EASA
European Aviation Safety Agency

ANNUAL SAFETY RECOMMENDATIONS REVIEW

2017

	Catalogue number	ISBN	ISSN	DOI
PDF	TO-AE-18-001-EN-N	978-92-9210-212-8	2599-7793	10.2822/177336

EUROPEAN AVIATION SAFETY AGENCY
SAFETY ANALYSIS AND RESEARCH DEPARTMENT

Designed in Luxembourg

EASA
European Aviation Safety Agency

Strategy & Safety Management Directorate
Safety Intelligence & Performance Department

Annual Safety Recommendations Review 2017

Disclaimer:

Neither the European Aviation Safety Agency, nor any person acting on behalf of the European Aviation Safety Agency is responsible for the use which might be made of the following information.

The Annual Safety Recommendations Review is produced by the European Aviation Safety Agency (EASA). This edition provides an overview of the safety recommendations that have been addressed to EASA in 2017. It also presents the replies produced during the year.

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

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

Image credits

Chapter 0- Vasco Morao
Chapter 1- iStock
Chapter 2- Samuel Pernet
Chapter 3-Alina Daliani
Chapter 4- iStock
Chapter 5- iStock
Chapter 6- Arjan Van Dijk
Annex A- iStock
Annex B- Gilles Gardiol
Annex C- iStock

Contents

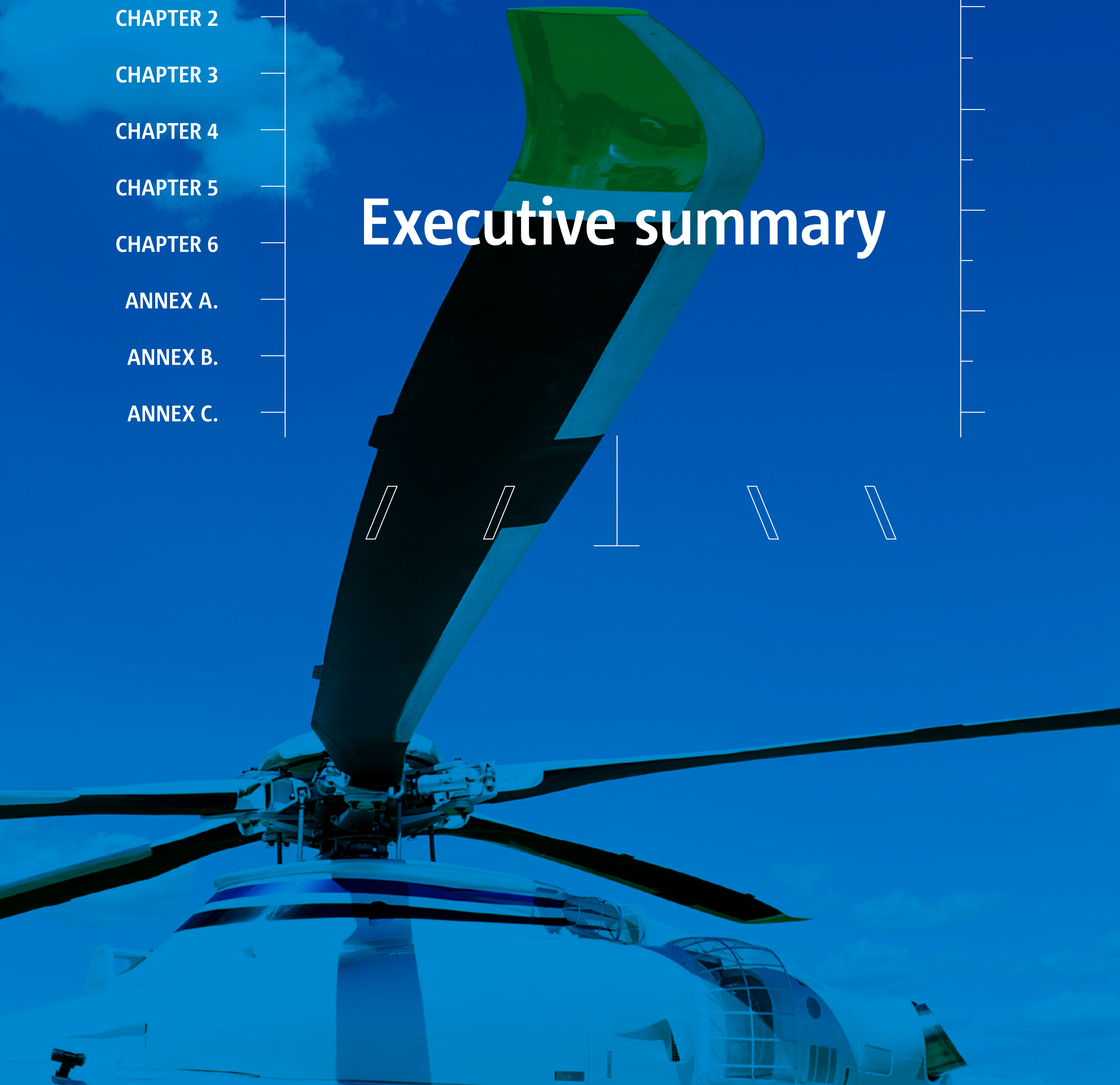
List of Figures

Abbreviation list

AD	Airworthiness Directive
AFM	Aircraft Flight Manual
AAIB UK	Air Accidents Investigation Branch United Kingdom
AMC	Acceptable Means of Compliance
ANSV	Italian National Agency for the Safety of Flight
BEA	Bureau d’Enquête et d’Analyse pour l’Aviation Civile
CAT	Commercial Air Transport
CIAIAC	Civil Aviation Accidents and Incidents Investigation Commission
CM	Certification Memo
CRI	Certification Review Item
CRM	Crew Resource Management
CS	Certification Specifications
CS-LSA	Certification Specifications for Light Sport Aeroplanes
CVR	Cockpit Voice Recorder
DSB	Dutch Safety Board
ELT	Emergency Locator Transmitter
ENCASIA	European Network of Civil Aviation Safety Investigation Authorities
EPAS	European Plan for Aviation Safety
ETOPS	Extended Operation
ETSO	European Technical Standard Order
EU	European Union
FAA	Federal Aviation Administration
FCOM	Flight Crew Operating Manual
FDM	Flight Data Monitoring
GA	General Aviation
GM	Guidance Material
HEMS	Helicopter Emergency Medical Service
HOFO	Helicopter Offshore Operations
ICAO	International Civil Aviation Organisation
ICCAIA	International Coordination Council for Aerospace Industry Associations
ILS	Instrument Landing System
LOC-I	Loss of control-inflight
MOPSC	Maximum Operational Passenger Seating Configuration
MS	Member States
NCO	Non-Commercial operations with Other than complex motor-powered aircraft
NTSB	National Transportation Safety Board
PED	Portable Electronic Devices
RE	Runway Excursion
RMT	Rulemaking Task
SIA	Safety Investigation Authority
SIB	Safety Information Bulletin
SRGC	Safety Recommendation of Global Concern
SRUR	Safety Recommendations of Union-wide Relevance
STC	Supplemental Type Certificates
STSB	Swiss Transportation Safety Investigation Board
VFR	Visual Flight Rules

CHAPTER 0
CHAPTER 1
CHAPTER 2
CHAPTER 3
CHAPTER 4
CHAPTER 5
CHAPTER 6
ANNEX A.
ANNEX B.
ANNEX C.

Executive summary



Executive summary

The Annual Safety Recommendations Review provides information on the activity carried out by the Agency in the field of safety investigation and follow-up. In addition, the review highlights a range of safety issues and Agency safety improvement efforts that are of interest to the European Aviation Community and the public.

This 11th edition reviews the 2017 activity and presents:

- General statistical data on the safety recommendations addressed by safety investigation authorities to EASA in 2017;
- Replies that EASA has given to safety recommendations in 2017;
- Main safety topics related to the above mentioned recommendations and/or replies that have been addressed through actions taken.

At the European Union level, the principles governing the investigation of accidents and serious incidents are defined in Regulation (EU) No 996/2010 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 implements international standards and recommended practices as described in Annex 13 to the Chicago Convention on International Civil Aviation.

During the last 10 years the Agency has become the main actor in safety investigation follow-up within Europe and this has also been reflected in the establishment of a robust and rigorous processing of the safety recommendations received. Owing to EASA central positioning in the system, the Agency is able to take actions with respect to systemic problems and other issues in the management of risk.

The implementation of safety recommendations provides tangible improvements in safety as a result of information that has been learned during safety investigations. In Europe, the methodical approach to investigatory work and the implementation of recommendations brings some meaning to the loss experienced as a result of accidents.

During 2017, Safety Investigation Authorities from 15 different States addressed 42 safety recommendations to EASA in the context of the Agency's remit. This number is about the half of the safety recommendations received by the Agency in 2016, and by far the lowest in the last 8 years.

They were mostly related to aircraft or aviation related "equipment or facilities" [39%, Aircraft/Equipment/Facilities] and to "procedures or regulations" [37%, Procedures/Regulations]. 16 were classified as safety recommendations of Global Concern (SRGC) and 16 were classified as safety recommendations having Union-wide Relevance (SRUR).

Therefore, the handling of the safety recommendations in both an expeditious and responsible manner constitutes one of the pivotal responsibilities for EASA. In response, the Agency in 2017 produced 157 replies to safety recommendations:

- 86 of them were final replies (closing safety recommendations) with more than 48% carrying an agreement assessment, and 35% with partial agreement;
- The remaining 71 updating replies provided information on the progress of the actions decided upon by the Agency and for which the relevant activities were not yet completed;
- Only 9% of the final response provided by EASA were assessed as “not adequate” by the Safety Investigation Authorities.

Introduction

Introduction

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

Regulation (EC) No 216/2008, the EASA Basic Regulation, states that "Results of air accident investigations should be acted upon as a matter of urgency, in particular when they relate to defective aircraft design and/or operational matters, in order to ensure consumer confidence in air transport".

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

- EASA delivers the first response to incoming recommendations within 90 days;
- The safety recommendations process is subject to continuous internal monitoring until all corrective actions are closed;
- The Agency receives assessments of its responses from Safety Investigation Authorities (SIA) and can identify when opinions diverge. In this context, EASA considers the assessment given by the safety investigation authority on the appropriateness of the mitigation measures when closing the recommendation.

In November 2017, EASA was audited by the International Civil Aviation Organisation (ICAO). ICAO performed the Universal Safety Oversight Audit Programme (USOAP) of its Member States to check the correct implementation of their ICAO obligations. The report will be published on ICAO web page.

All safety recommendations must be taken into full consideration by the organisations to which they are addressed. In this context, the Agency maintains transparency with respect to its decisions and actions, in line with its safety mission. The Agency will maintain the current levels of cooperation in working with the European Network of Civil Aviation Safety Investigation Authorities (ENCASIA) - WG6 on Safety Recommendations.

Furthermore, EASA is also monitoring safety recommendations that are issued to other aviation and non-aviation addressees. The types of safety recommendations that are listed below have noticeably increased over the past 3 years:

- Safety Recommendations of Union-wide Relevance (SRUR) and with Global Concern (SRGC), addressing mainly systemic safety concerns;

- Safety recommendations addressing new developments at the national level, such as safety recommendations related to increasing number of unmanned aircraft systems (drones/RPAS/UA), or ‘dual-use’ products which can be used for both military and civil aircraft;
- Interdisciplinary safety recommendations addressing non-aviation entities, such as those relating to cumulative events or to studies, with safety recommendations addressing a wide range of actors;
- Security-related-safety recommendations, such as criminal acts affecting (interference) aircraft, crew members, aviation critical infrastructure or the safety of airspace over conflict zones.

The Annual Safety Recommendations Review provides an overview on the follow-up performed by EASA in response to recommendations addressed to the Agency by Safety Investigation Authorities in relation to the investigation of Accidents and Serious Incidents or originating from safety studies.

The first edition of this review was issued in 2007. This 11th edition reviews the 2017 activity and presents:

- General statistical data on the safety recommendations addressed by safety investigation authorities to EASA in 2017;
- Replies that EASA has given to safety recommendations in 2017 and;
- Main safety issues that have been addressed through actions taken.

Since 2011, a process to assess and mitigate safety risks at the European level has been established by EASA. At the heart of this system is the concept of safety risk management, comprising hazard identification, risk assessment and decision-making resulting in the best agreed course of action to mitigate those risks. EASA, Member States (MS) and industry work closely together in this process. At the European level, this process is coordinated by the Agency and documented in the European Plan for Aviation Safety (EPAS).

The EPAS identifies the key safety issues as well as the agreed safety actions to resolve or mitigate the hazards.

Safety recommendations are one of the key inputs to the safety risk management process. They provide information on the hazards as well as proposed solutions to mitigate the associated safety risks to the aviation system.

Safety Recommendations received in 2017

Safety Recommendations received in 2017

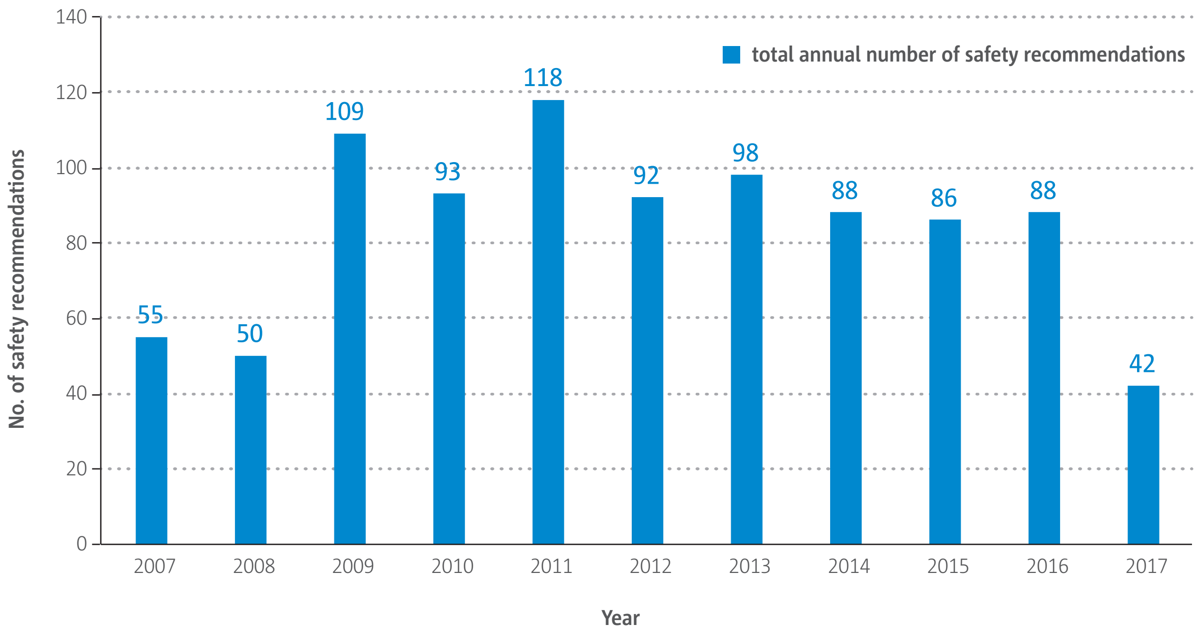
3.1 Overview of Safety Recommendations received in 2017

During 2017, EASA received a total of 42 safety recommendations.

Figure 1 shows the total annual number of safety recommendations that the Agency has received over the last 10 years. The exchange of safety recommendations and the role of EASA in that regard is enforced by the adoption of Regulation (EU) No 996/2010. The issuance of safety recommendations addressed to EASA started to develop shortly before this regulation came into force in 2010. In the years from 2012 to 2016, the annual number of safety recommendations addressed to EASA remained constant. In 2017, this amount reduced to half: This is by far the lowest number of yearly safety recommendations addressed to the Agency during the last 8 years.

This is in line with the decreased number of safety recommendations issued in 2017 by the SIA in EASA Members States. This fact was noted by ENCASIA when publishing their annual report. It was noted that in comparison to 2016 only 60 percent of safety recommendations were recorded in the European Safety Recommendation Information System (SRIS). WG6 of ENCASIA intends to review this data in more detail in order to understand the reason for this change.

➨ Figure 1: Safety Recommendations addressed to EASA per year



In 2017, the safety recommendations were related to one study, one transmittal letter and 30 different occurrences, comprising 20 accidents, 8 serious incidents and 2 incidents.

