.0741:
https://www.easa.europa.eu/en/document-library/terms-of-reference-and-rulemaking-group-compositions/tor-rmt0741

The objective of this RMT is to mitigate, using on-board design means of protection, the risk of large aeroplane accidents or incidents caused by the use of erroneous take-off performance parameters, and by erroneous take-off positions.

Taking into account design solutions that have been developed by industry to date, this objective should be achieved through the introduction of design requirements aiming at detecting and preventing these errors by providing a means of informing or alerting the flight crew in a timely manner.

Design requirements will be considered to address new large aeroplane designs. An analysis and impact assessment will be conducted to assess the feasibility and the benefit of design requirements applicable to existing (already type certificated) large aeroplane designs.

In parallel, the European Organisation for Civil Aviation Equipment (EUROCAE) created Working Group WG-129 'Take-off Performance Monitoring System Strategy' that held a first meeting on 30 April 2024 with the participation of EASA. The WG is tasked with developing a minimum operational performance standard (MOPS) and/or a minimum aviation system performance standard (MASPS) in order to facilitate the introduction of a take-off performance monitoring system (TOPMS). A close relationship with RTCA is also ensured by EUROCAE in view of issuing a common standard. EASA will take into account the work done by this WG and ultimately consider any issued standard that could support the compliance demonstration with new EASA certification specifications.

A Notice of Proposed Amendment (NPA) is being drafted with a publication for consultation currently expected in Q4 2024.

Status: Open

UNKG-2014-019

Eurocopter EC225 LP Super Puma, G-REDW, 10/05/2012 and G-CHCN, 22/10/2012

Safety Recommendation received on 04/06/2014:

It is recommended that the European Aviation Safety Agency commission research into the fatigue performance of components manufactured from high strength low alloy steel. An aim of the research should be the prediction of the reduction in service-life and fatigue strength as a consequence of small defects such as scratches and corrosion pits.

Final reply sent on 28/11/2024:

In the context of rotorcraft design and certification activities, an evaluation by Type Certificate Holders and the European Union Aviation Safety Agency (EASA) of the effect of corrosion on fatigue strength for high-strength steels had been carried out. This had already resulted in changes to the means provided by applicants to show compliance with CS 29.571 fatigue tolerance requirements.

EASA has completed the research project into “Integrity Improvement of Rotorcraft Main Gear Box (MGB)” (ref. European Plan for Aviation Safety RES.0008).

The outcome of the research project is published at https://www.easa.europa.eu/en/research-projects/integrity-improvement-rotorcraft-main-gear-box-mgb.

Status: Closed – Agreement

UNKG-2015-001

AIRBUS A319-131, G-EUOE, 24/05/2013

Safety Recommendation received on 14/07/2015:

It is recommended that the European Aviation Safety Agency publishes amended Acceptable Means of Compliance and Guidance Material in Part 145.A.47(b) of European Commission Regulation (EC) No 2042/2003, containing requirements for the implementation of an effective fatigue risk management system within approved maintenance organisations.

Final reply sent on 16/10/2024:

Regulation (EU) 2021/1963 of 8 November 2021 introduced amendments to Regulation (EU) No 1321/2014, among others, requiring the establishment of a Safety Management System (SMS) in all maintenance organisations approved in accordance with Annex II (Part-145) to Regulation (EU) No 1321/2014. The amendment is applicable as of 2 December 2022, with some transition time until 2 December 2024.

On the 10 May 2022 the European Union Aviation Safety Agency (EASA) published Executive Director Decision 2022/011/R (available at https://www.easa.europa.eu/en/document-library/agency-decisions/ed-decision-2022011r) that provides Acceptable Means of Compliance (AMC) and Guidance Material (GM) to the amended Regulation (EU) No 1321/2014. In particular, AMC1 145.A.47(b) "Production planning" includes a chapter titled "Consideration of Fatigue in the Planning of Maintenance" to ensure that the SMS adequately considers effective fatigue risk management.

As of 2 December 2024, all maintenance organisations approved in accordance with Part-145 must have implemented an SMS, which is expected to include an effective fatigue management.

Additionally, EASA has taken several measures since the subject accident, e.g. publication of Safety Information Bulletin (SIB) 2015-15, which can be downloaded at https://ad.easa.europa.eu/ad/2015-15, to raise awareness about the risk of taking off with unlocked fan cowl doors.

Status: Closed – Agreement

UNKG-2016-013

AS332 L2 Super Puma, G-WNSB, 23/08/2013

Safety Recommendation received on 08/03/2016:

It is recommended that the European Aviation Safety Agency requires the installation of Helicopter Terrain Awareness Warning Systems to all helicopters, used in offshore Commercial Air Transport operations, with

a Maximum Certificated Take-off Mass (MCTOM) of more than 3,175 kg, or a Maximum Operational Passenger Seating Configuration (MOPSC) of more than nine, manufactured before 31 December 2018.

Interim reply sent on 28/11/2024:

The consideration to extend the existing helicopter terrain avoidance warning systems (HTAWS) requirements for offshore helicopter operations included in point SPA.HOFO.160(c) of Subpart K Helicopter Offshore Operations of Annex V (Part-SPA) to Commission Regulation (EU) No 965/2012 to include those helicopters first issued with an individual Certificate of Airworthiness (CofA) on or before 31 December 2018 is being undertaken in rulemaking task RMT.0708 'Controlled flight into terrain prevention with HTAWS'.

Following a prioritisation exercise, Rulemaking Task RMT.0708 Subtask 1a on Controlled Flight Into Terrain prevention with (HTAWS) for offshore operations, for which a Notice of Proposed Amendment (NPA) was planned in 2025, will be put on hold. This will be reflected in the 2025 edition of the European Plan for Aviation Safety (EPAS).

The European Union Aviation Safety Agency (EASA) will keep the Air Accidents Investigation Branch informed of further progress on this rulemaking task.

Status: Open

UNKG-2016-014

AS332 L2 Super Puma, G-WNSB, 23/08/2013

Safety Recommendation received on 08/03/2016:

It is recommended that the European Union Aviation Safety Agency introduces a requirement for the installation of cockpit image recorders, in aircraft required to be equipped with Flight Data and Cockpit Voice Recorders, to capture flight crew actions within the cockpit environment.

Final reply sent on 07/06/2024:

In 2018, the International Civil Aviation Organization (ICAO) adopted a new standard on 'Flight crew-machine interface recordings' (FCMIR) in Annex 6 Part I (International Commercial Air Transport — Aeroplanes) Chapter 6, section 6.3.4, and the corresponding Appendix 8) with an applicability to aeroplanes of a maximum take-off mass of over 27 000 kg and for which the application for type certification was submitted on or after 1st January 2023. No standard similar to this one has been introduced to helicopters in Annex 6 Part III (International Operations — Helicopters).

This standard requires the aeroplane to be equipped with a crash-protected flight recorder which shall record the information displayed to the flight crew from electronic displays, as well as the operation of switches and selectors by the flight crew as defined in Appendix 8.

Compliance with this standard may be achieved by means of an airborne image recorder, or by other means capable of meeting the objective of the standard. The use of image recorders in the cockpit was not required due to privacy concerns.