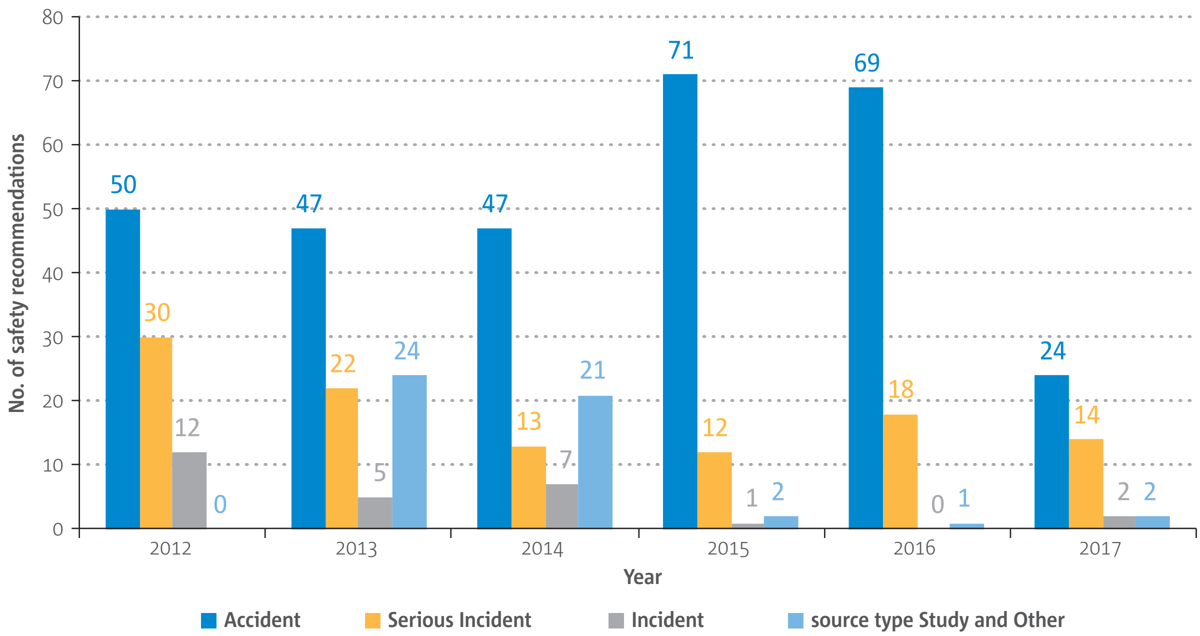
The study was initiated by the Swiss Transportation Safety Investigation Board (STSB) and reviewed the organisation and efficiency of the civil aviation search and rescue service in Switzerland[1] (Swiss – SAR) addressing et al one safety recommendation to the Agency regarding crash survivability of the emergency locator transmitter (ELT) system (signal and technical construction).

The transmittal letter was received from the Romanian Civil Aviation Safety Investigation and Analysis Center (CIAS) with one safety recommendation addressed to the Agency regarding the language used for passenger safety briefings on domestic flights.

In summary, each investigation of the applicable occurrences resulted in one to three safety recommendations being addressed to the Agency.

Figure 2 shows the total number of safety recommendations by different occurrence classes since 2012.

Figure 2: Annual Safety Recommendations by occurrence class 2012-2017



The aircraft categories, per type of operation, that were involved in the occurrences that resulted in safety recommendations in 2017 are listed in the table below.

1 "Studie Nr. 3 der Schweizerischen Sicherheitsuntersuchungsstelle SUST über die Organisation und die Wirksamkeit des Such- und Rettungsdienstes der zivilen Luftfahrt (search and rescue – SAR) in der Schweiz"

Figure 3: Safety Recommendations received in 2017 by Type of Operation and Aircraft Category

Type of Operation	Aircraft Category					
	Fixed Wing Large Aeroplane	**Fixed Wing Small Aeroplane** (incl. Glider, Ultralight/ Microlight)	**Lighter-than-air**	**Rotorcraft Total**	**UA/ RPAS**	**Grand Total**
Commercial Air Transport	**14**	**1**	**2**	**8**		**25**
Cargo	*1*	*1*				*2*
Passenger	*13*		*2*	*8*		*23*
Airline	13					13
HEMS				7		7
Sightseeing			2	1		3
Non-Commercial Operations	**2**	**10**		**1**	**1**	**14**
State Operations				**1**		**1**
Firefighting				1		1
not applicable*						**2**
Grand Total	**16**	**11**	**2**	**10**	**1**	**42**

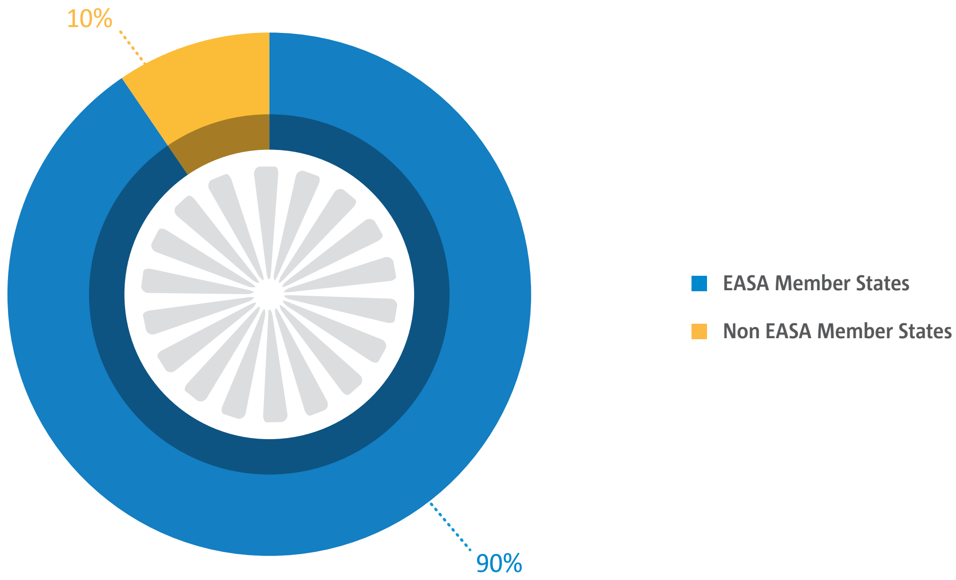
**including safety recommendations stemming from one study and one letter*

3.2 Origin of the Safety Recommendations received in 2017

In 2017, Safety Investigation Authorities of 15 different States addressed 42 safety recommendations to EASA.

Figure 4 shows the percentage distribution of safety recommendations between EASA Member States and non-EASA Member States that were addressed to EASA in 2017. The chart shows that EASA Member States issued 90 % of the safety recommendations that were received by EASA in 2017.

Figure 4: Origin of Safety Recommendations received by EASA



Almost one third [28%] of the safety recommendations received in 2017 were related to 4 major occurrences as follows [each investigation issued 3 safety recommendations addressed to EASA]:

1. An accident involving a rescue helicopter AgustaWestland AW109SP, with registration HB-ZRV, on 26 February 2015 during the approach to the Base “Rega Erstfeld” in Switzerland;

2. A serious incident involving an AIRBUS A330, with registration N276AY, on 26 June 2016 at London Heathrow Airport (United Kingdom) with an emergency evacuation at the parking stand after an APU failure filled cabin with smoke;

3. An accident involving a RANS S6 aircraft (Annex II aircraft), with registration EC-YDQ, on 15 July 2016 in the vicinity of the “Los Garranchos” airfield in Spain;

4. A serious incident involving a BK117D2 helicopter, with registration I-BRXA, in a powerplant related event, en-route during an Emergency Medical Service (HEMS) operation on 11 October 2017 at Montichiari Airport in Italy.

The safety recommendations that EASA received from non-EASA Member States are related to the following four occurrences:

- An accident involving an ATR 72 aircraft, with registration VH-FVR, operating on a scheduled passenger flight from Canberra to Sydney, Australia, sustained a pitch disconnect while on descent to Sydney on 20 February 2014. The Australian Transport Safety Bureau (ATSB) addressed one safety recommendation to EASA.

- A fatal accident involving a BOEING B747-412F, with registration TC-MCL, on 16 January 2017 while performing a cargo flight from Chek Lap Kok Airport (VHHH, Hong Kong) via Manas International Airport (UCFM, Bishkek) to Ataturk Airport (LTBA, Istanbul) impacted the ground during approach to RWY 26 of Manas International Airport, Kyrgyz Republic. The accident is being investigated by the Russian Federation Interstate Aviation Committee Commission (MAK), and in the published preliminary report one safety recommendation was addressed to EASA.

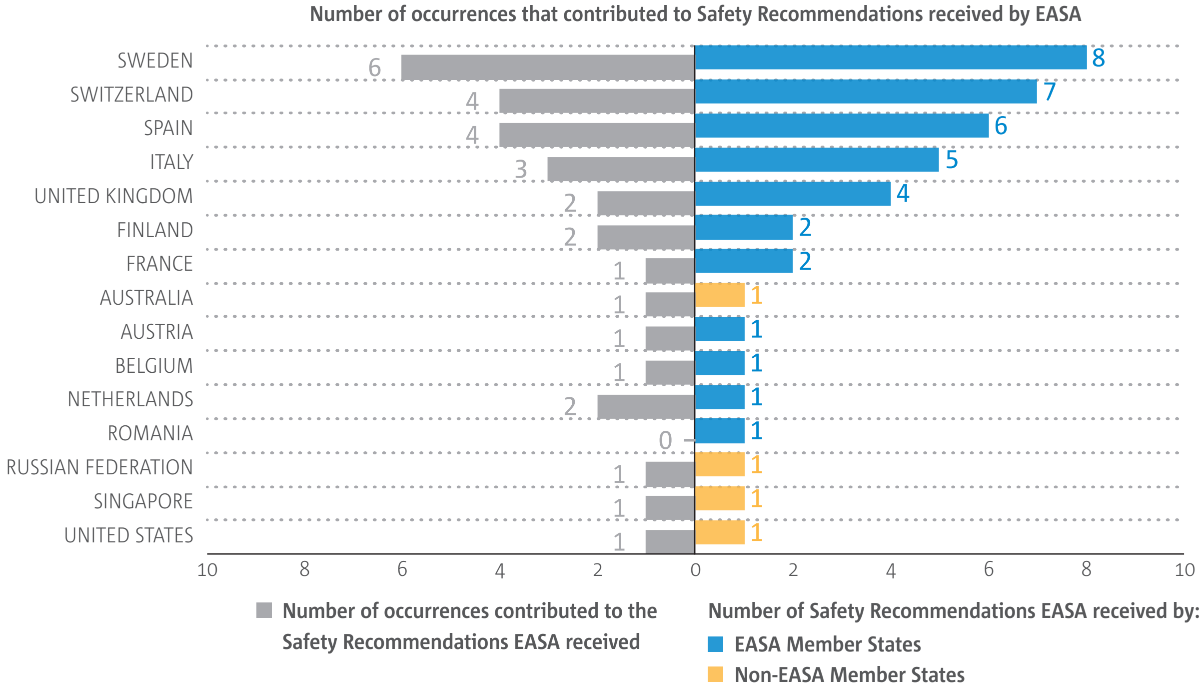
- An incident investigated by the Transport Safety Investigation Bureau of Singapore that occurred during a flight from Sydney to Singapore on 26 November 2016 involving a BOEING B787, with registration 9V-OJF. The aircraft experienced vibration in one engine during the climb and cruise phase and an engine failure during descent to Singapore Changi Airport. The SIA addressed one safety recommendation to EASA.

- The United States National Transportation Safety Board (NTSB) investigated an accident involving an AIRBUS Helicopters AS350 that suffered a loss of control at take-off from a ground-based hospital helipad in Frisco, Colorado on 3rd July 2015. The SIA addressed one safety recommendation to EASA.

Safety recommendations coming from non-EASA Member States mainly addressed actions to EASA certified products (focused on reviewing the design to ensure the ongoing safe operation) or recommended cooperation with the primary certification authority.

Figure 5 shows the contribution of different SIAs worldwide, also indicating the number of occurences that contributed to the safety recommendations that were addressed to EASA in 2017. The contribution of the occurrences is proportional to the number of safety recommendations. The SIAs of Sweden [8], Switzerland [7] and Spain [6] issued the highest number of safety recommendations.

Figure 5: States contribution to Safety Recommendations received in 2017



The Swedish Accident Investigation Authority (Statens haverikommission - SHK) issued 8 safety recommendations that were related to 6 different occurrences, all of which occurred in Sweden. The majority of the safety recommendations arise from different occurrences and are not drawn from the previously described 28% of all safety recommendations received in 2017:

- An accident involving a hot air balloon LINDSTRAND (model LBL 120A, with registration SE-ZOU) at Nynäs Fallet on 10 May 2016. The investigation resulted in two safety recommendations being addressed to EASA.

- A serious incident at Vilhelmina Airport in Sweden on 6 April 2016 involving a BAe ATP aeroplane, registration SE-LLO, in a runway excursion. The investigation determined that this event was caused by an asymmetrical reverse thrust and the braking action was probably worse than that indicated by the calculated friction coefficients. Two safety recommendations were addressed to EASA.

- A serious incident on 6 April 2016 involving a FOKKER F28-100 aeroplane, with registration YR-FZA, that occurred during an instrument approach to Gällivare airport, which was performed in the dark with snow and rain. After a hard landing in the touchdown zone, the aircraft overran the end of the runway and came to a halt on the runway strip. The investigation determined that the serious incident was caused by the gradual deterioration of conditions allowing for a safe landing, which was not perceived in due time. One safety recommendation was addressed to EASA.

- A serious incident involving an AVRO 146-RJ100, with registration SE-DSP, occurred on 29 September 2016 at Malmö Airport and related to a component failure/malfunction [non-powerplant / SCF-NP] due to inadequate maintenance. One safety recommendation was addressed to EASA.

- A serious incident involving an AVRO-RJ 100,with registration SE-DSV, after take-off from Gothenburg/Landvetter Airport on 7 November 2016. The investigation determined that the incident was partly caused by the operator lacking safe procedures for performing a complete contamination inspection, and partly because the operator had not properly checked the subcontractor's working methods. This resulted in the aircraft taking off with ice-contamination on critical surfaces. One safety recommendation was addressed to EASA.

- A Loss of control – inflight (LOC-I) involving a Diamond DA42, with registration SE-LVR, during a training flight on 22 January 2016 at Ängsö (Västmanland County). The investigation resulted in one safety recommendation being addressed to EASA.

The Swiss Transportation Safety Investigation Board (STSB) issued 7 safety recommendations that were related to one study and 4 accidents as follows:

1. An accident involving a rescue helicopter AgustaWestland AW109SP (HB-ZRV) on 26 February 2015 during the approach to the Base "Rega Erstfeld" in Switzerland. Three safety recommendations were addressed to EASA.

2. An accident involving an AIRBUS A319 (HB-JZQ) on 20 July 2014. One safety recommendation was addressed to EASA.

3. An accident involving a ROBIN DR400 (HB-EQN) on 26 August 2016. One safety recommendation was addressed to EASA.

4. An accident involving an ATR72 (D-ANFE) on 04 December 2014. One safety recommendation was addressed to EASA.

5. A study[2] concerning the review of the organisation and efficiency of the civil aviation search and rescue service in Switzerland (Swiss – SAR) addressing et al one safety recommendation to the Agency regarding crash survivability of the emergency locator transmitter (ELT) system.

2 "Studie Nr. 3 der Schweizerischen Sicherheitsuntersuchungsstelle SUST über die Organisation und die Wirksamkeit des Such- und Rettungsdienstes der zivilen Luftfahrt (search and rescue – SAR) in der Schweiz"

The Civil Aviation Accidents and Incidents Investigation Commission (CIAIAC) in Spain issued 6 safety recommendations that were related to 4 different occurrences (3 accidents and 1 incident). The safety recommendations were in the scope of operations [1 safety recommendation Flight Planning and Fuel Management (FPFM)], Air Crew training [1 safety recommendation concerning the training program for helicopter pilots for the LTE phenomenon, and 1 safety recommendation related to flight crew water survival training for flights over water in specialised air operations] and three safety recommendations concerning aircraft equipped with a ballistic parachute recovery system. The volume of safety recommendations is consistent with one of the four main contributing events, as described in the previous chapter.

In general, the safety recommendations issued by the European SIAs in 2017 addressed a wide scope of technical subjects in the remit of the Agency: Certification, air operations, air crew, aerodromes and air traffic management. Aspects covered were, inter alia, the initial and continued airworthiness of light aircraft and large helicopters, various aspects of air operations (such as flight planning, weather conditions, fuel consumption and de-icing), CAT operations, as along with flight crew training and procedures for air crew (emergency procedures).

3.3 Involvement in accident and serious incident investigations

In 2017 several investigations of major accidents and serious incidents have been opened and or conducted. The Agency's role in the field of aircraft accident and incident investigation is mostly focused on following-up on the progress of aircraft accident and incident investigations, the Agency being represented during investigations and providing technical expertise to investigations as required.

Below is a list of 2017 accident and incident investigations where EASA was closely involved, mainly through the appointment of an EASA Technical Advisor:

- A serious incident on 11 March 2017 in Colombia involving an AIRBUS A340-300 (registration F-GLZU), which experienced a slow rotation take-off from SKBO (Bogota) on RWY 13R. The investigation is delegated to the BEA by the Colombian Aircraft Accident Investigation (GRIAA).

- On 10 August 2017, an accident occurred involving an HPH Glasflügel 304 eS (registration G-GSGS), which is an electric self-sustainer sailplane, having a battery fire in the Front Electric Sustainer (FES) during landing at Parham Airfield, in the United Kingdom. The occurrence was initially referred to the British Gliding Association (BGA) for investigation in accordance with an existing Memorandum of Understanding between the AAIB and the BGA for non-fatal gliding accidents. Having conducted an initial investigation, the BGA requested further assistance from the UK AAIB, resulting in the UK AAIB launching a field investigation.

- A serious incident occurred on 09 September 2017 involving an ATR 72-212A (registration EC-KKQ) during a flight from Alicante to Madrid (Spain), which experienced Loss of Control Inflight (LoC-I) after entering icing conditions. The investigation is led by the CIAIAC.

- A collision with terrain involving a LET-410UVP (registration RA-67047) that was performing a scheduled passenger and cargo flight along the route Khabarovsk-Chumikan-Nelkan while approaching the landing site at Nelkan airport (Russia) on 15 November 2017. The accident is being investigated by the Interstate Aviation Committee (MAK).

- On 17 November 2017, a serious incident occurred en-route involving an AIRBUS A320, registration EC-HQJ, operating from Geneva airport (Switzerland) to Barcelona airport in Spain) when the pilots became partially incapacitated. The pilots donned the oxygen masks, declared an emergency situation and diverted towards Marseille Airport in Provence. The occurrence is being investigated by the BEA.

Events with encountering sudden severe turbulence at high altitude:

- An accident involving a Bombardier CL-604 and an AIRBUS A380, on 07 January 2017. During the cruise phase above the Arabian Sea, Indian Ocean, approximately one minute after it had been passed overhead by the AIRBUS A380 flying in the opposite direction, the CL-604 experienced a temporary loss of control. After losing approximately 9,000ft of altitude, the pilots regained control of the aircraft and subsequently landed at an alternate aerodrome; Muscat Airport, Oman. The German Federal Bureau of Aircraft Accident Investigation (BFU) is leading the investigation and EASA, at the invitation of the SIA, has been appointed as an adviser to the Investigator-in-charge.

- Two events involved the AIRBUS A330 aircraft type operating in severe turbulence with the potential to induce an upset:

    1. The first involved, an AIRBUS A330-300 (registration 9M-XXS) during cruise in Malaysian airspace on 03 May 2017. The Air Accident Investigation Bureau of Malaysia has opened an investigation in accordance with ICAO Annex 13 as the event occurred over international waters (State of Registration/Operator – Malaysia).

    2. The second involved an AIRBUS A330-200 (registration B-5926) during cruise while en-route from Paris (France) to Kunming (China) at FL390 about 260nm northeast of Tyumen (Russia) on 17 June 2017. The investigation is being led by the Chinese Aircraft Accident Investigation Division, Office of Aviation Safety.

    In both events EASA, at the invitation of the SIA, was appointed as an adviser to the BEA accredited representative.

Events involving helicopters:

- Two events occurred in Italy involving the helicopter type Agusta Westland AW139:

    1. On 24 January 2017, with registration EC-KJT during an Helicopter Emergency Medical Service (HEMS operation) flight;

    2. The second, with registration I-TNCC, occurred on 05 March 2017 while performing winching during an HEMS operation.

    The ANSV has opened two investigations and EASA, upon invitation from the SIA, appointed an adviser for the investigation.

- An accident involving a BK117 C-2 helicopter (registration N146DU) performing a HEMS operation in North Carolina (USA) occurred on 08 September 2017. The investigation is being led by the National Transportation Safety Board (NTSB).

- An accident involving a Sikorsky S92 (with registration EI-ICR) of the Irish Coast Guard conducting a Top Cover off-shore mission for Search and Rescue (SAR) occurred on 14 March 2017 in Ireland.

- An accident involving an Enstrom 480B helicopter (with registration N-480W) during a VFR flight from Bolzano airport (LIPB) to Linz airport (LOWL) occurred on 10 May 2017 in Italy. EASA, at the invitation of the SIA, was appointed as an adviser for the investigation opened by ANSV.

Events related to engine failure [engine malfunction]:

- A serious incident involving a SAAB 340 (with registration VH-NRX) with an in-flight propeller malfunction 19 km SW of Sydney Airport (Australia) occurred on 17 March 2017. The SHK (State of Design and Manufacture) assigned an accredited representative to assist the investigation led by the ATSB, and EASA, at the invitation of the SIA, was appointed as an adviser to the accredited representative.

- An accident involving an AIRBUS A380-800 (with registration F-HPJE) during a flight from Paris Charles de Gaulle (France) to Los Angeles (USA) occurred on 30 September 2017. An engine failure occurred during cruise at FL370 over Greenland, causing the crew to divert the aircraft for a safe landing at Goose Bay airport (Canada). The Danish Accident Investigation Board delegated the investigation lead to the BEA. Investigators from AIB Denmark (State of Occurrence), from the NTSB (State of Engine Manufacture), and the TSB (State where the flight crew diverted), are taking part in the safety investigation.

- Three powerplant failures [SCF-PP: powerplant failure or malfunction] involving the aircraft type AIRBUS A330 (with ROLLS-ROYCE TRENT 700 engine), were classified as serious incidents:

    1. During a flight on 15 May 2017, the pilots of an AIRBUS A330-200 (with registration SU-GCI) flying from Cairo (Egypt) to Beijing (China) rejected a take-off due to an engine failure.

    2. During a flight on 11 June 2017 from Sydney (Australia) to Shanghai (China), with an AIRBUS A330-200 (registration B-6099) an inlet cowl damage occurred. The aircraft returned to Sydney for a safe landing. The occurrence is being investigated by the ATSB. The BEA and the UK AAIB each appointed an accredited representative (respectively as State of Aircraft Manufacture and State of Engine Manufacture). EASA, at the request of the SIA, was appointed as an adviser to each of the two European accredited representatives.

    3. On 25 June 2017 during a flight from Perth (Australia) to Kuala Lumpur (Malaysia), an AIRBUS A330-300 (registration 9M-XXE) suffered a fan blade fracture en-route at FL380, which led to severe vibrations and the shutdown of the engine involved. The crew returned to Perth for a safe landing. The ATSB opened an investigation. The UK AAIB was appointed as an accredited representative and EASA, at the invitation of the SIA, was appointed as an adviser to the accredited representative.

Please note that safety actions that were taken immediately during an investigation do not appear in this publication if a Safety Investigation Authority did not issue an associated safety recommendation to EASA in 2017.

Safety Recommendations replies in 2017

Safety Recommendations replies in 2017

4.1 Overview of Safety Recommendations replies in 2017

In 2017, EASA issued 157 replies to 147 safety recommendations. Regular updates were provided, meaning that in a given year there may be several response letters issued for the same recommendation. The main volume of replies that were produced in 2017 were EASA responses to safety recommendations that were received in 2016 and 2017.

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

Figure 6: EASA responses to safety recommendations in 2017 by year received

Year Safety Recommendation received in	Number of replies in 2017	Including Final Replies
2004	1	0
2005	0	0
2006	1	1
2007	2	2
2008	1	1
2009	6	4
2010	8	3
2011	15	11
2012	3	2
2013	19	12
2014	10	8
2015	14	9
2016	46	24
2017	31	9
total	**157**	**86**

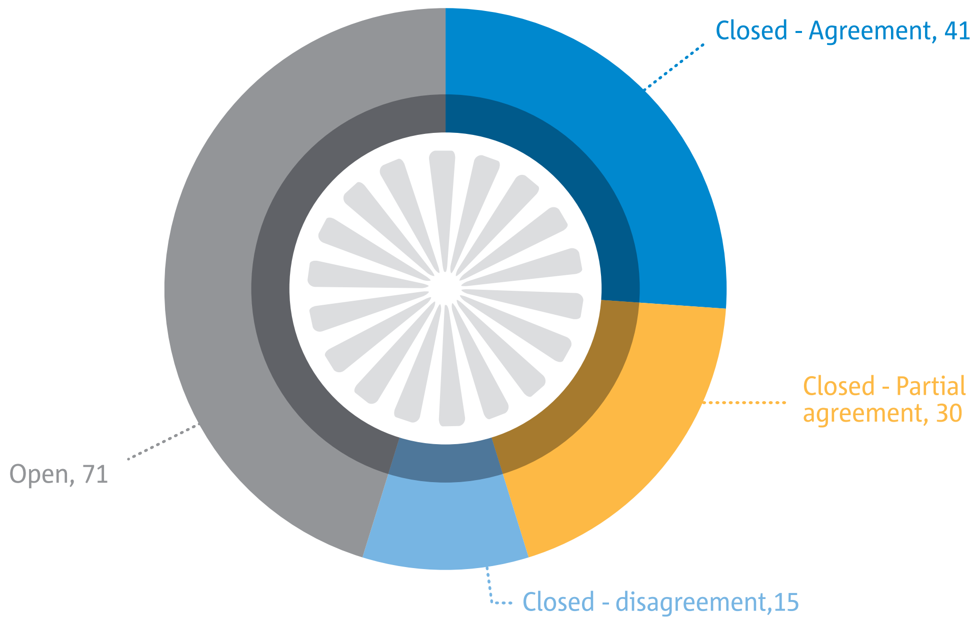
4.2 Status of the Safety Recommendations replies in 2017

Each final response closing a safety recommendation and its response assessment by the originators is classified according to the categories[3] given in Annex C.

Among the 157 replies that were sent by EASA in 2017 and summarised above, 86 were final replies that closed safety recommendations with the following EASA response category distribution:

- EASA agreed to take corrective actions in 71 cases either by directly applying the recommended actions as was the case for 41 of them, or by partially agreeing to take corrective action for 30 of them In partially agreeing, the Agency acknowledged the safety issue but took corrective actions other than those recommended;
- In another 15 cases, the safety recommendations were evaluated and the safety benefit was not agreed with. Figure 7 below shows this distribution.

Figure 7: Safety Recommendation Responses sent in 2017 [status, total number]



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

In addition to the 86 final replies closing a safety recommendation, 71 updating replies (so-called intermediate response) were also issued. These updating replies provided information on the progress of the actions decided upon by the Agency and for which the relevant activities were not yet completed.

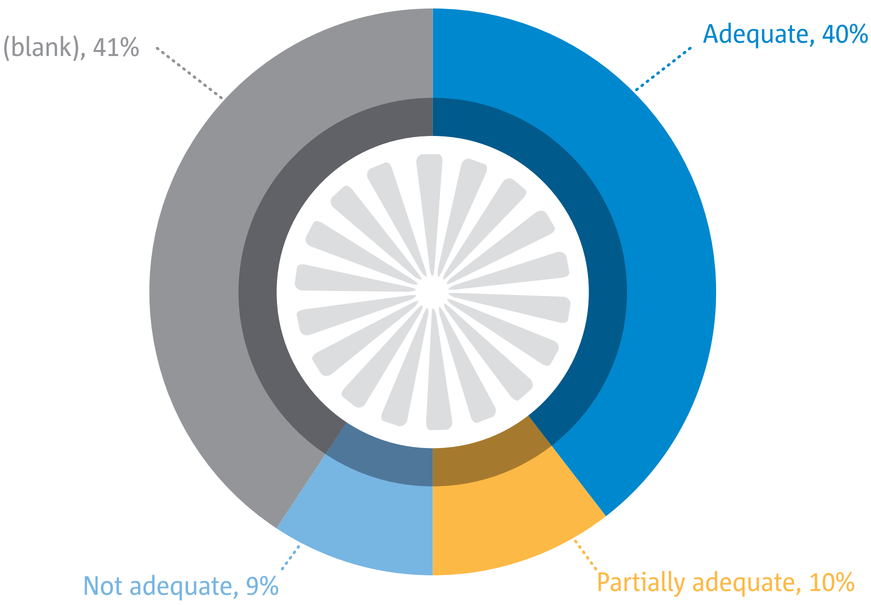
3 These definitions of classification categories are developed in collaboration with European Safety Investigation Authorities and are part of a taxonomy aimed at facilitating the management of safety recommendations.

To follow-up on whether or not the competent Safety Investigation Authority (SIA) considers the response to be adequate or disagrees with the action that EASA has proposed, the Agency has implemented procedures in compliance with Regulation (EU) No 996/2010.

Figure 8 shows the total number of response assessments that EASA has received from the SIAs, based on the 86 closing replies that were sent in 2017[4]. As assessed, 50 percent of the responses provided by the Agency were deemed to be “adequate” or “partially adequate”, and 9 percent as being “not adequate”. With respect to 35 closing responses or 41% of those sent in 2017, EASA is awaiting the assessment of the SIAs.

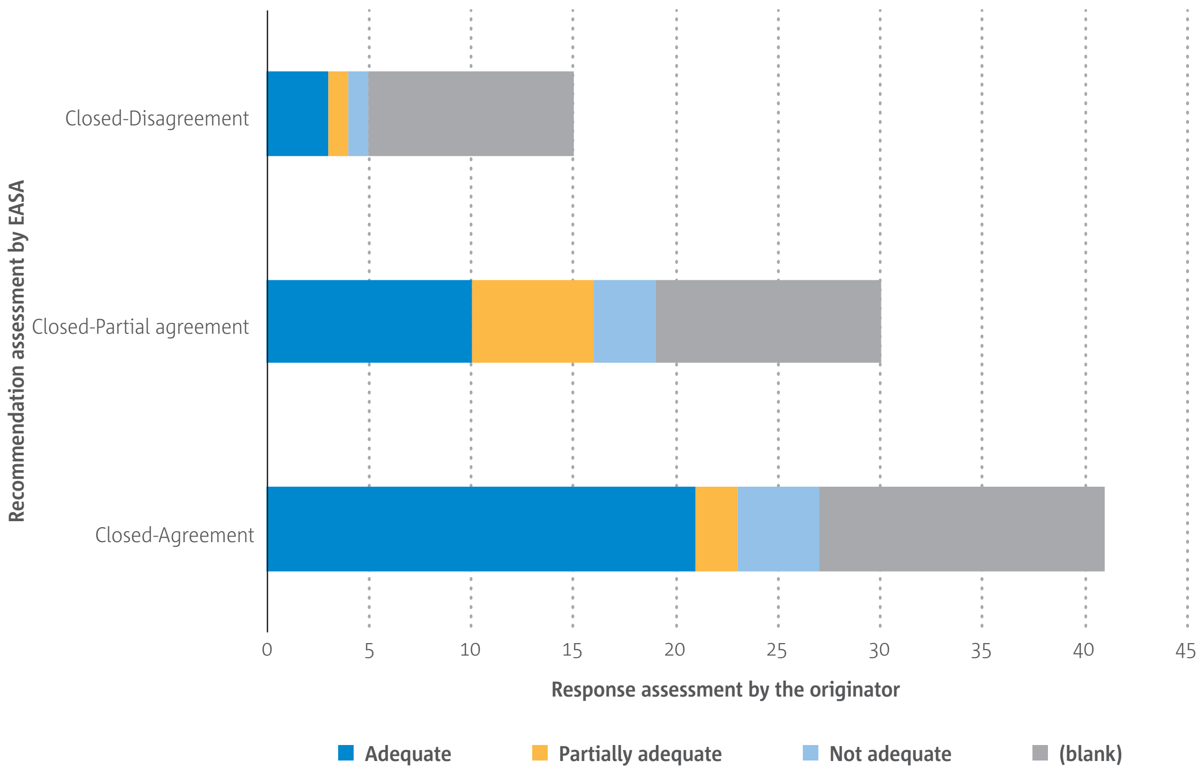
Figure 9 provides a more detailed view of the recommendation assessment and or classification as determined by the addressee.

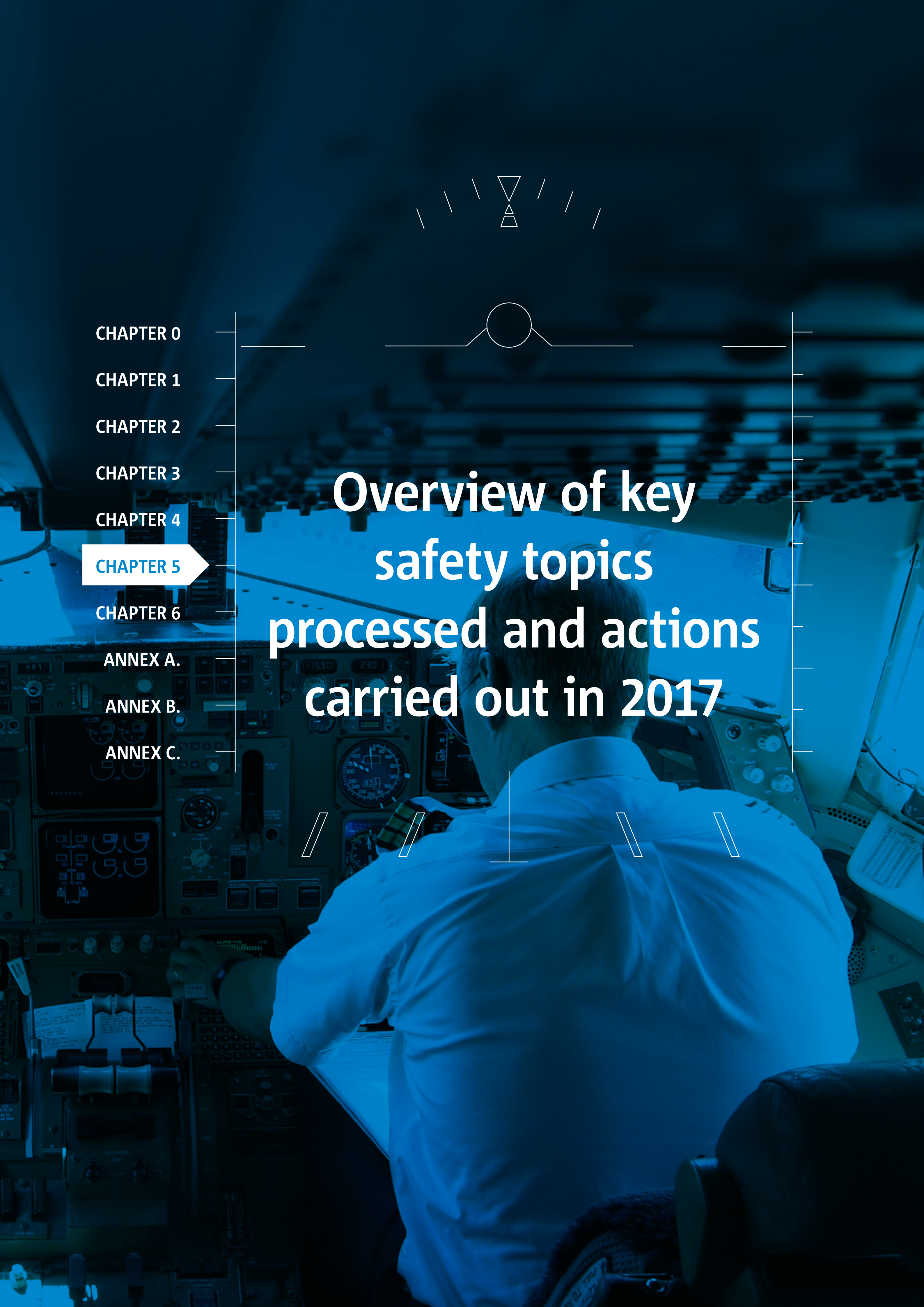
Figure 8: Response assessment received by originator on EASA Final Replies sent in 2017 [percentage, reference date: 26.03.2018]



4 The statistical reference date is 26 March 2018.

Figure 9: Assessment EASA received on the Final Responses sent in 2017 [total, reference date: 26.03.2018]





Overview of key safety topics processed and actions carried out in 2017

Overview of key safety topics processed and actions carried out in 2017

In 2017, Safety Investigation Authorities from 15 different States issued 42 safety recommendations to EASA that addressed proposals in all EASA remits. Figure 10 provides a percentage breakdown of the safety recommendation topics. Among the safety recommendations, the European SIAs classified 16 as being of Union-wide Relevance and 16 as being of Global Concern (SRGC). Thus, the handling of the safety recommendations in both an expeditious and responsible manner constitutes one of the pivotal responsibilities for EASA.