ICAO Doc 10101, published in 2021, provides guidance material for the implementation of appropriate provisions for FCMIRs as required by Annex 6 Part I, Chapter 6, 6.3.4 and provides references to the protective measures needed for these recordings.

The European Union Aviation Safety Agency (EASA) will continue to follow the developments in ICAO and will assess the need for transposition of such standards into EU requirements via its rulemaking process. EASA does not intend to propose a rule mandating a FCMIR for helicopters if no corresponding ICAO standard exists, however an assessment of the introduction of these recorders on aeroplanes will be done through Rule Making Task 0392, Subtask 2.

Status: Closed – Partial Agreement

UNKG-2016-016

AS332 L2 Super Puma, G-WNSB, 23/08/2013

Safety Recommendation received on 08/03/2016:

It is recommended that the European Aviation Safety Agency instigates a research programme to provide realistic data to better support regulations relating to evacuation and survivability of occupants in commercial helicopters operating offshore. This programme should better quantify the characteristics of helicopter underwater evacuation and include conditions representative of actual offshore operations and passenger demographics.

Final reply sent on 28/11/2024:

An initial review into the nature of the research that could be envisaged to provide realistic data to better support regulations relating to evacuation and survivability of occupants in helicopters operating offshore was commissioned by the European Union Aviation Safety Agency (EASA) in 2020.

The results of this first Helicopter Underwater Escape research project provided a comprehensive review of currently available information on underwater escape, identified shortfalls, and recommended further work to rectify this lack of information.
The final report is published on the EASA website: https://www.easa.europa.eu/en/research-projects/helicopter-underwater-evacuation.

Two of the highest-priority recommendations identified in the initial review were investigated in a subsequent research project: evaluation of the forces required to jettison push-out underwater emergency exits and underwater escape from a passenger cabin with a full complement of passengers.
The final report of this additional research is published on the EASA website:
https://www.easa.europa.eu/en/research-projects/helicopter-underwater-escape-2

The main objective of the second research project was to review the related rules, requirements, Acceptable Means of Compliance (AMC) and guidance material and propose areas for future rulemaking. The research activity concluded that the current Certification Specifications and Regulations are adequate and, however, provided recommendations for updates to AMC material.

As a result, EASA has decided to further review these recommendations, which will now be expedited by re-opening rulemaking task RMT.0120 or, alternatively, as a complement to another ongoing helicopter RMT.

Following the successful completion of two successive research programmes, EASA considers that these activities adequately address the intent of the safety recommendation and the results obtained will now be further followed up within EASA's continuous rulemaking programme aimed at improving helicopter certification standards.

Status: Closed – Agreement

UNKG-2018-014

Boeing 737-800, C-FWGH, 21/07/2017

Safety Recommendation received on 14/11/2018:

It is recommended that the European Aviation Safety Agency, in conjunction with the Federal Aviation Administration, sponsor the development of technical specifications and, subsequently, develop certification standards for a Takeoff Acceleration Monitoring System which will alert the crew of an aircraft to abnormally low acceleration during takeoff.

Interim reply sent on 19/07/2024:

On 30 August 2023, the European Union Aviation Safety Agency (EASA) published the Terms of Reference (ToR) for Rulemaking Task RMT.0741:
https://www.easa.europa.eu/en/document-library/terms-of-reference-and-rulemaking-group-compositions/tor-rmt0741

The objective of this RMT is to mitigate, using on-board design means of protection, the risk of large aeroplane accidents or incidents caused by the use of erroneous take-off performance parameters, and by erroneous take-off positions.

Taking into account design solutions that have been developed by industry to date, this objective should be achieved through the introduction of design requirements aiming at detecting and preventing these errors by providing a means of informing or alerting the flight crew in a timely manner. This should include the monitoring of real-time aeroplane performance during the take-off roll.

Design requirements will be considered to address new large aeroplane designs. An analysis and impact assessment will be conducted to assess the feasibility and the benefit of design requirements applicable to existing (already type certificated) large aeroplane designs.

In parallel, the European Organisation for Civil Aviation Equipment (EUROCAE) created Working Group WG-129 'Take-off Performance Monitoring System Strategy' that held a first meeting on 30 April 2024 with the participation of EASA. The WG is tasked with developing a minimum operational performance standard (MOPS) and/or a minimum aviation system performance standard (MASPS) in order to facilitate the introduction of a take-off performance monitoring system (TOPMS). A close relationship with RTCA is also ensured by EUROCAE in view of issuing a common standard. EASA will take into account the work done by this WG and ultimately consider any issued standard that could support the compliance demonstration with new EASA certification specifications.

A Notice of Proposed Amendment (NPA) is being drafted with a publication for consultation currently expected in Q4 2024.

Status: Open

UNKG-2021-015

Alauda Airspeeder Mk II (UAS), no registration, 04/07/2019

Safety Recommendation received on 11/02/2021:

It is recommended that the European Union Aviation Safety Agency adopt appropriate design, production, maintenance and reliability standards for all Unmanned Aircraft Systems with aircraft capable of imparting over 80 joules of energy.

Final reply sent on 16/10/2024:

The European Union Aviation Safety Agency (EASA) assisted the European Commission and the European Committee for Standardisation (CEN) in the development of a set of industry standards for the design, production, maintenance and reliability of drones capable of imparting over 80 Joule of energy. In summary, the applicable standards are:

- ASD-STAN prEN 4709-001 P1, published at https://stan-shop.org/en/catalog/item/75627?search=4709-001
- DIN EN 4709-002:2024-03, published at https://www.dinmedia.de/de/norm/din-en-4709-002/373551874
- ASD-STAN prEN 4709-003 P1 - Corrigendum 1, published at https://stan-shop.org/en/catalog/item/75419
- ASD-STAN prEN 4709-004 P1, published at https://stan-shop.org/en/catalog/item/75302

Following the publication in July 2024 of the last of this set of industry standards, the actions of EASA resulting from the safety recommendation may be considered closed.

The above standards are in the process of being adopted by the European Commission as harmonised EU norms for the placing on the market of Unmanned Aircraft Systems (UAS) in the open category, according to Regulation (EU) 2019/945.

Status: Closed – Agreement

UNKG-2021-018

Airbus A321, G-POWN, 26/02/2020

Safety Recommendation received on 04/05/2021:

It is recommended that the European Union Aviation Safety Agency amend the Acceptable Means of Compliance AMC2(a)(3) for regulation Part-145.A.48(b), Performance of Maintenance, to include the treatment of aircraft fuel systems with biocide additives as an example task that is to be considered as a critical maintenance task.

Interim reply sent on 22/03/2024:

The European Union Aviation Safety Agency (EASA) assessed the contents of the referred Acceptable Means of Compliance (AMC) and considers that the best approach would be to include in the list of data sources used to identify critical maintenance tasks (see point (b) of AMC2 145.A.48(c)(2)) relevant authority publications such as EASA Safety Information Bulletin (SIB) 2020-06, which deals with biocide treatment. This regulatory amendment will be addressed under rulemaking task RMT.0735, which addresses miscellaneous non-controversial topics and identified issues to ensure that Regulation (EU) No 1321/2014,

its AMC, and Guidance Material (GM) remain fit for purpose. The Terms of Reference (ToR) for RMT.0735 were published in December 2023 and a Notice of Proposed Amendment (NPA) is planned for Q3 2024.