➨ Figure 10: Safety Recommendations addressed to EASA per topic by EU SIAs[5]

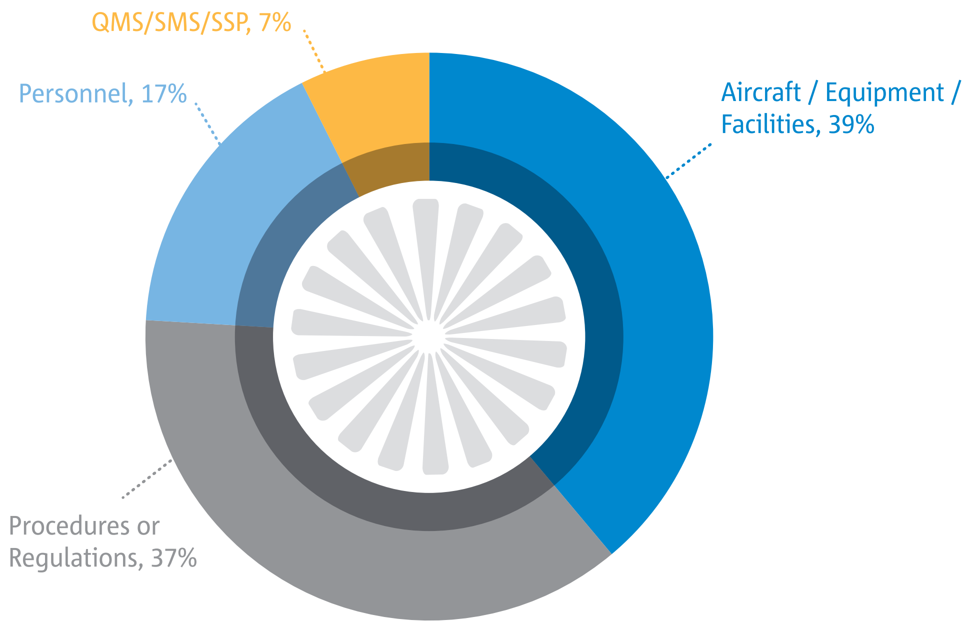


Figure 10 provides information on the main topics by safety recommendation, according to the taxonomy used in the European Safety Recommendation Information System (SRIS). The majority, almost 80 percent of safety recommendations that EASA received in 2017 make proposals for aircraft or aviation-related equipment/ facilities [39%, 21 safety recommendations] and procedures or Regulations [37%, 20 safety recommendations].

Only 24 percent of the safety recommendations that EASA received in 2017 addressed safety topics in the fields of "*Personnel*" and "*Quality Management System/Safety Management System/State Safety Plan* [QMS/SMS/SSP]", with 17 percent and 7 percent respectively.

5 Note: data in Figure 10 contains also safety topics estimated by EASA for 10 safety recommendations not recorded in EU SRIS by the SIAs of the MS.

Among the actions taken in 2017, several key safety topics are outlined below with accompanying information on the action that the Agency took. The description highlights the safety issues that were underlined by the safety recommendations, together with the actions taken by the Agency in response. Furthermore, the follow-up of safety recommendations that were classified as being of Global Concern (SRGC) and Union-wide Relevance (SRUR) are also specially taken into account.

5.1 Large aeroplane cabin and passenger safety - emergency evacuation

There are many factors that can influence aircraft incident and accident survivability and subsequent emergency evacuations. The physical factors include, adopting the correct brace position for impact, the correct use of seatbelts, the location and operation of all emergency exits and the configuration of the cabin including aisles and galleys, seating arrangements and the positioning of cabin crew assigned stations. Survivability in emergency evacuations is also affected by information factors such as passenger safety information cards, videos, signs, placards, emergency lighting and marking systems, and verbal briefings by the cabin crew.

Investigations containing an analysis of actual emergency evacuations are important to gather ‘lessons learned’, which in turn should enhance passenger safety in the event of an emergency evacuation. The aftermath of investigations and their safety recommendations are often classified as being of Global Concern (SRGC).

In 2017, and in previous years, several recommendations have been addressed to EASA on safety equipment and ‘passenger briefing’ [*material, emergency exit briefing or Passenger emergency exit seating*], for example:

- Ensure that all operators performing domestic flights provide the safety briefing for the emergency cases stipulated by CAT.OP.MPA.170 PASSENGER BRIEFING of Commission Regulation (EU) No 965/2012 also in the official language of the state in which the flight is operated. [ROMN-2017-002]
- On aircraft that are parked and have passengers on-board, require cabin crew to be evenly distributed throughout the cabin and in the vicinity of floor-level exits, in order to provide the most effective assistance in the event of an emergency. [UNKG-2017-028]
- Ensure safety briefings emphasise the importance of leaving hand baggage behind in an evacuation. [UNKG-2014-005]
- Develop recommendations on the content of visual aids such as safety briefing cards or safety videos that information be included on how passengers, including those with young children, should use the escape devices. [UNKG-2014-006]
- Consider the need for expanded information and checking the understanding of emergency evacuation procedures of passengers who are expected to act in an emergency evacuation. [SWED-2011-011]
- Require modifications to life vest stowage compartments or stowage compartment locations to improve the ability of passengers to retrieve life vests for all occupants. [UNST-2010-095]
- Regulate the operation of interphone handsets, including during emergency communications, so that it is standardised irrespective of aircraft type. [UNKG-2017-025]

EASA Actions:

In general, cabin crew duties, responsibilities and procedures, such as *Passenger briefing procedures and surveillance of the passenger cabin et.al.*, addressed under Commission Regulation (EU) No 965/2012 of 05 October 2012 'laying down technical requirements and administrative procedures related to air operations', are expected to provide an acceptable level of safety in the event of an emergency evacuation.

(A) Based on the context of the above-listed **safety recommendations concerning passenger briefing**, the Agency evaluated this safety issue within the framework of rulemaking tasks RMT.0516 and RMT.0517 'Updating Air OPS Regulation (EU) No 965/2012 Implementing Rules and related Acceptable Means of Compliance (AMC) & Guidance Material (GM)'.

The outcome of the evaluation is contained in EASA Executive Director (ED) Decision 2017/008/R, which was published on the Agency's web site on 30 March 2017. The ED Decision introduces:

- Amendments to AMC1 CAT.OP.MPA.170 on 'passenger briefing' which now states that, before take-off/landing, passengers should be briefed on/reminded of the correct stowage of hand baggage and the importance of leaving hand baggage behind in case of evacuation [see points (a)(1)(iii) and (c)(1)(iii)]. [UNKG-2014-005]

- New guidance material GM2 CAT.OP.MPA.170 'Passenger briefing — SAFETY BRIEFING MATERIAL' addressing both the safety briefing card and the safety video, and providing guidance on the minimum content, as applicable to the aircraft and the type of operation. Inclusion of information on how passengers, including those with young children, should use the escape devices is addressed in point (f)(7)(iv). [UNKG-2014-006]

- New guidance material addressing the need for a clear depiction for passengers of emergency escape routes from the cabin via the wing to the ground for aircraft with overwing exits (see point (f)(6)(iii) of GM2 CAT.OP.MPA.170 'Passenger briefing — SAFETY BRIEFING MATERIAL'). [UNKG-2002-043]

- New guidance material GM1 CAT.OP.MPA.170(a) 'Passenger briefing' to recommend instructions that the passenger(s) should receive through an 'exit briefing'. It also recommends verification by the cabin crew that the passenger has understood the instructions received. [SWED-2011-011]

(B) The following actions have taken place related to the **safety recommendations addressing standards for safety equipment**:

- The Agency has collaborated with FAA to revise the minimum performance standards for aircraft seating systems, (European) Technical Standard Order (E)TSO-C127a, by adding new life vest retrieval requirements that take into account this safety recommendation. Consequently, the FAA has published TSO-C127b dated 06.06.2014. The Agency has also revised ETSO-C127 (from issue 'a' to issue 'b') under rulemaking task RMT.0206. The associated ED Decision 2016/013/R amending CS-ETSO (amendment 11) entered into force on 5 August 2016. [UNST-2010-095]

5.2 Encountering severe turbulence at high altitude

In the last 10 years, events involving aeroplanes flying at high altitude encountering sudden severe turbulence have progressively become more frequent worldwide. Independent from the genesis of these turbulent events - passage of other aircraft traffic or atmospheric conditions - turbulence regularly causes injuries or serious injuries to cabin crew and passengers, as well as damage to the structure of the aeroplane. A number of turbulent events have the potential to induce an upset in flight[6].

So far, investigations of these occurrences have focused on the review of the certification requirements for the passenger cabin with respect to operational procedures, and have highlighted the importance of providing the crew with adequate training on the aircraft type.

A study about turbulence in air transport was carried out by the BEA in 2008. The study analysed accidents and incidents involving CAT operators between 1995 and 2007 that had encountered atmospheric turbulences during the cruise(excluding events generated by wake turbulence).

In this context, the BEA identified various actors and addressed aspects of air traffic control, forecasting meteorological issues and communication of meteorological information via data link. One safety recommendation was addressed to EASA.

Recent investigations and their recommendations underline the importance of providing the crew with adequate information and training on the aircraft type to identify and manage anomalies in the air data information.

The aforementioned investigations which opened in 2017 refer to the following:

- Accident involving a Bombardier CL-604 and an AIRBUS A380 on 07 January 2017 during cruise flight above the Arabian Sea, Indian Ocean.
  and
- Two serious incidents involving an AIRBUS A330 (one event on 03 May 2017 (registration 9M-XXS) during cruise flight in Malaysian airspace and one on 17 June 2017 (registration B-5926) during cruise flight at FL390 about 260nm northeast of Tyumen (Russia).

EASA Actions:

(A) Raise Awareness for ‘En-route Wake Turbulence Encounters’

With the increase of the overall volume of air traffic and enhanced navigation precision, wake turbulence encounters in the en-route phase of flight above 10 000 feet (ft) mean sea level (MSL) have progressively become more frequent in the last few years. Therefore, on 22 June 2017 the Agency published EASA SIB No.: 2017-10 ‘En-route Wake Turbulence Encounters’ to enhance the awareness of pilots and air traffic controllers of the risks associated with wake turbulence encounters in the en-route phase of flight and provide recommendations and advice with the purpose of mitigating the associated risks.

6 An aeroplane upset is a condition where an aeroplane unintentionally exceeds the flight parameters experienced during normal flight. Upsets that are not corrected in a timely manner are likely to lead to loss of control in-flight (LOC-I).

(B) Providing the crew with weather information

Since March 2016, the Agency has has been conducting a project on 'weather information to pilots'. The objective is to propose means to maximise in-flight safety through enhanced meteorological situational awareness in the cockpit and, therefore, to reduce the risk of flying in severe weather conditions. The resultant EASA strategy paper is published on the EASA website [**https://www.easa.europa.eu/easa-and-you/air-operations/weather-information-pilots**], and concludes with nine recommendations to facilitate and promote enhanced situational awareness in the cockpit with regard to the weather. The strategy paper recognises the potential benefits of additional situational awareness that may follow from the provision of in-flight weather updates, for strategic planning purposes, to the cockpit via emerging technologies such as Electronic Flight Bags. The recommendations and subsequent actions from the strategy paper aim to more accurately quantify and assess the benefits and challenges in order that appropriate safety promotion and or regulatory material can be developed.

The Agency has published Opinion No 10/2017 [**https://www.easa.europa.eu/document-library/opinions/opinion-102017**] 'Transposition of provisions on electronic flight bags from ICAO Annex 6' (18/12/2017), related to Comment Response Document (CRD) 2016/12. The use of In-flight Weather updates on Electronic Flight Bags is referenced.

The Agency intends to monitor data distribution through the use of datalink as part of the Single European Sky ATM (Air Traffic Management) Research (SESAR) work programme. As the concept and technology improves, the Agency will develop the necessary regulatory material, as appropriate.

(C) Make the crew fit: provide Loss of Control Prevention and Recovery Flight Cew Training/ Cabin Crew Passenger Management

The Agency published Opinion No 06/2017 'Loss of control prevention and recovery training' from rulemaking task RMT.0581 on 29 June 2017. This Opinion introduces mandatory upset prevention and recovery training (UPRT), testing and checking at various stages for pilots who intend to pursue a pilot career with a commercial airline.

5.3 Runway surface conditions and aircraft ground anti/de-icing

In 2017, EASA received two safety recommendations on runway surface conditions and one on aircraft ground anti/de-icing:

- The recommendations stemming from 2 serious incidents which occurred in Sweden (one occurrence consists of two separate incidents, with the second having been a consequence of the first) address 'Runway Surface Condition Assessment and Reporting' [SWED-2017-006], and operations/performance of aircraft 'on surfaces contaminated with slush or water' [SWED-2017-005].

- One safety recommendation was received regarding methods for aircraft ground de-icing and post-de-icing checks [SWED-2017-014].

All three safety recommendations are identified as being of Global Concern (SRGC).

EASA Actions:

In order to maintain a high and uniform level of civil aviation safety in the Union while pursuing the objective of an overall improvement in aerodrome safety, the Commission Regulation (EU) No 139/2014 of 12 February 2014 'laying down requirements and administrative procedures related to aerodromes', has been published. Reflecting the state of the art and the best practices in the field of aerodromes while taking into account the applicable International Civil Aviation Organisation Standards and Recommended Practices.

EASA has taken the following actions in relation to runway surface condition assessment and reporting:

- The Agency has been actively supported the development of ICAO standards on this topic. With Amendment 13B to Annex 14 and Amendment 1 to PANS-Aerodromes, ICAO introduced provisions regarding the use of a global reporting format for assessing and reporting runway surface conditions, with the objective to link better assessed runway surface conditions with aircraft performance. These provisions are required to be implemented by November 2020.

  In order to transpose this amendment to Annex 14, the Agency introduced rulemaking task RMT.0704 "Runway Surface Condition Assessment and Reporting" in the European Plan for Aviation Safety (EPAS) 2017-2021, with a view to amending Regulation 139/2014. The task has been launched on 13 September 2017 with the publication of the terms of reference and the rulemaking task is planned to finish by second quarter of 2020. The safety recommendation SWED-2017-006 will be considered within the context of this RMT.

- EASA has taken the following actions in relation to generic performance corrections for aeroplane operations on surfaces contaminated with slush or water [SWED-2017-005]:

  — Rulemaking task RMT.0296 'Review of aeroplane performance requirements for CAT operations' was launched by EASA on 9 June 2015 with the publication of the terms of reference. The associated notice of proposed amendment NPA 2016-11 was published on 30 September 2016. It includes proposals on standards for runway surface condition reporting, airworthiness standards for landing performance computation at time of arrival and an in-flight assessment of landing performance at time of arrival. The NPA takes into account the following recommendations made in the 2013 European Action Plan for the Prevention of Runway Excursions (EAPPRE):

    › Establish and implement one consistent method of contaminated runway surface condition assessment and reporting by the aerodrome operator for use by aircraft operators. Ensure the relation of this report to aircraft performance as published by aircraft manufacturers.

    › It is recommended that aircraft operators always conduct an in-flight assessment of the landing performance prior to landing. Note: Apply an appropriate margin to these results. The deliverable for RMT.0296, an EASA Opinion, is planned to be published in the second quarter 2018.
    In addition, the Agency published Safety Information Bulletin SIB No.: 2018-02 on 18 January 2018 concerning 'Runway Surface Condition Reporting'. The aim of this SIB is to enhance awareness of air operators and pilots of the risks associated with incorrect or unreliable runway surface condition reporting, inform about on-going rulemaking actions on the matter and provide recommendations for the purpose of mitigating the associated risks.