Status: Open

UNKG-2021-019

Airbus A321, G-POWN, 26/02/2020

Safety Recommendation received on 04/05/2021:

It is recommended that the European Union Aviation Safety Agency amend the Acceptable Means of Compliance AMC1(c) for regulation M.A.402(h), Performance of Maintenance, to include the treatment of aircraft fuel systems with biocide additives as an example task that is to be considered as a critical maintenance task.

Interim reply sent on 22/03/2024:

The European Union Aviation Safety Agency (EASA) assessed the contents of the referred Acceptable Means of Compliance (AMC) and considers that the best approach would be to include in the list of data sources used to identify critical maintenance tasks (see GM M.A.402(h)) relevant authority publications such as the EASA Safety Information Bulletin (SIB). This regulatory amendment will be addressed under rulemaking task RMT.0735, which addresses miscellaneous non-controversial topics and identified issues to ensure that Regulation (EU) No 1321/2014, its AMC, and Guidance Material (GM) remain fit for purpose. The Terms of Reference (ToR) for RMT.0735 were published in December 2023 and a Notice of Proposed Amendment (NPA) is planned for Q3 2024.

Status: Open

UNKG-2021-020

Airbus A321, G-POWN, 26/02/2020

Safety Recommendation received on 04/05/2021:

It is recommended that the European Union Aviation Safety Agency (EASA) conduct safety promotion with the National Aviation Authorities (NAAs) of EASA Member States to promote the classification of biocide treatment of aircraft fuel systems as a critical maintenance task.

Interim reply sent on 19/12/2024:

The European Union Aviation Safety Agency (EASA) has implemented two safety promotion actions on this topic as key aspects of preventing maintenance error and mitigating risks coming from this domain.

Specifically:

- an article was published in the Conversation Aviation Magazine 1-2024, published at: https://www.easa.europa.eu/community/topics/conversation-aviation-1-2024-dirty-dozen-edition (Page 23) on 29 February 2024.
- the topic was also covered in a specific article 1 July 2024 with an article on Preventing Maintenance Error, published at https://www.easa.europa.eu/community/topics/preventing-maintenance-error.

The topic has also been discussed in the Safety Promotion Network that is the collaborative group with EASA and the National Aviation Authorities (NAAs) that coordinates safety promotion across Europe. This is to ensure that the NAAs are also aware of the work carried out and promote it to both their own staff and maintenance organizations in their jurisdiction.

EASA plans to launch another safety promotion initiative specific to the biocide topic in Q1 2025.

Status: Open

UNKG-2023-001

Leonardo AW169, G-VSKP, 27/10/2018

Safety Recommendation received on 25/08/2023:

It is recommended that the European Union Aviation Safety Agency amend Certification Specification 29.602 to require type design manufacturers to provide the results of all relevant system and flight testing to any supplier who retains the sole expertise to assess the performance and reliability of components identified as critical parts within a specific system application, to verify that such components can safely meet the in-service operational demands, prior to the certification of the overall system.

Final reply sent on 06/02/2024:

Pursuant to point 21.A.20 of Annex I (Part 21) to Regulation (EU) No 748/2012, the applicant for aircraft type certification is responsible for the demonstration of compliance with the type certification basis (that includes certification specifications), and to record justifications of compliance within the compliance documents as referred to in the certification programme. This implies ensuring that parts and systems reach minimum performance and reliability targets.

Therefore, the applicant is responsible for providing any information such as, but not limited to, test results to its suppliers to ensure a final airworthy design.

This principle is not specific to certain products and should not be repeated in each Certification Specification where a supplier could be affected.

The European Union Aviation Safety Agency (EASA) considers that the above-mentioned regulatory framework, including Certification Specifications, is adequate and does not envisage creating new prescriptive requirements.

Status: Closed – Partial Agreement

UNKG-2023-002

Leonardo AW169, G-VSKP, 27/10/2018

Safety Recommendation received on 25/08/2023:

It is recommended that the European Union Aviation Safety Agency introduce additional requirements to Certification Specification 29 to specifically address premature rolling contact fatigue failure across the full operating spectrum and service life of bearings used in safety critical applications.

Interim reply sent on 06/02/2024:

Point CS 29.571 (Fatigue Tolerance Evaluation of Metallic Structure) paragraph (d) of Certification Specification for Large Rotorcraft (CS-29) specifies the following with regard to Principle Structure Elements (PSE):

“Each PSE must be identified. Structure to be considered must include the rotors, rotor drive systems between the engines and rotor hubs, controls, fuselage, fixed and movable control surfaces, engine and transmission mountings, landing gear, and their related primary attachments.”

The European Union Aviation Safety Agency (EASA) considers that this includes critical components within the rotor control mechanism, such as the tail rotor duplex bearing of the AW169.

Acceptable Means of Compliance AMC1 29.571 (introduced with Amendment 11 of CS-29) addresses Rolling Contact Fatigue (RCF) which should be included, when applicable, in the fatigue tolerance evaluation of Principle Structure Elements (PSE). This AMC describes possible steps to be taken to minimise the risk of crack initiation due to RCF on PSEs (and in particular for integrated bearing races). A fail-safe approach is recommended wherever possible, such that cracking of the affected structural element(s) is detected prior to its residual strength capability falling below the required levels prescribed in CS 29.571(f). In addition to following a fail-safe approach, inspection and retirement times may be needed in order to ensure that the assumptions supporting the fail-safety and detection of failure remain valid throughout the operational life of the component.

EASA is however reviewing the opportunity to clarify the scope of application of AMC1 29.571, and similarly of AMC1 27.571, to ensure that critical bearings are always considered. A proposed amendment of CS-27 and CS-29 is planned to be included in the next Notice of Proposed Amendment under rulemaking task RMT.0128 ‘Regular update of the Certification Specifications for Very Light Rotorcraft (CS-VLR), Small Rotorcraft (CS-27), and Large Rotorcraft (CS-29)’.

Status: Open

UNKG-2023-003

Leonardo AW169, G-VSKP, 27/10/2018

Safety Recommendation received on 25/08/2023:

It is recommended that the European Union Aviation Safety Agency amend Certification Specification 29.602 to define the airworthiness status of life limits on non-structural critical parts and how they should be controlled in service.

Final reply sent on 06/02/2024:

Inspections and/or retirement times are introduced in the Airworthiness Limitations Section (ALS) of the Instructions for Continued Airworthiness (ICA) based on:

1. The fatigue and damage tolerance evaluations performed when showing compliance with points CS 29.571 (Fatigue Tolerance Evaluation of Metallic Structure) and CS 29.573 (Damage Tolerance and Fatigue Evaluation of Composite Rotorcraft Structures) of Certification Specification for Large Rotorcraft (CS-29). Note: the European Union Aviation Safety Agency (EASA) considers that tail rotor bearings are part of the scope of CS 29.571/573; or

2. Certification Maintenance Requirements (CMRs) identified when showing compliance with points CS 29.1309 [or equivalent assessments performed when showing compliance with other CS-29 paragraphs such as CS 29.547(b) (Main and tail rotor structure) or CS 29.917(b) (Rotor drive system design)] to ensure that safety objectives are met when addressing significant latent failures (refer to Federal Aviation Administration (FAA) Advisory Circular 29-2C, paragraph 29.1309, which is recognised as Acceptable Means of Compliance (AMC) to CS-29; in addition, details on CMRs are provided in CS-25, AMC 25-19, the content of which is also applied by EASA to CS-29 certification projects through a Means of Compliance Certification Review Item).

Thus, EASA considers that the 'airworthiness status of life limits' of critical parts is ensured by means of demonstrating that the necessary limits are established, when required, in compliance with the Certification Specifications mentioned in points 1 and 2 above.

Following the creation of AMC1 29.571 (addressing rolling contact fatigue) as part of Amendment 11 of CS-29 (ED Decision 2023/001/R), EASA will ensure that bearings installed in rotorcraft certified by EASA comply with CS 29.571 and feature adequate life limits in the ALS, when required.

Status: Closed – Partial Agreement

UNKG-2023-004

Leonardo AW169, G-VSKP, 27/10/2018

Safety Recommendation received on 25/08/2023:

It is recommended that the European Union Aviation Safety Agency define the airworthiness status of life limits and how they should be controlled for existing non-structural critical parts approved to Certification Specification 29.602 requirements, already in service.

Final reply sent on 22/03/2024:

In accordance with point 21.A.7 of Annex I (Part 21) to Regulation (EU) No 748/2012, the Type Certificate Holder (TCH) must provide Instructions for Continued Airworthiness (ICA) for critical parts, either structural or non-structural, and, in case of large rotorcraft, the preparation of ICA must be performed in compliance with the Certification Specification (CS) 29.1529.

The ICA applicable to critical parts may be included within the Airworthiness Limitation Section (ALS) of the ICA and/or in other appropriate Sections.

Retirement Times or Operational Time Limits provided in the ICA are necessary for the safe operation of the aircraft and they have to be implemented in the Aircraft Maintenance Programme (AMP) to obtain

approval by the Competent Authority [ref. point M.A.302(d)(2) of Annex I (Part M) to Regulation (EU) No 1321/2014]. This requirement is applicable to both ALS and other Sections of the ICA.

In addition, point 21.A.3A of Annex I (Part 21) to Regulation (EU) No 748/2012 contains the necessary provisions for ensuring the collection, investigation and analysis of occurrence reports to identify the necessary mitigations in terms of changes to the design and/or to the ICA to prevent or minimize the possibility of such occurrences in the future, as necessary. This includes, as per point 21.A.3A(a)(1), the identification of adverse trends or deficiencies that cause or might cause adverse effects on the continuing airworthiness of the product. The 'analysis' is not limited to those occurrences that require the involvement of the European Union Aviation Safety Agency (EASA) under point 21.A.3A(e).

Taking into account the information above, the EASA considers that the necessary regulatory framework is already in place and, therefore, EASA does not intend to re-define or re-evaluate the airworthiness status of ICA for critical parts, either structural or non-structural, already in service.

Status: Closed – Disagreement

UNKG-2023-005

Leonardo AW169, G-VSKP, 27/10/2018

Safety Recommendation received on 25/08/2023:

It is recommended that the European Union Aviation Safety Agency amend Certification Specification 29.602 to require manufacturers to implement a comprehensive post removal from service assessment programme for critical parts. The findings from this should be used to ensure that reliability and life assumptions in the certification risk analysis for the critical part or the system in which it operates remain valid.

Interim reply sent on 06/02/2024:

The European Union Aviation Safety Agency (EASA) issued Certification Memorandum (CM) CM-S-007 dated 19 August 2015 on 'Post Certification Actions to Verify the Continued Integrity of Rotorcraft Critical Parts'. The purpose of this CM is to supplement the existing guidance for compliance with Certification Specifications CS 27.602 and CS 29.602 (Critical Parts), detailing the need for post certification actions to verify the continued integrity of Critical Parts. These actions should ensure that critical parts are controlled throughout their service life in order to maintain the critical characteristics on which certification is based. In addition, the effectiveness of any associated design, maintenance and monitoring provisions, which either help to ensure the continued integrity or provide advance indication of impending failure of critical parts, should be assessed.

EASA also addressed this topic under rulemaking task RMT.0128 'Regular update of CS-27&29'. Notice of Proposed Amendment (NPA) 2022-01 was published on 14 February 2022. Under item 6, this NPA proposed to amend CS-27 and CS-29 (certification specifications and acceptable means of compliance for small and large rotorcraft).

The NPA proposed to create CS 27.602(c)/29.602(c) and associated acceptable means of compliance AMC1 27.602/29.602 to require the development of a continued integrity verification programme (CIVP). The

content of the proposed amendments was based on CM-S-007, which is currently used during new Type Certifications (TC) and major changes to existing TC.

The CIVP should ensure the continued validity of assumptions made during certification that could affect the integrity of critical parts. This should include, but not be limited to, demonstration of the continuity of the effectiveness of design, maintenance and monitoring provisions (e.g. health monitoring, usage monitoring and safety devices).

However, several comments have been raised during the public consultation of NPA 2022-01 and highlighted a need to clarify the applicability, to promote the proportionality and to better refine the concept of CIVP before its introduction in CS-27 and CS-29. A dedicated webinar was organised on 28 November 2022 to discuss those concerns with industry and National Competent Authorities (NCA). The feedback received was quite positive even if it was clear that the concept needs to be studied further before CIVP is introduced within CS-27 and CS-29.

In consequence, it has been decided that this topic will not be included in the CS-27 and CS-29 amendments resulting from NPA 2022-01.

The CIVP concept is being reviewed by EASA, and a revision of CM-S-007 is being prepared. In this revision, it is envisaged to clarify that, in case of any findings during the CIVP questioning the validity of the certification assumptions, the applicant should perform a detailed evaluation of the potential impact on flight safety and, when necessary, report to its competent authority for continued airworthiness (EASA and national competent authority). The analysis of a finding in a CIVP could lead to changes to the future certification approach for similar components and/or to continued airworthiness actions.

In parallel, EASA intends to create a new rulemaking task to prepare a new proposal for CS-27 and CS-29 amendment in consultation with the industry.

The response to this safety recommendation will be updated when progress is made with the above-mentioned actions.

Status: Open

UNKG-2023-006

Leonardo AW169, G-VSKP, 27/10/2018

Safety Recommendation received on 25/08/2023:

It is recommended that the European Union Aviation Safety Agency require manufacturers to retrospectively implement a comprehensive post removal from service assessment programme for critical parts, approved to Certification Specification 29.602 requirements, already in service. The findings from this should be used to ensure that the reliability and life assumptions in the certification risk analysis for the critical part or the system in which it operates remain valid.

Final reply sent on 22/03/2024:

Point 21.A.3A of Annex I (Part 21) to Regulation (EU) No 748/2012 defines the obligations applicable to the Type Certificate Holders (TCHs) to establish and maintain a system for collecting, investigating and

analysing occurrence reports. This includes, as per point 21.A.3A(a)(1), identification of adverse trends or deficiencies that might cause adverse effects on the continuing airworthiness of the product.