Regarding the safety recommendation on aircraft ground de-icing and post de-icing checks [SWED-2017-014], the Agency will consider, in collaboration with the ground de-icing industry community, whether there is a need to re-inforce the established procedures through safety promotion channels, to remind the service providers of the importance of applying the procedures correctly. This will inevitably include an evaluation of the suitability of the recommended methodologies.

In addition the Agency published the following Safety Information Bulletin:

- SIB No.: 2017-11, Issued: 14 July 2017, Subject: Global Aircraft De-icing Standards.

5.4 Helicopters performing CAT operations

In 2017, the Agency received a total of 10 safety recommendations [24%] stemming from occurrences involving helicopters. Seven of those safety recommendations resulted from investigations of 2 accidents and 1 serious incident involving a Helicopter Emergency Medical Service (HEMS) operation.

EASA Actions:

(A) CAT operations - HEMS

The Agency initiated a rulemaking task related to Helicopter Emergency Medical Service (HEMS) operations. The specific objectives of this rulemaking task RMT.0325/0326 'HEMS performance and public interest sites' are the following:

(a) To issue an efficient and proportional regulation by adapting HEMS requirements to mountain operations and rescue operations other than search and rescue.

(b) To maintain a high aviation safety level by reviewing the provisions related to flights to/from a PIS located in a congested area.

(c) To maintain a high aviation safety level by reviewing requirements related to HEMS flights by day or night, regarding equipment, training, minima, operating/hospital site illumination.

(d) To issue an efficient and proportional regulation by adapting regulations in order to ensure that limited certifying staff authorisations can be issued to the best suited personnel regarding the release of the aircraft following line maintenance on helicopter sling, hoisting, or other cabin equipment.

In 2017, a Notice of Proposed Amendment was under development through RMT.0325/.0326 for publication in the first quarter of 2018.

(B) SPO - specialised operations

Since 21 April 2017 Annex VIII (Part-SPO) of the Commission Regulation (EU) No 965/2012 on Air Operations has been applicable for specialised operations (SPO) with helicopters. As per definition, SPO may be of non-commercial or commercial nature.

According to SPO.OP.230, before commencing a specialised operation, the operator shall conduct a risk assessment, assessing the complexity of the activity to determine the hazards and associated risks inherent in the operation and establish mitigating measures. Based on the risk assessment, the operator shall establish Standard Operating Procedures (SOPs) appropriate to the specialised activity and helicopter used (for example refer to SPO.SPEC.HESLO.100). This should take into consideration the risks related to the helicopter's design during operations with a suspended load. The associated SOPs should include suitable operational defences to ensure that the equipment is installed and operated safely, also taking into account any instructions prescribed in the manufacturer's manuals. The SOPs should specify the training for crew members and task specialists required to perform their tasks, as well as the responsibilities and duties of crew members and task specialists.

Furthermore, in 2017 the Agency took the following actions to enhance the safety of helicopters performing CAT and specialised operations:

- The Agengy issued Airworthiness Directive 2017-0025 on 14 February 2017 to mandate specific inspections and a modification of the attaching means of the rescue hoist handle of the rescue hoist support for specific installations on AW109SP. The manufacturer is also considering the introduction of a protective cover as a design improvement. [SWTZ-2016-528];

- The Agency has approved the Supplemental Type Certificate (STC) No. 10060852 and EASA STC No. 10061056 to certify, under certain limitations, a crash resistant fuel system for the AS350B3e rotorcraft. This configuration will be progressively introduced by the manufacturer in the newly produced rotorcraft. [ASTL-2015-030];

- The management of the carriage of passengers can often increase the workload of the pilot and can cause a distraction during a flight. On 15 September 2017, the Agency issued SIB No.: 2017-15 'Carriage of Passengers on Helicopters'. This SIB promotes two EHEST training videos on Passenger Management[7] by way of raising the awareness of helicopter pilot licence holders, National Airworthiness Authorities, Air Training Organisations and staff involved in helicopter operations;

- EASA published updated Certification Specifications and Acceptable Means of Compliance for Large Rotorcraft (CS-29 Amendment 4). The specific objective is to update the certification specifications in order to maintain a high level of safety and to provide cost-efficient rules harmonised with those of international partners. This Decision amends AMC 29.351; to reflect certification experience and to ensure a consistent and safe approach to establishing structural substantiation; to adopt AC 29-2C — Change 4, published by FAA in May 2014. Most changes adopted in this AC were previously developed jointly by FAA and EASA however some minor differences remain; to create new Certification Specifications on High-intensity radiated fields (HIRF) (CS 29.1317) and lightning (CS 29.1316). This will better reflect existing certification practice and will replace reliance on ageing JAA interim policies;

- The publication of the EHEST Pre-departure Risk Assessment Checklist – This tool has been developed to allow pilots and technicians to evaluate the actual risk of the flight or of the maintenance. The tool is based on the PAVE (Pilot, Aircraft, environment, External pressure) check list and adapted for the type of flight (HEMS, leisure, training, passenger, etc.). The final purpose is to make pilots and technicians aware that simple factors, when combined, can raise the total risk significantly, eventually resulting in a situation where the helicopter should not flight unless some of the risk factors are mitigated;

- The publication of the new Edition of the EHEST Helicopter Flight Instructor Guide based on a manual developed by the Australian Civil Aviation Safety Authority (CASA) and other international organisations – This edition features a series of further changes and improvements such as chapter reorganisation matching the EASA Part FCL syllabus requirements. The Guide covers the Teaching and Learning syllabus of the Flight Instructor Course including pedagogical theory, human performance, threat and error management together withricher content addressing training programme

7 All EHEST material was transferred in 2017 to the EASA Safety Promotion website.

development and administration. In addition, it covers the PPL(H) Air Exercises with lesson objectives added as a checklist for instructors.

5.5 Flight simulation training and other flight training exercises

In 2017, EASA received 5 safety recommendations [12%] concerning the flight training in simulators and flight training exercises.

Safety recommendations related to flight training for helicopter pilots:

- Simulation of uncontrolled flight conditions due to „Loss of tail rotor effectiveness" (LTE) to 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). [AUST-2017-001];

- To standardise the theoretical and practical training on the LTE phenomenon among the various helicopter training programs for obtaining the LAPL(H), PPL(H), CPL(H), ATPL(H) and FI(H) licenses. This training should benefit the level of complexity and responsibility associated with each license. [SPAN-2017-010];

Other safety recommendations concerning flight training issues, addressing EASA:

- To amend the regulations so as to authorise, in the context of FCL, the use of types of FSTD simulators with a lower level than FFS during smoke or emergency descent training on Cessna 525B aeroplane types and, more generally, on complex HPA aeroplanes. [FRAN-2017-001];

- To identify exercises in flight training that might entail an increased risk factor and to issue guidance material (GM) for the practical execution of these. [SWED-2017-001];

- To ensure that the manufacturer improves the awareness of the flight crews of the Airbus A320 family and provide them training to overspeed situations. [SWTZ-2017-524].

EASA Actions:

In 2017, in the wake of several safety recommendations addressing loss of control in flight, the Agency published opinion No 06/2017 on "loss of control prevention and recovery training". This opinion introduces mandatory UPRT and testing and checking at regular intervals for pilots who intend to pursue a pilot career with a commercial airline. In support of the new standards, appendix 9 — Training, skill test and proficiency checks for MPL, ATPL, type and class ratings, and proficiency checks for IRs is amended to include UPRT. It now covers procedures requiring a high workload in a short time frame, such as going around with all engines operating. In addition, opinion No 05/2017 amending Commission Regulation (EU) No 1178/2011 related to flight crew licensing (FCL) coordinates Part–FCL safety and regulatory issues and takes benefit from new learning objectives (LOs) for ATPL, MPL, CPL and IR for aeroplanes and helicopters developed in ED Decision 2016/008/R related to performance-based navigation (PBN) operations.

In response to recommendations to improve flight simulators fidelity, including the need to improve training on the latest UPRT amendments and to also cover some specific manoeuvres such as rotorcraft loss of tail rotor effectiveness, the Agency took all inputs into consideration in the Rulemaking Task RMT.0196 'Update of flight simulation training devices requirement', which was launched with the objective to adapt the requirements for Flight Simulator Training Devices (CS-FSTD) to the training need.

All **EHEST Training and Education** material was transferred in 2017 to the EASA Safety Promotion website. Refer in particular to:

- **EHEST Helicopter Flight Instructor Guide,** a comprehensive and fully illustrated Helicopter Flight Instructor Guide;
- **EHEST Leaflet HE 12 Helicopter Performance:** This leaflet discusses the factors affecting helicopter performance. It then provides pilots with guidance, tips and techniques to ensure safe operations;
- **EHEST Leaflet HE11 Training and Testing of Emergency and Abnormal Procedures in Helicopters:** This leaflet provides guidance and safety tips for pilots, instructors and examiners on the subject of training and testing of emergency and abnormal procedures;
- **EHEST Leaflet HE 10 Teaching and Testing in Flight simulation training Devices (FSTD):** This leaflet provides guidance to helicopter instructors and examiners on how to conduct aircrew training and testing in Flight Simulator Training Devices (FSTDs), and provides basic principles on how to get the best use of this invaluable training asset;
- **EHEST Leaflet HE 6 Advantages of Simulators in Helicopter Flight Training:** This leaflet emphasises the advantages of simulators in helicopter flight training. The document presents the various helicopter flight simulation training devices available and reviews the additional training and safety benefits related to recent technological and regulatory developments;
- **EHEST Leaflet HE 5 Risk Management in Training:** This leaflet provides tools and methods to improve risk management in training;
- **EHEST Leaflet HE 1 Safety Considerations:** addresses Degraded Visual Environment (DVE), Vortex Ring State (VRS), Loss of Tail Rotor Effectiveness (LTE), Static & Dynamic Rollover and Pre-flight Planning Checklist.

5.6 General Aviation (GA) – various aspects in the frame of airworthiness

In 2017, the Agency received six safety recommendations [14%] stemming from investigations of different occurrences related to various general aviation aircraft types.

These safety recommendations address specific airworthiness aspects for small aeroplanes, for example:

- To modify the design of the APEX DR400 brake system after two cases of wing fire of the wooden structure on the ground as a result of overheating of the brake disc [NETH-2017-001 (SRGC)] or;
- To demand a mandatory warning system to detect overheat in the battery and warn the pilot for gliders fitted with Electric Sustainer (FES) systems as recommended in UNKG-2017-018 (SRUR).

It is worth mentioning that three safety recommendations are classified with Global Concern (SRGC) and three safety recommendations are classified with Union-wide Relevance (SRUR). One recommendation with SRUR and SRGC character is addressing a proposal concerning the certification of unmanned aircraft and is specifically discussed in the next safety topic [ref. chapter 4.7].

EASA Actions:

In general, the Agency agreed with the intent of all received safety recommendations in this scope. All requested actions have been properly addressed, either together with the Type Certificate Holder (TCH) or by issuing an Airworthiness Directive.

The above mentioned cases have been addressed as following:

- The safety recommendation NETH-2017-001 (SRGC) is being addressed with the TC holder to improve the pedal design mechanism and avoid misuse of the brakes and;
- The safety recommendation UNKG-2017-018 (SRUR) has been closed with AD 2017-0167-E, which requires the removal of the FES battery pack or an EASA approved modification of the FES batteries before the next flight, Aircraft Flight Manual (AFM) improvement and updating the Flight Control Unit (FCU) software with regard to the warnings presented to the pilot and modifications to the FES battery design.

General Aviation is a high priority for EASA and the Agency is dedicating effort and resources towards creating simpler, lighter and better rules for General Aviation. Recognising the importance of General Aviation and its contribution to a safe European aviation system, EASA in partnership with the European Commission and other stakeholders has created a Road Map for the Regulation of General Aviation (GA). EASA recognises that existing regulations impacting General Aviation may not necessarily be proportional to the risk exposure of GA. Some of this regulation was intended to cover more demanding (in terms of safety) activities, such as commercial air transport operations.

Following the objective to simplify the airworthiness certification and oversight system for small and low-risk General Aviation, EASA has re-written CS-23 certification rules for small aircraft. The reorganised CS-23 remove design limitations for manufacturers and thus open the way to innovation.

5.7 Unmanned Aircraft (UA)

In 2017, the Agency received one safety recommendation issued by the Italian – ANSV stemming from an accident that occurred on 12 April 2016 during an experimental flight of an unmanned aircraft (UA). The recommendation proposes as a mandatory requirement that unmanned helicopters be fitted with an automatic emergency recovery (autorotation) function to mitigate the risk of ground impact in case of engine failure.

The Air Accident Investigation Unit Belgium (AAIU-BE) issued four safety recommendations related to UA in 2017 that addressed the NAA and design organisation concerning the review and or modification of requirements for design and operations following an accident investigation of a UA that took-off in Belgium and crash landed in northern France due to a series of communication interruptions between the ground station and the aircraft that caused the autopilot to initiate the automatic landing procedure, which ultimately failed.

In 2016, 5 safety recommendations were issued by the Italian – ANSV stemming from a study related to "Interference of unmanned aircraft in the Italian airspace. The recommendations were concerned associated risks for the safety of the flight of manned aircraft". They addressed the Italian National Aviation Authority and covered the safety topics of aircraft certification, aircraft operations, oversight and auditing, design, production and manufacturing.

EASA is following-up all actions as the majority of these safety recommendations are classified as having Global Concern (SRGC) and Union-wide Relevance (SRUR).

EASA Actions:

A new regulatory framework is currently being developed by the European Commission and EASA to accommodate the operation of all Unmanned Aircraft (UA) in the EU:

> In accordance with Regulation (EC) No 216/2008 (hereinafter referred to at the 'Basic Regulation'), the regulation of unmanned aircraft systems (UAS) with a maximum take-off mass (MTOM) of less than 150 kg falls within the competence of the European Union (EU) Member States (MSs). This leads to a fragmented regulatory system that hampers the development of a single EU market for UAS and cross-border UAS operations. A new proposed Basic Regulation (hereinafter referred to as 'the new Basic Regulation'), currently under discussion between the Council, the European Commission, and the European Parliament, aims to solve this issue, by extending the competence of the EU to regulate all UAS regardless of their MTOM.

In view of the adoption of this planned 'new Basic Regulation', the Agency:

- Published a Technical Opinion (Opinion of a technical nature) in December 2015 which proposed a regulatory concept which is operation centric, proportionate, risk- and performance-based. It includes the establishment of three categories of UA operation (Open, Specific, Certified) which are based on the risk posed by the operation;

- Started in 2016 a Rulemaking task RMT.0230 and published in August 2016 a 'Prototype' regulation for the 'Open' and 'Specific' categories;

- Published in May 2017 the Notice of Proposed Amendment 2017-05 'Introduction of a regulatory framework for the operation of drones - Unmanned aircraft system operations in the open and specific category';

- Published on 6 February 2018 Opinion 01/2018 entitled 'Unmanned Aircraft System (UAS) operations in the 'open' and 'specific' categories'. The objective of this Opinion is to create a new regulatory framework that defines measures to mitigate the risk of operations in the:

    1. 'Open' category, through a combination of limitations, operational rules, requirements for the competency of the remote pilot, as well as technical requirements for UAS, such that the UAS operator may conduct the operation without prior authorisation by the competent authority, or without submitting a declarationand;

    2. 'Specific' category, through a system that includes a risk assessment being conducted by the UAS operator before starting an operation, or an operator complying with a standard scenario, or an operator holding a certificate with privileges.

Moreover, this Opinion is intended to:

1. implement an operation-centric, proportionate, risk- and performance-based regulatory framework for all UAS operations conducted in the 'open' and 'specific' categories;

2. ensure a high and uniform level of safety for UAS operations;

3. foster the development of the UAS marketand;

4. contribute to addressing citizens' concerns regarding security, privacy, data protection, and environmental protection.

Thus, the safety risk associated with a UA falling onto third parties or properties is taken into account in the development of the regulations. The magnitude of the risk depends both on the type of operation performed and on the characteristics of the UA. Different means can be used to mitigate this risk, at the operational and design levels. For an unmanned helicopter, an autorotation function is one of those mitigations.

In Addition, the Agency has developed a Safety Risk Portfolio for UAS with the support of the EASA task force and Collaborative Analysis Group (CAG). Furthermore, in the UAS domain, there is a large strategic EPAS action that will cover all the various safety issues identified in the safety risk portfolio.

5.8 Ballistic Parachute Recovery Systems (BPRS)

In 2017, three safety recommendations have been received regarding the need to have a better means of identifying aircraft equipped with Ballistic Parachute Recovery Systems (BPRS), in order to alert rescue or other personnel at the scene of an accident or incident and to mitigate the risk to first responders and other personnel during a rescue operation. Addressing EASA to:

- Lay out the measures required so that aircraft equipped with a ballistic parachute reflect this in the flight plan as part of point SERA.4005, Contents of a flight plan, "Emergency and survival equipment". [SPAN-2017-038];

- Lay out the measures required to initiate, at the European level, an awareness, information and training campaign directed at general aviation users and emergency services personnel on the existence, identification, location and deactivation of ballistic parachutes in the event of an accident or incident. [SPAN-2017-040];

- Liaise with International Civil Aviation Organization (ICAO) to include standards for the design (conspicuity, coloration, visibility, and content) in the installation of ballistic parachute systems. This should include, as compulsory for pyrotechnical systems, specifications of the routing of the components of the system and a thermal exposure indicator to enable emergency responders to quickly and safely disable the system, and fully alert persons to the hazards and the danger areas on the aircraft. [SPAN-2017-042];

EASA had already received three safety recommendations in 2015 and one in 2014 addressing the need for better means of identification for aircraft equipped with Ballistic Parachute Recovery Systems (BPRS), in order to alert rescue or other personnel at the scene of an accident and mitigate the risk to first responders during a rescue operation. All of them have been closed with final replies.