In addition, acceptable means of compliance AMC1 21.A.3A(a) clarifies that, for parts whose failure could lead to an unsafe condition (and critical parts are candidates as they could have catastrophic effect upon the rotorcraft), the 'analysis' function of the system should ensure that reports and information sent, or available, to the Design Approval Holder (DAH) are fully investigated so that the exact nature of any event and its effect on continuing airworthiness is understood. This may then result in changes to the design and/or to the Instructions for Continued Airworthiness (ICA), and/or in establishing a mitigation plan to prevent or minimize the possibility of such occurrences in the future, as necessary. The 'analysis' is not limited to those occurrences that require the involvement of the European Union Aviation Safety Agency (EASA) under point 21.A.3A(e).

EASA considers that obligations outlined in 21.A.3A already indicate that the TCH shall collect, investigate and analyse reports and information [including the early rejection of parts from service as mentioned in guidance material GM1 21.A.3A(a) and 21.A.3A(b) Reporting system] that might question the certification assumptions for critical parts and when necessary, define design changes and implement mitigation plans.

Therefore, EASA considers that the necessary regulatory framework is already in place to address the intent of this Safety Recommendation (SR) and, therefore, there is no need to retrospectively implement a comprehensive post removal from service assessment programme for critical parts already in service.

Status: Closed – Disagreement

UNKG-2023-007

Leonardo AW169, G-VSKP, 27/10/2018

Safety Recommendation received on 25/08/2023:

It is recommended that the European Union Aviation Safety Agency amend Certification Specification 29.602 to provide guidance and set minimum standards for the calculation of design load spectrums for non-structural critical parts. They must encompass, with an appropriate and defined safety margin, the highest individual operating load and combination of dynamic operating loads, and the longest duration of exposure to such loads that can be experienced in operation.

Interim reply sent on 06/02/2024:

The accident investigation report mentions a non-conservative load calculation at the time of certification as a potential root cause of the bearing failure.

The European Union Aviation Safety Agency (EASA) does not share this single factor conclusion, considering that other possible detrimental factors might also have contributed to the bearing failure, as already explained in comments appended to the final investigation report as Appendix K, published here: AAR_1-2023_G-VSKP_Final_Vol_2.pdf (publishing.service.gov.uk)

The methodology for load calculation as used by Leonardo is not novel or unusual and does not require complete reconsideration by new prescriptive certification specifications.

However, as lessons learnt from this accident, EASA considers that future approvals of hybrid bearing with ceramic balls will deserve more attention as regards to the failure mechanics and the sensitivity of the

bearing to its working conditions (including abnormal conditions created by e.g. manufacturing defects, degraded lubrication, improper maintenance, etc.,) in order to better cope with a wider range of scenarios.

EASA plans to issue a Certification Memorandum (CM) to provide specific guidance related to the demonstration of compliance with applicable CS-27 and CS-29 certification specifications for hybrid bearings (combination of steel races with ceramic ball bearings).

The response to this safety recommendation will be updated when the CM is issued.

Status: Open

UNKG-2023-008

Leonardo AW169, G-VSKP, 27/10/2018

Safety Recommendation received on 25/08/2023:

It is recommended that the European Union Aviation Safety Agency amend the relevant requirements of Certification Specification 29 and their Acceptable Means of Compliance to emphasise that where potentially catastrophic failure modes are identified, rather than rely solely on statistical analysis to address the risk, the wider system should also be reviewed for practical mitigation options, such as early warning systems and failure tolerant design, in order to mitigate the severity of the outcome as well as the likelihood of occurrence.

Final reply sent on 06/02/2024:

The European Union Aviation Safety Agency (EASA) considers that some steps have already been taken to ensure a more comprehensive evaluation of critical bearings installed in the rotor and rotor drive systems.

For instance, Certification Specification CS 29.571 (Fatigue tolerance evaluation of metallic structure) and Acceptable Means of Compliance AMC1 29.571 (dealing with rolling contact fatigue (RCF)) address the need to take into account the impact of RCF and minimise the risk of crack initiation resulting from RCF on Principal Structural Elements (PSEs). In addition, AMC1 29.571 states that ‘as it is difficult to totally preclude cracking initiated by RCF, a fail-safe approach is recommended wherever possible, such that cracking of the affected structural element(s) is detected prior to its residual strength capability falling below the required levels prescribed in CS 29.571(f)’.

No further change to CS-29 is planned on this topic.

Final reply sent on 19/07/2024:

The European Union Aviation Safety Agency (EASA) considers that practical mitigation options such as early warning systems and failure tolerant designs are relevant means to achieve adequate safety levels in rotorcraft designs.

According to CS-29 Amdt 11 (Certification Specifications, Acceptable Means of Compliance (AMC) and Guidance Material for Large Rotorcraft), CS 29.571 (Fatigue tolerance evaluation of metallic structure) and AMC1 29.571 (dealing with rolling contact fatigue (RCF)) address the need to take into account the impact of RCF and minimise the risk of crack initiation resulting from RCF on Principal Structural Elements (PSEs). In addition, AMC1 29.571 states that ‘as it is difficult to totally preclude cracking initiated by RCF, a fail-safe approach is recommended wherever possible, such that cracking of the affected structural element(s) is detected prior to its residual strength capability falling below the required levels prescribed in CS 29.571(f)’. Hence AMC1 29.571 clearly introduces the notion of fail-safe designs and of means of detection to fulfil the

objective of preventing failure as a result of RCF. This regulatory material was relatively new at the date of publication of the accident investigation report and it appeared, in EASA's view, not to have been considered.

Nevertheless, additional CS-29 provisions help to meet the intent of this safety recommendation:

(1) The design assessments specified by CS 29.547(b) (Strength requirements - Main and tail rotor structure) and CS 29.917(b) (Powerplant – Rotor Drive System - Design) require the identification of all failures in rotors and rotor drive systems that will prevent continued safe flight or safe landing, as well as the means to minimise the likelihood of their occurrence. As per Federal Aviation Administration (FAA) Advisory Circular (AC) 29-2C Change 7 (recognised as AMC to CS-29) sections 29.547 and 29.917, 'a design assessment […] should be carried out in order to substantiate that the system is of a safe design and that compensating provisions are made available to prevent failures classified as hazardous and catastrophic[…]'. The listed compensating provisions include design features (such as redundancies and safety factors) and the use of safety devices or vibration health monitoring systems, which cover the means proposed by the AAIB in this safety recommendation. Other compensating provisions such as inspections or checks, as well as preventive maintenance are also listed.

(2) Since some years EASA has recognised the need to clearly identify those continuing airworthiness tasks which are listed as compensating provisions in the aforementioned design assessments and are also considered key to ensuring that the hazardous and catastrophic failures of the design are either adequately mitigated or their probability of occurrence has been adequately minimised. EASA considers that these continuing airworthiness tasks should be:

   i. considered as candidates for Certification Maintenance Requirements (CMRs) in accordance with AMC 25-19 of CS-25 (Certification Specifications and Acceptable Means of Compliance for Large Aeroplanes). EASA currently addresses the application of the CS-25 CMR concept to support the demonstration of compliance with large rotorcraft certification specifications requiring safety assessment and design assessment, including CS 29.547(b) and CS 29.917(b), through a Means of Compliance Certification Review Item. Therein applicants are requested to detail the criteria and methods to demonstrate the adequacy of these CMRs.

   ii. evaluated for the need of dedicated certification testing to demonstrate adequate performance and suitable intervals. EASA is currently considering the possibility of introducing new AMC to CS 29.927(a) (Additional tests) to address this aspect. This would clarify the need to support inspection intervals and retirement times with appropriate directly applicable data.

In conclusion, while the relevance of a full assessment of the design and a detailed evaluation of the failure scenarios is agreed and already present in CS-29, EASA considers that mandating design measures to systematically mitigate the outcome of catastrophic failures could be counterproductive. This could lead to impractical and overly complex solutions, that negatively impact the reliability of rotors and rotor drive systems.

Based on the above, EASA considers that the necessary elements are in place to ensure that hazardous and catastrophic failures are adequately addressed during certification, by adequately mitigating such failures and/or minimising their probability of occurrence, thus, ensuring adequate safety levels.

Status: Closed – Partial Agreement

UNKG-2024-004

Extra NG, G-MIIL, 02/04/2022

Safety Recommendation received on 16/02/2024:

It is recommended that the European Union Aviation Safety Agency (EASA) ensure the canopies fitted to all Extra NG aircraft are manufactured to meet the required certification standards and can withstand expected aerodynamic and flight loads.

Interim reply sent on 26/04/2024:

The European Union Aviation Safety Agency (EASA), together with the aircraft manufacturer, has reviewed the design data of the EXTRA NG canopy. The manufacturing process, used to bond the inner and outer canopy frames with each other, and the canopy glass with the previously bonded canopy frame, is unchanged compared to the earlier Type Design EA 300 for which no similar in-service occurrence was recorded. Additionally, the Type Certificate Holder (TCH) has conducted a computational fluid dynamics (CFD) analysis under conservative assumptions which has shown that the canopy assembly meets the required certification standards.

Nevertheless, EASA is evaluating, with the aircraft manufacturer, the need to perform on a voluntary basis, a one-time Non Destructive Test (NDT) to verify the correct bonding of the in service canopy frames as precautionary measure.

EASA is also considering the scenario presented by Bundesstelle für Flugunfalluntersuchung (BFU) on the role that the change in the locking mechanism of the canopy of the Extra NG compared to the previous models might have had in the accident.

Status: Open

UNKG-2024-005

Extra NG, G-MIIL, 02/04/2022

Safety Recommendation received on 16/02/2024:

It is recommended that the European Union Aviation Safety Agency (EASA) assess the effectiveness of SB-NG-2-22 in rectifying inadequate bonding.

Final reply sent on 26/04/2024:

The European Union Aviation Safety Agency (EASA) highlights that Service Bulletin (SB) SB-NG-2-22 was issued as a precautionary measure following the subject accident. The intent of the SB was not to rectify an assumed inadequate bonding. EASA finds that the actions prescribed in the SB would be effective in improving the bonding by fitting the canopy glass more homogeneously to the canopy frame.

Final reply sent on 28/11/2024:

The European Union Aviation Safety Agency (EASA) considers the conclusion received on 28/06/2024 (AAIB-28120) concerning the scope of the SB-NG-2-22 is correct. Notwithstanding the above, EASA's view is that Extra NG aircraft canopies comply with the applicable certification requirements even without the incorporation of the aforementioned SB. As precautionary measure, the manufacturer is willing to recommend a one-off inspection of canopy frames as per Aircraft Maintenance Manual 20-10-06 on

aeroplanes in service. Furthermore, not overlooking the possibility that the canopy was not correctly latched, the manufacturer is offering an improvement on the latching system together with a proactive replacement of the outer canopy frame, or even replacing with a new canopy as an alternative. Together, EASA finds that these improvements fully satisfy the intent of this safety recommendation.

Status: Closed – Partial Agreement

UNST-2019-007

Boeing 737-7H4, N772SW, 17/04/2018

Safety Recommendation received on 12/12/2019:

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.

Final reply sent on 22/03/2024:

The European Union Aviation Safety Agency (EASA) analysed the lessons learnt from the subject accident and this safety recommendation and took several actions to improve the certification of turbine engines and large aeroplanes.

I. Certification of turbine engines

The review of the existing certification specifications (CS) and acceptable means of compliance (AMC) applicable to turbine engines in CS-E identified the following issues:

(a) The potential release of uncontained debris in the engine forward and rearward directions is not sufficiently addressed. It is limited to a provision in AMC E 810 (‘Compressor and Turbine Blade Failure’) related to the blade containment test, expecting to report the estimated size, weight, trajectory, and velocity of any debris ejected from the intake or exhaust during the test.

(b) CS-E 520(c)(2) requires that validated data (from analysis or test or both) be established and provided to enable the aircraft manufacturer to ascertain the forces that could be imposed on the aircraft structure and systems as a consequence of the out-of-balance running and during any continued rotation with rotor unbalance after shutdown of the Engine following the occurrence of blade failure as demonstrated in compliance with CS-E 810 (‘Compressor and Turbine Blade Failure’). AMC E 520(c)(2) provides acceptable means of compliance regarding the Engine model validation. However, it appears that the displacements and loads transmitted to the engine nacelle structure (certified at aircraft level) have not been sufficiently addressed during the certification of some engines and aircraft.

In order to address the above analysis’ findings, in the frame of rulemaking task RMT.0184 (‘Regular update of CS-E’) EASA published on 22 November 2021 Notice of Proposed Amendment (NPA) 2021-13 (https://www.easa.europa.eu/document-library/notices-of-proposed-amendment/npa-2021-13), proposing to amend CS-E.
Based on this NPA and on the comments received during the public consultation, EASA issued Executive Director Decision 2023/020/R amending CS-E (‘CS-E Amendment 7’):
https://www.easa.europa.eu/en/document-library/certification-specifications/cs-e-amendment-7

This amendment includes the following changes:
(a) CS-E 520 ('Strength'), paragraph (c)(1) is amended to require that compressor and turbine blades are 'radially' contained after their failure, instead of the current requirement to demonstrate no Hazardous Engine effect. This better reflects the actual design and certification practices regarding engine casing strength. The secondary effects associated with the blade failure are addressed by CS-E 810.

(b) AMC E 520(c)(2) ('Engine model validation') is amended to:
(1) add provisions clarifying that the engine model validated data (to be provided to the aircraft manufacturer) includes the dynamic displacement of nacelle attachment features;
(2) clarify, regarding engines designed for the failure of the rotor support structure following a blade failure, that engine manufacturers should also evaluate the effect of the most severe blade failure which would not cause the failure of the rotor structural support, and that the effect on the engine and on the loads transmitted to the aircraft should be included in this evaluation; and
(3) specify that the engine model validation should consider any differences between the test configuration and the aircraft installation.

(c) AMC E 510 ('Safety analysis'), paragraph (3)(d)(iii) on 'Hazardous Engine Effects - Non-containment of high-energy debris' is amended to specify:
(1) when debris, released after a failure, should be considered as uncontained high-energy debris causing a hazardous engine effect, i.e. when this can cause an unsafe condition;
(2) how applicants should address the threat posed by major rotating parts (which are not required to be contained);
(3) how applicants should address the threat posed by blade failure debris. A link is made with CS-E 520(c)(1) regarding the requirement for debris radial containment. In addition, the case where blade failure debris is released forward, rearward or otherwise outside the engine containment structure is addressed. The need to assess the hazard at the aircraft level is included and this assessment should be performed as far as possible in coordination with the aircraft manufacturer;
(4) how applicants should address other sources of uncontained high-energy debris, such as high-pressure casing failures.