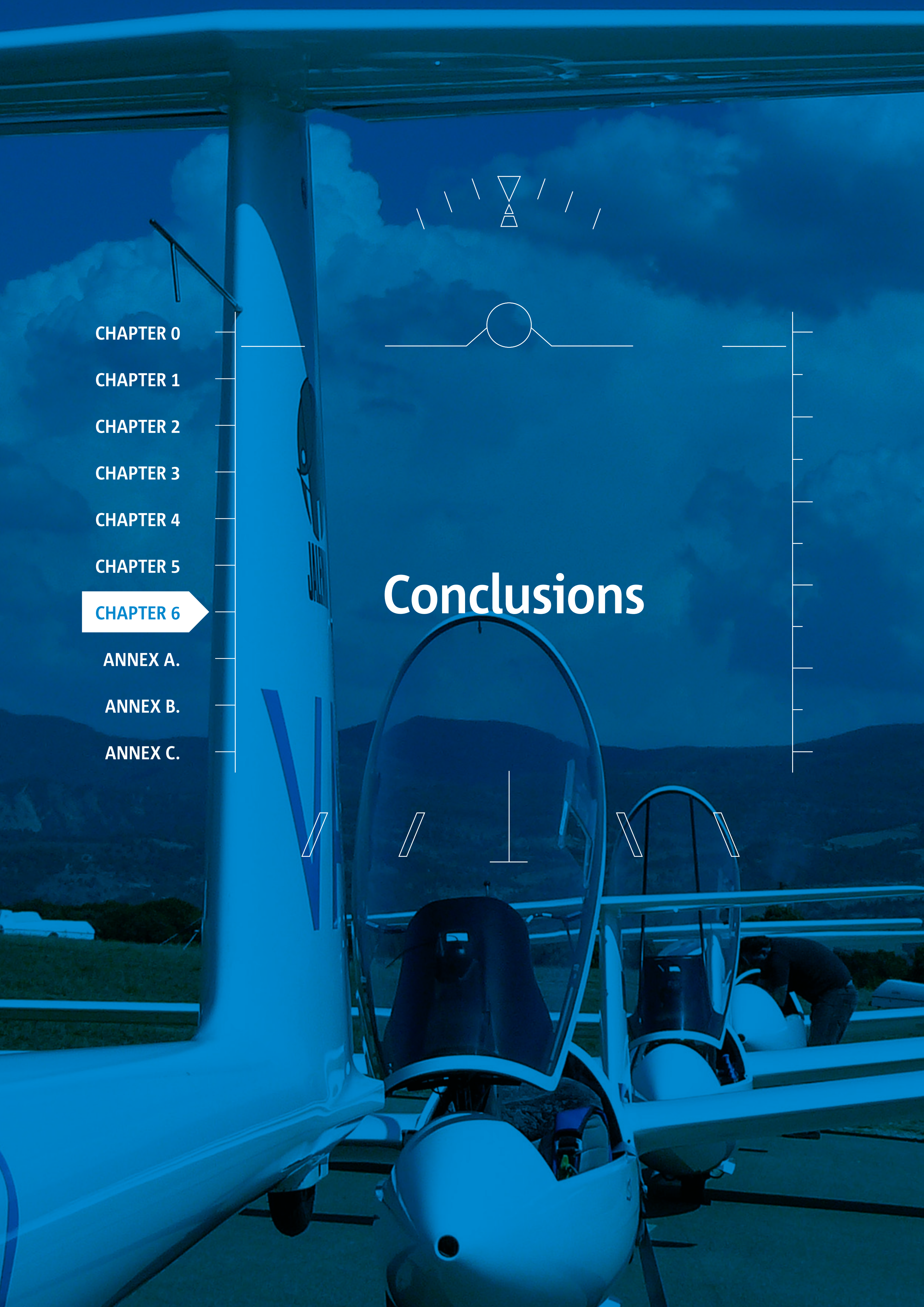
EASA Actions:

Ballistic Parachute Recovery Systems (BPRS) for EASA certified aircraft are regulated in the Certification Specifications for Light Sport Aeroplanes, CS-LSA, which requires compliance of the BPRS with the ASTM standard F2316-12 ('Airframe Emergency Parachutes for Light Sport Aircraft'). The same reference standard can be applied to other small aeroplanes category certified by EASA through a Special Condition.

EASA holds that the installation of placards complying with this standard provide an adequate level of safety, and that the same standard is also available for use on aircraft not certified by EASA.

In addition, EASA intends to issue an Opinion to amend Commission Implementing Regulation (EU) No 923/2012 concerning the common rules of the air (SERA), as well as of the related Acceptable Means of Compliance (AMC) and Guidance Material (GM) so that aircraft equipped with a BPRS reflect this in the flight plan and emergency equipment list as recommended in SPAN-2017-038.

EASA will also examine how to improve the awareness emergency services personnel as to the BPRS identification, location and deactivation in the event of an accident, as recommended by SPAN-2017-040.



CHAPTER 0
CHAPTER 1
CHAPTER 2
CHAPTER 3
CHAPTER 4
CHAPTER 5
CHAPTER 6
ANNEX A.
ANNEX B.
ANNEX C.

Conclusions

CONCLUSIONS

In 2017, EASA received a total of 42 safety recommendations that:

- Originated from 1 study, 1 transmittal letter and 30 different occurrences (20 accidents, 8 serious incidents and 2 incidents);
- Were addressed by Safety Investigation Authorities of 15 different States;
- 90 percent of the received safety recommendations [38 total] were issued by EASA Member States. Among those, 16 were classified as safety recommendations having Union-wide Relevance (SRUR);
- 16 were classified as safety recommendations of Global Concern (SRGC) and;
- Were mostly related to aircraft or aviation related equipment or facilities [39%, Aircraft/Equipment/Facilities] and to procedures or regulations [37%, Procedures/Regulations].

This number of safety recommendations EASA received in 2017 is about the half of those received in 2016, and by far the lowest in the last 8 years. Although this can be the result of a number of factors, one contributing element is certainly due to the fact that no single investigation report was issued in 2017 containing a large batch of safety recommendations addressed to the Agency as it was the case in the previous years.

In response, the Agency in 2017 produced 157 replies to 147 safety recommendations:

- 86 of them were final replies (closing safety recommendations) with more than 48% carrying an agreed assessment, and 35 percent with partial agreement;
- The remaining 71 updating replies provided information on the progress of the actions decided upon by the Agency and for which the relevant activities were not yet completed;
- 85 percent of the final responses provided by EASA and assessed by the originator of the recommendation were “adequate” or “partially adequate”.

The number of replies provided in 2017 was consistent with the number of replies provided in 2016. In particular, the volume of 86 closing replies sent in 2017 allowed a significant reduction in the number of safety recommendations currently open for the Agency.

Furthermore, the actions taken by the Agency in response to the safety recommendations outlined several of the key safety topics that are currently part of the EPAS and are included in the safety risk management process.

CHAPTER 0
CHAPTER 1
CHAPTER 2
CHAPTER 3
CHAPTER 4
CHAPTER 5
CHAPTER 6
ANNEX A.
ANNEX B.
ANNEX C.

List of 2017 Safety Recommendations Replies

ANNEX A: List of 2017 Safety Recommendations Replies

The replies EASA sent in 2017 to safety recommendations are listed below. In the case of multiple replies sent during the year (in total EASA sent 157 reply letters), only the latest reply is provided (147 reply letters). They are sorted by country of origin and grouped by occurrence.

Argentina

Registration	Aircraft Type	Location	Date of event	Event Type
LV-CEJ	SAAB 340	Caltaruna, Province of Rio Negro	18/05/2011	Accident

Synopsis of the event:

On 18 May 2011, the pilot in command (PIC) and the crew - composed of the co-pilot (COP) and cabin crew members (CCM) - initiated the flight OSL 5428 from Rosario International Airport (ROS) in the province of Santa Fe at 20:35, the final destination being the Comodoro Rivadavia International Airport (CRD), in the province of Chubut.

The flight had scheduled intermediate stopovers at Cordoba International Airport (COR), Medoza (MDZ), and Neuquén (NQN), according to the company's plans. The company designated aircraft Saab 340A, with registration number LV-CEJ, for the flight.

After having made the intermediate stopovers in Cordoba (COR) and Mendoza (MDZ), the pilot landed the aircraft at the airport in Neuquén at 22:20. After refuelling and carrying out the planned dispatch, the crew and 19 passengers (18 adults and one minor) on board, prepared to make the last leg of the flight OSL 5428, from Neuquén Airport (NQN) to the final destination: Comodoro Rivadavia International Airport (CRD). The flight took off at 23:05.

After the take-off, the aircraft started to climb AWY T 105, to reach FL 190, in accordance with the flight plan. After flying for 24 minutes, the pilot levelled the aircraft at 17800 ft, and remained at this level for approximately 9 minutes. Due to the fact that the meteorological conditions at this level caused icing, the technical crew descended to FL (flight level) 140. Shifting to FL 140 took five minutes. During this stage of the flight the icing conditions steadily worsened.

By the time the aircraft had reached FL 140, the icing conditions were severe. The aircraft flew for approximately two minutes with a straight and level flight attitude, increasing the accumulation of ice.

Then the aircraft completely lost lift, which resulted in a loss of control, and the subsequent entry into abnormal flight attitude. The aircraft plunged towards the earth and impacted the ground, which resulted in a fire. Everyone on board perished and the aircraft was destroyed.

The accident happened at night under IMC conditions.

Safety Recommendation ARGT-2015-001 (JIAAC)

It is recommended to the Aviation Authorities to consider implementing changes to the compliance requirements with regard to the crew's instruction and training, related to flight manoeuvre that are carried out during operations with a large angle of attack or with abnormal flight attitudes.

Consider making the following manoeuvres obligatory during the training and the licensing inspection (in flight simulators), in accordance with the aircraft:

a) Recognising when a stall commences and how to prevent it from happening.

b) Recognising and recovering from an artificial stall warning

c) Recognising and recovering from a total aerodynamic stall

d) Practising how to recover from typical abnormal flight attitudes.

Reply No. 2 sent on 23/08/2017:

Mitigating Loss of Control In-flight (LOC-I) is one of the European Aviation Safety Agency's (EASA's) highest priorities, and the Agency has published provisions on flight crew Upset Prevention and Recovery Training (UPRT) with the specific objective to ensure that flight crew acquire the necessary competencies to prevent and recover from developing or developed upsets.

ED Decision 2015/012/R published on the EASA website entered into force on 04 May 2016. It defines Applicable Means of Compliance (AMC) and Guidance Materials (GM) for recurrent training programme of Commission Regulation (EU) No 965/2012 (ORO.FC.230) and conversion training (ORO.FC.220) pertaining to Commercial Air Transport (CAT) operators using 'complex motor-powered aeroplanes'.

The material takes into account the International Civil Aviation Organization (ICAO) Annex 6 amendment 38, ICAO Doc 9868 'Procedures for Air Navigation Services - Training' (PANS-TRG) amendment 3 relating to UPRT, and ICAO Doc 10011 'Manual on Aeroplane UPRT'. Reference is also made to the Original Equipment Manufacturers' (OEMs') Aeroplane Upset Recovery Training Aid (AURTA).

In addition, the Agency published Opinion No 06/2017 on "loss of control prevention and recovery training" in the wake of rulemaking task RMT.0581 on 29 June 2017.

This Opinion proposes to introduce mandatory UPRT, testing and checking at various stages for pilots who intend to pursue a pilot career with a commercial airline:

- advanced UPRT course (new FCL.745.A) as a prerequisite for training courses for single-pilot aeroplanes operated in multi-pilot operation, single-pilot high-performance complex aeroplanes and multi-pilot aeroplanes (amendments to FCL.720.A);
- Inclusion of UPRT elements considering the specificities of the particular class or type during the relevant class or type rating training course (amendments to FCL.725.A);
- Amendments to Appendix 9, paragraphs 5 and 6 in Annex I (Part-FCL) of Commission Regulation (EU) No 1178/2011 for including upset prevention and recovery exercises into training courses, skill test and proficiency checks related to single-pilot aeroplanes operated in multi-pilot operations, single-pilot high-performance complex aeroplanes and multi-pilot type rating training courses;

The newly developed advanced UPRT course, which is to be mandated as an addendum to ATP and MPL training courses and also to serve as a prerequisite prior to commencing the first type rating course in multi-pilot operations, is an important step towards enhancing a commercial pilot's resilience to the psychological and physiological aspects often associated with upset conditions.

In support of the new standards, the proposals place greater emphasis on the training of instructors involved in the flight and synthetic training who are foreseen to deliver the various UPRT elements. EASA proposes training up to the stall but does not propose post-stall training to be required in a full flight simulator (FFS), due to the risk of negative transfer of training, and reiterates that existing flight simulator training devices (FSTDs) may be used to facilitate UPRT.

In line with ICAO, the opinion and the decision mentioned above propose UPRT to proficiency during initial and recurrent training.

Status: Closed – **Category**: Agreement

Australia

Registration	Aircraft Type	Location	Date of event	Event Type
VH-HWQ	ROBINSON R44	Bulli Tops, New South Wales	21/03/2013	Accident

Synopsis of the event:

At about 1207 on 21 March 2013, a Robinson Helicopter Company R44 helicopter (R44), registered VH-HWQ, landed at a grassed area adjacent to a function centre at Bulli Tops, New South Wales. Shortly after landing, the helicopter was observed to simultaneously lift off, yaw right through 180° and drift towards nearby trees. The helicopter struck branches of the trees before descending, impacting the ground nose low and rolling onto its right side. A short time after coming to rest a fire started and engulfed the helicopter. The pilot and three passengers were fatally injured.

Safety Recommendation ASTL-2015-030 (ATSB)

The ATSB recommends that the European Aviation Safety Agency take action to increase the number of helicopters manufactured in accordance with the 1994 certification requirements for helicopters to include a crash-resistant fuel system. [AO-2013-055-SR-030]

Reply No. 2 sent on 14/03/2017:

The Agency has approved the Supplemental Type Certificate (STC) No. 10060852 and EASA STC No. 10061056 to certify, under certain limitations, a crash resistant fuel system for the AS350B3e rotorcraft model. This configuration will be progressively introduced by the manufacturer in the newly produced rotorcraft.

Status: Closed – **Category**: Agreement

Registration	Aircraft Type	Location	Date of event	Event Type
VH-FVR	ATR ATR72	47 km WSW of Sydney Airport	20/02/2014	Accident

Synopsis of the event:

On 20 February 2014, a Virgin Australia Regional Airlines (VARA) ATR 72 aircraft, registered VH-FVR, operating on a scheduled passenger flight from Canberra, Australian Capital Territory to Sydney, New South Wales sustained a pitch disconnect while on descent into Sydney. The pitch disconnect occurred while the crew were attempting to prevent the airspeed from exceeding the maximum permitted airspeed (VMO). The aircraft was significantly damaged during the occurrence.

In accordance with the Transport Safety Investigation Act 2003 (the Act), the ATSB initiated an investigation into the occurrence. On 15 June 2016 the ATSB released its first interim investigation report that contained the following safety issue:

- Inadvertent application of opposing pitch control inputs by flight crew can activate the pitch uncoupling mechanism which, in certain high-energy situations, can result in catastrophic damage to the aircraft structure before crews are able to react.

In the interest of transport safety, this safety issue was brought to the attention of the aircraft manufacturer (ATR) and the wider aviation industry prior to completion of the investigation.

During the continued investigation of the occurrence, the ATSB has obtained an increased understanding of the factors behind this previously identified safety issue. This increased understanding has identified that there are transient elevator deflections during a pitch disconnect event that could lead to aerodynamic loads that could exceed the strength of the aircraft structure.

The ATSB also found that these transient elevator deflections were not identified, and therefore not considered in the engineering justification documents completed during the aircraft type's original certification process. The ATSB considers that the potential consequences are sufficiently important to release a further interim report prior to completion of the final investigation report.

This second interim report expands on information already provided in, and should be read in conjunction with, the interim report released on 15 June 2016 report and an update on the ATSB website on 10 June 2014. It is released in accordance with section 25 of the Act and relates to the ongoing investigation of the occurrence.

Readers are cautioned that the factual information and analysis presented in this interim report pertains only to the safety issue discussed herein. The final report will contain information on many other facets of the investigation, including the operational, maintenance, training and regulatory aspects.

Readers are also cautioned that new evidence may become available as the investigation progresses that will enhance the ATSB's understanding of the occurrence. However, in order to ensure the veracity of the analysis of the evidence leading to the identified safety issue, the ATSB engaged the UK Air Accidents Investigation Branch (AAIB) to conduct a peer review. The AAIB conducted an analysis of the evidence relating to the safety issue and concluded that their findings were consistent with those provided by the ATSB.