(d) CS-E 810 ('Compressor and Turbine Blade Failure') is amended to align with CS-E 520(c)(1) regarding the 'radial' containment requirement and clarify that Hazardous Engine Effects that may be triggered by the blade failure must not occur at a rate greater than that defined as Extremely Remote. The previous wording requiring to demonstrate that no Hazardous Engine Effect can happen was not considered as adequate, as some debris may be released outside the radial containment area and this must be addressed and mitigated.

(e) AMC E 810 ('Compressor and Turbine Blade Failure'), paragraph (2)(c), related to the conditions after the containment test, is amended to:
(1) reflect the amendments made to CS-E 810 and AMC E 510;
(2) specify that applicants should assess the threats represented by blade failure conditions other than the test conditions;
(3) specify that the assessment of potential hazardous engine effect resulting from other damage before engine shutdown should consider the long-term effects (e.g. unbalance loads) of blade failures which would not be detected by the declared instrumentation;
(4) specify that the assessment of potential hazardous engine effect resulting from the blade failure should consider debris being released from the engine, forward, rearward or otherwise outside the containment structure, thereby also referring to AMC E 510;
(5) remind the applicability of other CS-E specifications according to which some failures that could be triggered after a blade failure are not acceptable.

II. Certification of large aeroplanes

The review of certification specifications and acceptable means of compliance for large aeroplanes (CS-25) showed that the structural integrity of secondary structure elements (including engine nacelle elements) is not explicitly addressed within the specifications related to the protection of the aeroplane against the FBO event and the related Sustained Engine Imbalance (SEI). Although aeroplane manufacturers generally take into account these loads for the design of their nacelle components, EASA prepared a Special Condition (SC) to supplement the CS-25 provisions. This SC would be provided in case of new application for certification of a new aeroplane. It would require the following:

(a) Supplement CS 25.901(c) (on powerplant installation) to specify that the damaging effects from the SEI are excepted from compliance with CS 25.1309.
(b) Supplement CS 25.1103(b), CS 25.1123, CS 25.1193(a), CS 25.1191(b) to specify that these structural elements must resist the FBO event and the related SEI conditions and remain attached to the aeroplane.

This SC is complemented by Interpretative Material that supplement the following AMC material:
(1) AMC 25.362 ('Engine Failure Loads') and AMC 25-24 ('Sustained Engine Imbalance') to address the methods used to develop aeroplane design loads based on the FBO data provided by the engine manufacturer,
(2) AMC 20-128A ('Design Considerations for Minimizing Hazards Caused by Uncontained Turbine Engine and Auxiliary Power Unit Rotor Failure') to address the consolidation of data provided by the engine manufacturer for debris release that are not addressed by the existing rotor failure model of the AMC.

III. On-going certification projects

EASA cooperated with engine and aeroplane manufacturers to ensure that the above-mentioned topics are addressed as far as possible in the frame of already on-going certification projects.

Status: Closed – Partial Agreement

UNST-2021-052

Saab 2000, N686PA, 17/10/2019

Safety Recommendation received on 18/11/2021:

Identify all currently certificated transport-category airplanes for which system safety assessments for landing gear systems did not consider human error that could lead to cross-wiring of antiskid brake system components, including the wheel speed transducers, and require manufacturers of transport-category airplanes without such assessments to perform the assessments and then implement mitigations to prevent cross-wiring of antiskid brake system components.

Interim reply sent on 22/03/2024:

Since the issuance of the Continued Airworthiness Review Item (CARI) 25-10 (March 2022), inquiring if their landing gear systems / architecture is robust to potential cross-wiring of antiskid brake system components, and how their system safety assessments considered those failure condition(s), and the potential need for mitigation, the European Union Aviation Safety Agency (EASA) received feedback from the Large Aeroplane EU Type Certificate holders. Among those manufacturers' outcomes, most of the product designs have been confirmed as mitigating adequately the threat identified, whether per hardware and/or procedural

solutions. However, some manufacturers have initiated maintenance data (AMM, …) updates, which are monitored by EASA.

The particular case of the SAAB 2000 architecture has been reassessed and enhanced by the mandate of design change (through EASA Airworthiness Directive 2023-0135, effective Date: 24 July 2023) to avoid the mis-connection of the anti-skid harnesses.

Following the completion of the few remaining actions (maintenance data update, remaining feedback to be analysed, …), a final reply to this recommendation will be issued to confirm that the products in the scope of the CARI 25-10, and for which EASA is the Primary Certification Authority, have been evaluated and confirmed as satisfactorily protected against the issue of the mis-connection of the anti-skid harnesses.

Status: Open

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Annex B

Definitions

Definitions

Accident: occurrence associated with the operation of an aircraft which, in the case of a manned aircraft, takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, or in the case of an unmanned aircraft, takes place between the time the aircraft is ready to move with the purpose of flight until such time it comes to rest at the end of the flight and the primary propulsion system is shut down, in which:

(a) a person is fatally or seriously injured as a result of:

- being in the aircraft, or,
- direct contact with any part of the aircraft, including parts which have become detached from the aircraft, or,
- direct exposure to jet blast,

except when the injuries are from natural causes, self- inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew; or

(b) the aircraft sustains damage or structural failure which adversely affects the structural strength, performance or flight characteristics of the aircraft, and would normally require major repair or replacement of the affected component, except for engine failure or damage, when the damage is limited to a single engine, (including its cowlings or accessories), to propellers, wing tips, antennas, probes, vanes, tires, brakes, wheels, fairings, panels, landing gear doors, windscreens, the aircraft skin (such as small dents or puncture holes) or minor damages to main rotor blades, tail rotor blades, landing gear, and those resulting from hail or bird strike, (including holes in the radome); or

(c) the aircraft is missing or is completely inaccessible.

Incident: an occurrence, other than an accident, associated with the operation of an aircraft which affects or would affect the safety of operation.

Serious incident: an incident involving circumstances indicating that there was a high probability of an accident and is associated with the operation of an aircraft, which in the case of a manned aircraft, takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, or in the case of an unmanned aircraft, takes place between the time the aircraft is ready to move with the purpose of flight until such time it comes to rest at the end of the flight and the primary propulsion system is shut down.

A list of examples of serious incidents is given below. The list is not exhaustive and only serves as guidance with respect to the definition of 'serious incident':

- a near collision requiring an avoidance manoeuvre to avoid a collision or an unsafe situation or when an avoidance action would have been appropriate,
- controlled flight into terrain only marginally avoided,

- aborted take-offs on a closed or engaged runway, on a taxiway, excluding authorised operations by helicopters, or from an unassigned runway,
- take-offs from a closed or engaged runway, from a taxiway, excluding authorised operations by helicopters, or from an unassigned runway,
- landings or attempted landings on a closed or engaged runway, on a taxiway, excluding authorised operations by helicopters, or from an unassigned runway,
- gross failures to achieve predicted performance during take-off or initial climb,
- fires and smoke in the passenger compartment, in cargo compartments or engine fires, even though such fires were extinguished by the use of extinguishing agents,
- events requiring the emergency use of oxygen by the flight crew,
- aircraft structural failure or engine disintegration, including uncontained turbine engine failures, not classified as an accident,
- multiple malfunctions of one or more aircraft systems seriously affecting the operation of the aircraft,
- flight crew incapacitation in flight,
- fuel quantity requiring the declaration of an emergency by the pilot,
- runway incursions classified with severity A according to the Manual on the Prevention of Runway Incursions (ICAO Doc 9870) which contains information on the severity classifications,
- take-off or landing incidents. Incidents such as undershooting, overrunning or running off the side of runways,
- system failures, weather phenomena, operation outside the approved flight envelope or other occurrences which could have caused difficulties controlling the aircraft,
- failure of more than one system in a redundancy system mandatory for flight guidance and navigation.