Safety Recommendation ASTL-2017-015 (ATSB)

The ATSB recommends that EASA monitor and review ATR's engineering assessment of transient elevator deflections associated with a pitch disconnect to determine whether the aircraft can safely withstand the loads resulting from a pitch disconnect within the entire operational envelope. In the event that the analysis identifies that the aircraft does not have sufficient strength, it is further recommended that EASA take immediate action to ensure the ongoing safe operation of ATR42/72 aircraft. [AO-2014-032-SR-015]

Reply No. 1 sent on 07/07/2017:

EASA is in regular contact with ATR regarding their engineering assessment of transient elevator deflections associated with a pitch disconnect.

As an initial step, ATR is examining scenarios that were considered at the time of the original certification by analysing the relevant and most critical failure cases with pilot input consistent with the flight test data available. ATR has already performed a parametric study for the case of elevator jamming which shows that whatever the pilot input is, the loads experienced during the transient elevator deflections are below the certified ultimate loads.

As a second step, EASA and ATR have already started discussions regarding analyses of scenarios that will be evaluated based on current certification practices with regards to CS 25.671.

Finally, EASA and ATR will explore the severity of the consequences of dual input, looking at reasonable scenarios based on in-service experience.

The above overall plan is expected to be completed in autumn 2017. Should an unsafe condition be identified then ATR and EASA will take action as per Annex I paragraph 21.A.3 of Commission Regulation (EU) No 748/2012 to ensure the ongoing safe operation of the ATR42/72 aircraft.

Status: Open – **Category**:

Austria

Registration	Aircraft Type	Location	Date of event	Event Type
	AEROSPATIALE AS332 DIAMOND DV20	Flugplatz Zell am See, Austria	05/03/2007	Accident

Synopsis of the event:

Der Zusammenstoß eines Motorflugzeugs der Type DV 20 „Katana“ mit einem Hubschrauber der Type AS 332 „Super-Puma“ ereignete sich um 09:53 Uhr, ca 1 NM NW des Flugplatzes Zell am See (LOWZ), als der Hubschrauber auf dem Weg von Kaprun Richtung Berchtesgaden den Flugplatzbereich in Richtung NNE überquerte. Dabei kreuzten einander die Flugwege des Hubschraubers und des Motorflugzeugs entlang der Platzrunde über dem Südosthang der Schmittenhöhe. Das Motorflugzeug war zum Zeitpunkt des Zusammenstoßes im Steigflug, der Hubschrauber befand sich kurz nach dem Übergang vom Steigflug in den Horizontalflug.

Als Unfallursachen konnten Sichtbehinderungen und komplexe psychologische Faktoren der Piloten der beiden Luftfahrzeuge ermittelt werden, die das Erkennen des jeweils anderen Luftfahrzeugs und ein rechtzeitiges Ausweichen verhindert haben.

Safety Recommendation AUST-2008-002 (VERSA)

[German] - Die Empfehlungen aus früheren Untersuchungen der UUB (bzw der FUS) zu einer Verwendung von Zusammenstoßwarngeräten muss nach diesem Zusammenstoß und einem ähnlichen im November 2006 in der Nähe von Wr. Neustadt eindringlich wiederholt werden. So sollten seitens der EASA die Voraussetzungen für die Entwicklung von Vorschriften hinsichtlich Technik, Einbau und Zertifizierung von kostengünstigen Zusammenstoßwarngeräten für die Allgemeine Luftfahrt geschaffen werden. Es sollte auch eine mögliche Subventionierung von Zusammenstoßwarngeräten überlegt werden (Aero-Club, Steuerbefreiung usw). Welches der verfügbaren (auf gegenseitiger Funkabfrage bzw auf Transpondererkennung basierend) oder der in Erprobung befindlichen Systeme (satellitengestützte Verarbeitung von Transpondersignalen, ADS-B, bzw RFID- Technologie in Verbindung mit GPS) zum Einsatz kommen sollen, wird noch zu diskutieren sein. Testflüge mit allen derzeit erhältlichen Systemen durch die UUB haben jedenfalls eindrücklich die Wirksamkeit solcher Systeme bestätigt. [SE/UUB/LF/02/2008]

Reply No. 4 sent on 28/04/2017:

The European Aviation Safety Plan 2011-2014 already contained first actions on Mid-air collision/Near mid-air collision (MAC/NMAC) by improving the “see and avoid” for general aviation. Among the actions already taken, EASA is facilitating the voluntary installation of electronic conspicuity devices via Standard Changes, as defined in 21.A.90B of Commission Regulation (EU) 748/2012 (refer to CS-SC002a, CS-SC051a in CS-STAN Issue 1 dated 8 July 2015, CS-SC058a in CS-STAN Issue 2 dated 30 March 2017) and installation approvals of this type of devices.

In addition, EASA is in the process of publishing a CS-ETSO for Traffic Awareness Beacon System (TABS). There are currently several technical solutions for general aviation for electronic conspicuity devices with varied strengths and weaknesses. The main issue is the interoperability between all of these solutions.

According to the EASA Annual Safety Review 2016, MACs contributed to 6% of the fatalities in the 2006-2015 period in Non-Commercial operations with aeroplanes. The related fatalities mainly involved loss of control (47%) or controlled flight into terrain (15%). The Agency recognises that the safety barriers of the Visual Flight Rules (VFR), which rely on the “see and avoid” principles, should be reinforced. Cost-efficient electronic conspicuity devices can be one contributor.

The European Plan for Aviation Safety (EPAS) 2016-2020 already addressed the issue under the umbrella of the safety topic “general aviation safety”. The current version of the plan, (EPAS 2017-2021) includes further actions for MAC/NMAC in general aviation, under the strategic safety area “General Aviation - Preventing mid-air collisions”.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
	DIAMOND DA42	Sankt Pantaleon, Austria	20/09/2007	Accident

Synopsis of the event:

Der Pilot führte mit einem Passagier vom Flughafen Linz zum Flugplatz Krems/Gneixendorf mit dem gegenständlichen Luftfahrzeug einen Privatflug durch. Beim Rückflug nach Linz fiel nach dem Start das rechte Triebwerk aus, worauf der rechte Propeller in Segelstellung wechselte. Der Pilot wollte jedoch den Flug zum Zielflugplatz fortsetzen. Da er Probleme bekam, den ausfallsbedingten Momentenausgleich zu bewerkstelligen und Flughöhe verlor, versuchte er das rechte Triebwerk wieder zu starten, was jedoch misslang. Der rechte Propeller befand sich nunmehr nicht mehr in Segelstellung, wodurch das Luftfahrzeug stärker an Flughöhe verlor. Der Pilot entschloss sich nahe St. Pantaleon/NÖ zu einer Notlandung. Im Endanflug bemerkte er eine etwa quer zur Anflugrichtung verlaufende Stromleitung, die er versuchte zu unterfliegen. Nach dem Aufsetzen überschlug sich das Luftfahrzeug. Der Pilot wurde schwer, seine Passagierin leicht verletzt. Das Luftfahrzeug wurde zerstört.

Safety Recommendation AUST-2009-011 (VERSA)

[German] - Änderung der Zertifizierungsvorschriften für Kolbentriebwerke CS-E:
Nach der Zertifizierung der DA 40 und DA 42 mit TAE Triebwerken Centurion 1,7 und 2,0 sind eine Vielzahl von schweren Störungen und Antriebsausfälle aufgetreten. Die Zertifizierungsvorschriften sollten dahingehend geändert werden, dass vor der ersten Auslieferung an Kunden die Funktion des Gesamtsystems in voll konformer Installation über einen wesentlichen Zeitraum der angestrebten TBO ohne Antriebsausfall oder markantem mechanischen Defekt nachgewiesen wird.

Reply No. 3 sent on 28/04/2017:
This Safety Recommendation will be considered within the framework of rulemaking task RMT.0180 'CS-E engine testing, endurance/IMI/ETOPS' which is included in the Agency's rulemaking programme 2017-2021 and planned to be launched in the first quarter of 2018 with the publication of its terms of reference.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
	MCDONNELL DOUGLAS MD88	Vienna Schwechat Airport (LOWW)	31/07/2008	Serious incident

Synopsis of the event:

The MD 88 aircraft took off from the Vienna Schwechat airport for Madrid on 31.07.2008 at 17:34 UTC. During the take-off run immediately before becoming airborne, the left engine experienced loss of power and vibration, as well as a smell of burning, upon which the pilots shut the engine off. The pilots returned to the airport and landed at 18:50. The aircraft was able to leave the runway under its own power.

The incident did not cause any personal injury, but the aircraft was seriously damaged.

The investigations by the Aviation Safety Investigation Authority showed that the unsecured valve stem on the rim of tyre 2 has worked loose and the O-ring underneath was torn apart, which had the effect of deflating the tyre. As a result, during the take-off run and past the point of decision, the tread of the tyre broke away, breaking off part of the water deflector attached to the left engine. The landing gear well was damaged, and then parts of the tread were thrown into the left engine, which caused loss of power and vibration, after which the engine was shut down.

A further consequence of the damage in the landing gear well was that no locking indication of the left-hand landing gear could be observed, and as a precaution the subsequent landing was performed in accordance with the "Landing with unsafe landing gear and possible evacuation of the aircraft" checklist.

Safety Recommendation AUST-2013-008 (VERSA)

EASA, FAA: SE/SUB/ZLF/8/2013: Supplement to Certification Specifications 25 (CS-25), pressure displays of landing gear tyres: Insufficient pressure in landing gear tyres can, as happened in this serious incident, cause massive damage to the aircraft and result in flight situations with increased risk. On this topic also see, for example, the accident report issued by the US National Transportation Safety Board (NTSB): Runway Overrun during Rejected Takeoff, Global Exec Aviation, Bombardier Learjet 60, N999LJ, Columbia, South Carolina, September 19, 2008, http://www.ntsb.gov/doclib/reports/2010/aar1002.pdf. CS-25 should be revised to specify installation of pressure indicators for all landing gear tyres in the cockpit of commercial aircraft.

Reply No. 3 sent on 07/07/2017:

With the amendment 14 of CS-25 (effective on 20 December 2013, applicable to new certification projects of large aeroplanes), the Agency introduced new certification specifications to upgrade the protection against the damaging effects of tyre and wheel failures.

However, the Agency has initiated a new rulemaking task, RMT.0586, to propose a regulatory change to better ensure that the inflation pressures of tyres of large aeroplanes remain within the pressure specifications defined by the aeroplane manufacturer.

The terms of reference and the rulemaking group composition were published on 30 May 2017 on the EASA Website: https://www.easa.europa.eu/document-library/terms-of-reference-and-group-compositions/tor-rmt0586

Mandating the installation of a tyre pressure monitoring system is one of the elements to be considered among the objectives of RMT.0586.

The next step of RMT.0586 is the publication of a Notice of Proposed Amendment (NPA) which is envisaged during 03Q2018.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
	DIAMOND DA42 ROBINSON R44	near Katzelsdorf	14/11/2006	Accident

Synopsis of the event:

Pilot A startete am 14.11.2006, um 12:08 Uhr alleine als verantwortlicher Pilot mit dem Flugzeug A nach Sichtflugregeln am Flugplatz Wr. Neustadt-Ost (LOAN) mit dem Flugziel Flughafen Graz-Thalerhof (LOWG).

Zur gleichen Zeit flog Pilot B alleine als verantwortlicher Pilot mit dem Hubschrauber B nach Sichtflugregeln vom Flugplatz Trieben (LOGI) kommend zum Flugplatz Wr. Neustadt-Ost (LOAN).

Flugzeug A kurvte vom Meldepunkt GOLF kommend im Steigflug nach rechts auf südwestlichen Kurs, Hubschrauber B kurvte im Horizontalflug nach links auf nordöstlichen Kurs. Gegen 12:12 Uhr kollidierten die beiden Luftfahrzeuge ca. 2,1 km südwestlich von Meldepunkt GOLF des Flugplatzes Wr. Neustadt-Ost in ca. 1800-1900 ft MSL und stürzten ab.

Beide Piloten erlitten tödliche Verletzungen. Beide Luftfahrzeuge wurden zerstört.

Der Zusammenstoß ist auf das für ein Ausweichen der Luftfahrzeuge zu spätes Erkennen der Zusammenstoßgefahr zurückzuführen.

Safety Recommendation AUST-2016-001 (VERSA)

[German] - Auf die anlässlich der Untersuchung des Zusammenstoßes eines Motorflugzeuges Type DV20 und eines Hubschraubers Type AS 332 am 05.03.2007, um 09:53 Uhr UTC im Platzbereich des Flugplatzes Zell am See, Salzburg (GZ. BMVIT-85.121/0002-II/BAV/UUB/LF/2008) von der Unfalluntersuchungsstelle des Bundes herausgegebene Sicherheitsempfehlungen Nr. SE/UUB/LF/02/2008 wird nochmals hingewiesen:
SE/UUB/LF/02/2008 - Zusammenstoßwarngeräte
Die Empfehlungen aus früheren Untersuchungen der UUB (bzw der FUS) zu einer Verwendung von Zusammenstoßwarngeräten muss nach diesem Zusammenstoß und einem ähnlichen im November 2006 in der Nähe von Wr. Neustadt eindringlich wiederholt werden.
So sollten seitens der EASA die Voraussetzungen für die Entwicklung von Vorschriften hinsichtlich Technik, Einbau und Zertifizierung von kostengünstigen Zusammenstoßwarngeräten für die Allgemeine Luftfahrt geschaffen werden. Es sollte auch eine mögliche Subventionierung von Zusammenstoßwarngeräten überlegt werden (Aero-Club, Steuerbefreiung usw).
Welches der verfügbaren (auf gegenseitiger Funkabfrage bzw auf Transpondererkennung basierend) oder der in Erprobung befindlichen Systeme (satellitengestützte Verarbeitung von Transpondersignalen, ADS-B, bzw RFID-Technologie in Verbindung mit GPS) zum Einsatz kommen sollen, wird noch zu diskutieren sein.
Testflüge mit allen derzeit erhältlichen Systemen durch die UUB haben jedenfalls eindrücklich die Wirksamkeit solcher Systeme bestätigt.

Reply No. 2 sent on 28/04/2017:

The European Aviation Safety Plan 2011-2014 already contained first actions on Mid-air collision/Near mid-air collision (MAC/NMAC) by improving the “see and avoid” for general aviation. Among the actions already taken, EASA is facilitating the voluntary installation of electronic conspicuity devices via Standard Changes, as defined in 21.A.90B of Commission Regulation (EU) 748/2012 (refer to CS-SC002a, CS-SC051a in CS-STAN Issue 1 dated 8 July 2015, CS-SC058a in CS-STAN Issue 2 dated 30 March 2017) and installation approvals of this type of devices.

In addition, EASA is in the process of publishing a CS-ETSO for Traffic Awareness Beacon System (TABS). There are currently several technical solutions for general aviation for electronic conspicuity devices with varied strengths and weaknesses. The main issue is the interoperability between all of these solutions.

According to the EASA Annual Safety Review 2016, MACs contributed to 6% of the fatalities in the 2006-2015 period in Non-Commercial operations with aeroplanes. The related fatalities mainly involved loss of control (47%) or controlled flight into terrain (15%). The Agency recognises that the safety barriers of the Visual Flight Rules (VFR), which rely on the “see and avoid” principles, should be reinforced. Cost-efficient electronic conspicuity devices can be one contributor.

The European Plan for Aviation Safety (EPAS) 2016-2020 already addressed the issue under the umbrella of the safety topic “general aviation safety”. The current version of the plan, (EPAS 2017-2021) includes further actions for MAC/NMAC in general aviation, under the strategic safety area “General Aviation - Preventing mid-air collisions”.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
	GLASER DIRKS DG300 Lange Aviation GmbH Antares 18	near Unterklien	18/05/2015	Accident

Synopsis of the event:

Am 18.05.2015 um ca. 12:30 Uhr ereignete sich ein Zusammenstoß zweier Luftfahrzeuge im Fluge. Dabei kollidierte das Luftfahrzeug Antares 18T mit dem Luftfahrzeug DG 300 ELAN ACRO in einer Höhe von ca. 950 m über dem Steinbruch nahe Unterklien. Das Luftfahrzeug DG 300 ELAN ACRO konnte vom Piloten nach der Kollision am Flugplatz Hohenems notgelandet werden, das Luftfahrzeug Antares 18T stürzte dabei ab.

Safety Recommendation AUST-2016-002 (VERSA)

[German] - SE/UUB/LF/2/2016 ergeht an: Austro Control, Aero Club und EASA
Erweiterung der Mindestausrüstung:
Die Mindestausrüstung insbesondere von Segelflugzeugen, sowie von Motorsegelflugzeugen sollte in Hinblick auf Kollisionswarnsysteme erweitert werden.

Reply No. 1 sent on 20/01/2017:

The European Aviation Safety Plan 2011-2014 already contained first actions on Mid-air collision/Near mid-air collision (MAC/NMAC) by improving the “see and avoid” for General Aviation. Among the actions already taken, EASA is facilitating the voluntary installation of electronic conspicuity devices via Standard Changes, as defined in 21.A.90B of Commission Regulation (EU) 748/2012 (refer to CS-SC002a, CS-SC051a in CS-STAN Issue 1 dated 8 July 2015) and installation approvals of this type of devices.

In addition, EASA is in the process of publishing a CS-ETSO for Traffic Awareness Beacon System (TABS). There are currently several technical solutions for general aviation for electronic conspicuity devices with varied strengths and weaknesses. The main issue is the interoperability between all these solutions.