Safety investigation: process conducted by a safety investigation authority for the purpose of accident and incident prevention which includes the gathering and analysis of information, the drawing of conclusions, including the determination of cause(s) and/or contributing factors and, when appropriate, the making of safety recommendations.

Safety recommendation: proposal of a safety investigation authority, based on information derived from a safety investigation or other sources such as safety studies, made with the intention of preventing accidents and incidents.

Safety Recommendation of Global Concern (SRGC)[3]: is defined as a safety recommendation made to a State civil aviation authority, to a regional certification authority, or to ICAO regarding a systemic deficiency having a probability of recurrence with potential for significant consequences and requiring timely action to improve safety.

3 Source: ICAO Manual of Aircraft Accident and Incident Investigation (Doc 9756 -2014), Part IV Reporting, Chapter 1.6 RELEASE AND DISTRIBUTION OF SAFETY RECOMMENDATIONS.

An SRGC would meet one or more of the following criteria:

a. the deficiency underlying the recommendation is systemic and not solely a local issue;

b. the probability of recurrence of the accident and the adverse consequences are high;

c. the risk to persons, equipment and/or environment is high;

d. the urgency for taking effective remedial safety action is high;

e. there is a history of recurrence of the relevant deficiency;

f. the deficiency underlying the recommendation constitutes a risk to the airworthiness, design, manufacture, maintenance, operation and/or regulation of the involved aircraft type;

g. the deficiency underlying the recommendation constitutes a risk to more than one aircraft type, to more than one operator, to more than one manufacturer and/or to more than one State; and

h. the mitigation of the risks associated with the deficiency will require coordinated efforts of more than one entity of the air transport industry, such as civil aviation authorities, manufacturers and operators.

Safety Recommendation of Union-wide Relevance (SRUR): a safety recommendation identified by the European Network of Civil Aviation Safety Investigation Authorities according to Article 7 (g) of Regulation (EU) No 996/2010.

A safety recommendation of Union-wide Relevance (SRUR) would meet one or more of the following criteria:

- The deficiency underlying the safety recommendation is systemic, not related to a specific aircraft type, operator, manufacturer component, maintenance organization, air navigation service and/or approved training organisation, and not solely a national issue, or;
- There is a history of recurrence across Europe of the relevant deficiency.

Technical Adviser (Article 8 of REGULATION (EU) No 996/2010)

1. Safety investigation authorities shall, provided that the requirement of no conflict of interest is satisfied, invite EASA and national civil aviation authorities of the Member States concerned, within the scope of their respective competence, to appoint a representative to participate:

   (a) as an adviser to the investigator-in-charge in any safety investigation under Article 5(1) and (2), conducted in the territory of a Member State or in the location referred to in Article 5(2) under the control and at the discretion of the investigator-in-charge;

   (b) as an adviser appointed under this Regulation to assist accredited representative(s) of the Member States in any safety investigation conducted in a third country to which a safety investigation authority is invited to designate an accredited representative in accordance with international standards and recommended practices for aircraft accident and incident investigation, under the supervision of the accredited representative.

2. The participants referred to in paragraph 1 shall be entitled, in particular to:

   a. (a) visit the scene of the accident and examine the wreckage;

   b. (b) suggest areas of questioning and obtain witness information;

c. (c) receive copies of all pertinent documents and obtain relevant factual information;

d. (d) participate in the read-outs of recorded media, except cockpit voice or image recorders;

e. (e) participate in off-scene investigative activities such as component examinations, tests and simulations, technical briefings and investigation progress meetings, except when related to the determination of the causes or the formulation of safety recommendations.

3. EASA and the national civil aviation authorities shall support the investigation in which they participate by supplying the requested information, advisers and equipment to the safety investigation authority in charge.

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Annex C

Safety Recommendations classification

Safety Recommendation classification

This classification has been established in the scope of the safety recommendations taxonomy working group in cooperation with representatives from European Safety Investigation Bodies, Eurocontrol, the European Joint Research Center (JRC) and EASA. The aim of this group was to initiate a taxonomy dedicated to recommendations.

This activity took place in 2007 and is being used to implement a safety recommendation database developed by the JRC.

In addition to common definitions, the taxonomy also defines a unique pre-defined format for referencing safety recommendations. This format is composed by 4 digits originating state name followed by the year it was issued and then a three digits number (ex: UNKG-2007-001 for recommendation #1 issued by United Kingdom in 2007). Consequently, all references comply with this taxonomy foreseeing that existing safety recommendations will be imported in a central database and shared with a community of users.

Recommendation assessment: assessment given to a safety recommendation by the addressee as defined below:

- **Agreement:** safety recommendation for which the safety concern is agreed by the addressee and subsequent action is planned or implemented.
- **Partial agreement:** safety recommendation considered relevant by the addressee but not applicable and for which a safety issue has been recognised and a new orientation has been given to the recommended action.
- **Disagreement:** safety recommendation considered not relevant or not applicable by the addressee.
- **No longer applicable:** safety recommendation has been superseded or has become no longer applicable.
- **Not Responsible:** safety recommendation wrongly allocated or not in the scope of responsibility of the addressee.
- **More information required:** safety recommendation for which more information is required by the addressee before any action initiated. Additional information should be sent by the originator.
- **Unknown:** safety recommendation which was issued before any tracking implementation status and for which insufficient information to assign any other status has been received.

Response assessment: The classification of the response as determined by the originator (when a response is received):

- **Adequate:** safety recommendation for which appropriate action is planned or implemented or sufficient evidence of completed action satisfying the objective has been received by the originator.
- **Partially adequate:** safety recommendation for which the planned action or the action taken will reduce but not substantially reduce or eliminate the deficiency or for which a safety issue has been recognised and a new orientation has been given to the recommended action.

- **Not adequate:** safety recommendation for which no action has been taken or proposed that will reduce or eliminate the deficiency, or for which the proposed action is considered not applicable/ unacceptable.
- **Response is awaited:** safety recommendation for which no response has been received.
- **Response received awaiting assessment:** response to the safety recommendation has been received by the originator and is awaiting assessment.
- **Superseded:** if the recommendation has been superseded by another recommendation.
- **Unknown:** the safety recommendation is one which was issued before any tracking implementation status and for which insufficient information to assign any other status has been received.

Status of a safety recommendation: progress of the implementation of the response to a recommendation as defined below:

- **Open safety recommendation**: safety recommendation for which the reply has not yet been defined or the appropriate action addressing the safety concern is still in progress.
- **Closed safety recommendation:** safety recommendation for which appropriate action has been taken and completed addressing the safety issue.

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