According the EASA Annual Safety Report 2016 the MACs contributed to 6% of the fatalities in the 2006-2015 period in Non Commercial Operations for Aeroplanes. The largest amount of fatalities involved loss of control (47%) or controlled flight into terrain (15%). The Agency recognises that the safety barriers of the Visual Flight Rules (VFR), which rely on the “see and avoid”, need to be reinforced and cost-efficient electronic conspicuity devices can be one contributor.

The latest version of the plan, European Plan for Aviation Safety (EPAS) 2016-2020 is further addressing the issue under the umbrella of the safety topic “general aviation safety”. The next version of the plan, (EPAS 2017-2021) will address and take further actions for MAC/NMAC in general aviation, under the umbrella “General Aviation - Preventing mid-air collisions”.

Status: Open – **Category**:

Safety Recommendation AUST-2016-003 (VERSA)

[German] - SE/UUB/LF/3/2016 ergeht an: Austro Control, Aero Club und EASA
Sicherstellung der Funktionsfähigkeit von Kollisionswarngeräten:
Festlegung geeigneter Maßnahmen welche sicherstellen, dass ein eingebautes Kollisionswarnsystem gemäß seinen Bestimmungen funktioniert. Im Besonderen, dass richtige und für andere Kollisionswarngeräte verwertbare Daten ausgesendet und im Umkehrschluss auch empfangen werden.

Reply No. 1 sent on 20/01/2017:

The European Aviation Safety Plan 2011-2014 already contained first actions on Mid-air collision/Near mid-air collision (MAC/NMAC) by improving the “see and avoid” for General Aviation. Among the actions already taken, EASA is facilitating the voluntary installation of electronic conspicuity devices via Standard Changes, as defined in 21.A.90B of Commission Regulation (EU) 748/2012 (refer to CS-SC002a, CS-SC051a in CS-STAN Issue 1 dated 8 July 2015) and installation approvals of this type of devices.

In addition, EASA is in the process of publishing a CS-ETSO for Traffic Awareness Beacon System (TABS). There are currently several technical solutions for general aviation for electronic conspicuity devices with varied strengths and weaknesses. The main issue is the interoperability between all these solutions.

According the EASA Annual Safety Report 2016 the MACs contributed to 6% of the fatalities in the 2006-2015 period in Non Commercial Operations for Aeroplanes. The largest amount of fatalities involved loss of control (47%) or controlled flight into terrain (15%). The Agency recognises that the safety barriers of the Visual Flight Rules (VFR), which rely on the “see and avoid”, need to be reinforced and cost-efficient electronic conspicuity devices can be one contributor.

The latest version of the plan, European Plan for Aviation Safety (EPAS) 2016-2020 is further addressing the issue under the umbrella of the safety topic “general aviation safety”. The next version of the plan, (EPAS 2017-2021) will address and take further actions for MAC/NMAC in general aviation, under the umbrella “General Aviation - Preventing mid-air collisions”.

Status: Open – **Category**:

Safety Recommendation AUST-2016-004 (VERSA)

[German] – SE/UUB/LF/4/2016 ergeht an: Austro Control, Aero Club und EASA
Wiederholte Aussprache der Sicherheitsempfehlung aus dem Jahre 2008 SE/UUB/LF/02/2008:
Die Empfehlung aus einem Unfallbericht aus dem Jahr 2005 (GZ. BMVIT-85.053/0008-FUS/2004) anlässlich eines Zusammenstoßes in der Luft im Jahr 2004 zu einer Verpflichtung zum Betrieb von Zusammenstoßwarngeräten muss nach diesem Zusammenstoß und einem sehr ähnlichen im November 2006 in der Nähe von Wr. Neustadt eindringlich wiederholt werden.

Reply No. 1 sent on 20/01/2017:

The European Aviation Safety Plan 2011-2014 already contained first actions on Mid-air collision/Near mid-air collision (MAC/NMAC) by improving the “see and avoid” for General Aviation. Among the actions already taken, EASA is facilitating the voluntary installation of electronic conspicuity devices via Standard Changes, as defined in 21.A.90B of Commission Regulation (EU) 748/2012 (refer to CS-SC002a, CS-SC051a in CS-STAN Issue 1 dated 8 July 2015) and installation approvals of this type of devices.

In addition, EASA is in the process of publishing a CS-ETSO for Traffic Awareness Beacon System (TABS). There are currently several technical solutions for general aviation for electronic conspicuity devices with varied strengths and weaknesses. The main issue is the interoperability between all these solutions.

According the EASA Annual Safety Report 2016 the MACs contributed to 6% of the fatalities in the 2006-2015 period in Non Commercial Operations for Aeroplanes. The largest amount of fatalities involved loss of control (47%) or controlled flight into terrain (15%). The Agency recognises that the safety barriers of the Visual Flight Rules (VFR), which rely on the “see and avoid”, need to be reinforced and cost-efficient electronic conspicuity devices can be one contributor.

The latest version of the plan, European Plan for Aviation Safety (EPAS) 2016-2020 is further addressing the issue under the umbrella of the safety topic “general aviation safety”. The next version of the plan, (EPAS 2017-2021) will address and take further actions for MAC/NMAC in general aviation, under the umbrella “General Aviation - Preventing mid-air collisions”.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
	SCHEMPP HIRTH VENTUS CM	Airport Innsbruck (LOWI)	20/04/2015	Serious incident

Synopsis of the event:

Der Störungshergang wurde aufgrund der Aussage des Luftfahrzeughalters in Verbindung mit den Erhebungen der Sicherheitsuntersuchungsstelle des Bundes Bereich Zivilluftfahrt wie folgt rekonstruiert:

Am 25.04.2009 wurde von einem nach EASA Part MF genehmigten Instandhaltungsbetrieb ein Notfunksender der Type ACK E-01 rechts neben dem Fahrwerkskasten in das Motorsegelflugzeug Ventus cM eingebaut. Der Notfunksender ACK E-01 ist das Vorgängermodel des ACK E-04, welcher von der Halterung mit diesem ident ist. Das Einbaudatum des Notfunksenders ACK E-04 wurde seitens des Luftfahrzeughalters mit dem Datum 29.12.2011 angegeben. Der letzte Jahrestest des Notfunksenders gem. den Herstelleranweisungen konnte nicht rekonstruiert werden. Am 20. April 2015 wurde der Notfunksender (ELT) ACK E-04 im Zuge einer Umrüstung auf ein alternatives Gerät aus dem Motorsegelflugzeug ausgebaut. Dabei konnte festgestellt werden, dass das Gehäuse der Notfunksender Batterie teilweise geschmolzen war. Die Halteplatte, sowie die Struktur des Motorsegelflugzeuges wiesen keine Beschädigungen auf. Der genaue Zeitpunkt, wann die Beschädigung entstand, konnte nicht rekonstruiert werden.

Safety Recommendation AUST-2016-005 (VERSA)

[German] - Nr. SE/UUB/LF/1/2016, ergeht an: Hersteller, FAA und EASA:

Der Isolationskörper der Steckverbindung bzw. die Steckverbindung zwischen thermischen Schaltelement und Kontaktfeder sollte so gewählt werden, dass ein Durchscheuern durch Teile der elektrischen Steckverbindung nicht möglich ist.

Reply No. 2 sent on 14/03/2017:

EASA has contacted the Emergency Locator Transmitter (ELT) manufacturer with the help of Federal Aviation Administration (FAA) to investigate the origin of the issue revealed by VERSA.

The manufacturer has produced a report describing additional tests conducted on the fuse-spring assembly. These tests intended to determine how much pressure is required to make electrical contact between the rod, and test contact through the isolator and the cell insulating wrap. It showed that an electrical contact could only occur when pressure was well beyond the one that could be exerted by the equipment design. This shows that the damages observed on the cell are not the root cause of the event. These are most probably due to the contact being the result of the cell venting heated corrosive gases. Statistically, lithium cells, despite high quality production standards, can on very rare occasions spontaneously self-heat due to manufacturing defects.

EASA noted that the internal protection mechanism (thermal fuse, cell fuse) were successful in avoiding the single cell heating to develop in a full thermal runaway. Indeed, only one cell was affected and none of the cells, including the damaged one, depleted their charge during the occurrence. In addition, the foam around the cells suffered limited damages, showing that the temperature rise was limited. This shows that TSO-C142a/ETSO-C142a approval provided a good protection by avoiding that this self-heat evolved in a thermal runaway.

Status: Closed – **Category**: Disagreement

Registration	Aircraft Type	Location	Date of event	Event Type
	DE HAVILLAND DHC8	Vienna Int'l Airport (LOWW)	06/05/2015	Serious incident

Synopsis of the event:

Flug XXX meldete wenige Minuten nach dem Abheben von der Piste 29 des Flughafens Wien-Schwechat (LOWW), Rauch in der Kabine als auch im Cockpit des Luftfahrzeuges. Das Luftfahrzeug befand sich zu diesem Zeitpunkt, ca. 2 Minuten nach dem Abheben, mit 43 Passagieren und 5 Besatzungsmitgliedern an Bord im Steigflug unter Sichtflug-Wetterbedingungen (VMC) entlang der Standardabflugroute (SID) SITNI 4C mit dem Flugziel Innsbruck in ca. 5000 ft (Flugfläche 50).

Die Piloten entschieden sich zur Rücklandung des Luftfahrzeuges zum Flughafen Wien-Schwechat. Das Luftfahrzeug landete kurze Zeit später ohne Probleme auf dem Flughafen Wien-Schwechat. Alle Passagiere sowie die gesamte Flugbesatzung konnten das Luftfahrzeug unverletzt verlassen.

Safety Recommendation AUST-2016-008 (VERSA)

[German] - EASA: SE/SUB/LF/8/2016

Die Auswirkungen von kontaminierter Kabinenluft in Luftfahrzeugen auf den menschlichen Körper sollten zeitnah, umfassend und unabhängig untersucht werden, um aus den daraus gewonnenen Ergebnissen Lösungsansätze für den Schutz von Passagieren und Besatzungsmitgliedern aufzuzeigen und verpflichtend umzusetzen. Dies könnte gegebenenfalls mittels einer internationalen Kooperation mit bereits laufenden Forschungsarbeiten erfolgen.

Reply No. 2 sent on 02/06/2017:

On 23 March 2017, EASA published the final reports of two studies it commissioned with the aim to gain solid scientific knowledge about cabin air quality on board large aeroplanes operated for commercial air transport.

Study 1: Cabin air quality (CAQ) measurement campaign - study conducted by a consortium of the Fraunhofer Institute for Toxicology and Experimental Medicine and the Hannover Medical School.

In-flight measurements have been conducted on a number of commercial flights after defining adequate and reliable air contaminants measurement methods for cockpit and passenger cabin areas.

The results show that the cabin/cockpit air quality is similar or better than what is observed in normal indoor environments (offices, schools, kinder gardens or dwellings). No occupational exposure limits and guidelines were exceeded.

In total, 69 measurement flights were performed between July 2015 and June 2016 on 8 types of aeroplane/engine configurations. This included 61 flights on aeroplanes equipped with engine bleed air systems, and 8 flights on Boeing 787 which is equipped with electrical compressors ('bleed free' system). For all flights, measurement equipment was installed in the cockpit and in the cabin. Special attention was paid to organophosphates, in particular Tri Cresyl Phosphates (TCP) with the use of high sensitivity analysis techniques.

Study 2: Characterisation of the toxicity of aviation turbine engine oils after pyrolysis - study conducted by a consortium of the Netherlands Organisation for Applied Scientific Research and the Dutch National Institute for Public Health and the Environment.

This study characterised the chemical composition of some transport aeroplane turbine engine oils (including pyrolysis breakdown products), and the toxic effects of the chemical compounds that can be released in the cabin or cockpit air.

It concluded that 'neuroactive pyrolysis products are present, but that their concentration in the presence of an intact lung barrier is that low that it could not be appointed as a major concern for neuronal function'. TCP was present in the analysed oils, however no ortho-isomers could be detected. Finally the 'analysis of the human sensitivity variability factor showed that the complete metabolic pathway and the contribution of inter individual variability in the metabolic enzymes is still largely unknown for the majority of industrial chemicals, including cabin air contaminants'. Two brands of oil were used in this study, and both new and used oil samples were analysed.

Both reports can be found on EASA website:

https://www.easa.europa.eu/document-library/research-projects

Based on these results, a causal link between exposure to cabin/cockpit air contaminants and reported health symptoms is still considered unlikely. At this stage, the results do not support new mandatory actions for the 'protection of passengers and crew members'.

As a follow-up activity, further research has started in a European Commission (EC) study, with technical support from EASA. It will take into account the findings and recommendations from the two EASA studies to develop a comprehensive understanding of the cockpit and cabin air quality.

The contract award notice was published on 22/02/2017 and can be found here:

http://ted.europa.eu/udl?uri=TED:NOTICE:66334-2017:TEXT:EN:HTML&src=0

Status: Closed – **Category**: Agreement

Safety Recommendation AUST-2016-009 (VERSA)

[German] - EASA: SE/SUB/LF/9/2016

Der Einbau von technischen Überwachungsmöglichkeiten wie etwa Sensoren welche die Zusammensetzung bzw. eine mögliche Verunreinigung der Kabinenluft im Luftfahrzeug in Echtzeit routinemäßig aufzeichnet und die Piloten rechtzeitig warnt, gepaart mit geeigneten Filtersystemen, sollte bei Luftfahrzeugen welche Zapfluft von den Triebwerken für die Kabinenluft verwenden, verpflichtend vorgeschrieben werden.

Reply No. 2 sent on 02/06/2017:

On 23 March 2017, EASA published the final reports of two studies it commissioned with the aim to gain solid scientific knowledge about cabin air quality on board large aeroplanes operated for commercial air transport.

Study 1: Cabin air quality (CAQ) measurement campaign - study conducted by a consortium of the Fraunhofer Institute for Toxicology and Experimental Medicine and the Hannover Medical School.

In-flight measurements have been conducted on a number of commercial flights after defining adequate and reliable air contaminants measurement methods for cockpit and passenger cabin areas.

The results show that the cabin/cockpit air quality is similar or better than what is observed in normal indoor environments (offices, schools, kinder gardens or dwellings). No occupational exposure limits and guidelines were exceeded.

In total, 69 measurement flights were performed between July 2015 and June 2016 on 8 types of aeroplane/engine configurations. This included 61 flights on aeroplanes equipped with engine bleed air systems, and 8 flights on Boeing 787 which is equipped with electrical compressors ('bleed free' system). For all flights, measurement equipment was installed in the cockpit and in the cabin. Special attention was paid to organophosphates, in particular Tri Cresyl Phosphates (TCP) with the use of high sensitivity analysis techniques.

Study 2: Characterisation of the toxicity of aviation turbine engine oils after pyrolysis - study conducted by a consortium of the Netherlands Organisation for Applied Scientific Research and the Dutch National Institute for Public Health and the Environment.

This study characterised the chemical composition of some transport aeroplane turbine engine oils (including pyrolysis breakdown products), and the toxic effects of the chemical compounds that can be released in the cabin or cockpit air.

It concluded that 'neuroactive pyrolysis products are present, but that their concentration in the presence of an intact lung barrier is that low that it could not be appointed as a major concern for neuronal function. TCP was present in the analysed oils, however no ortho-isomers could be detected. Finally the 'analysis of the human sensitivity variability factor showed that the complete metabolic pathway and the contribution of inter individual variability in the metabolic enzymes is still largely unknown for the majority of industrial chemicals, including cabin air contaminants'. Two brands of oil were used in this study, and both new and used oil samples were analysed.

Both reports can be found on EASA website:

https://www.easa.europa.eu/document-library/research-projects

Based on these results, a causal link between exposure to cabin/cockpit air contaminants and reported health symptoms is still considered unlikely. At this stage, the need for mandating a cabin air monitoring system and cabin air filters is not supported.

As a follow-up activity, further research has started in a European Commission (EC) study, with technical support from EASA. It will take into account the findings and recommendations from the two EASA studies to develop a comprehensive understanding of the cockpit and cabin air quality.

The contract award notice was published on 22/02/2017 and can be found here:

http://ted.europa.eu/udl?uri=TED:NOTICE:66334-2017:TEXT:EN:HTML&src=0

Status: Closed – **Category**: Disagreement

Registration	Aircraft Type	Location	Date of event	Event Type
	SCHWEIZER 269C	Stockerau, Niederösterreich, Flugplatz LOAU	09/08/2014	Accident

Synopsis of the event:

Der Pilot des Hubschraubers startete am 09. August 2014 um 09:07 Uhr in Begleitung eines Passagiers mit dem Hubschrauber der Type Schweizer 269C vom Flugplatz Stockerau (LOAU) zu einem kurzen kommerziellen Rundflug. Kurz vor der Landung um 09:18 Uhr begann der Hubschrauber in ca. 1,5 m Höhe um die Hochachse nach rechts zu drehen. Nach mehreren Drehungen setzte der Hubschrauber hart auf den Kufen auf und kippte nach links.

Der Passagier und der Pilot wurden durch den Aufprall bzw. durch das Kippen des Hubschraubers leicht verletzt. Der Hubschrauber wurde schwer beschädigt. Es entstand geringer Flurschaden.

Safety Recommendation AUST-2017-001 (VERSA)

[German] - SE/UUB/ZLF/01/2017, ergeht an die EASA.
Simulation von unkontrollierten Flugzuständen durch Verlust der aerodynamischen Heckrotorwirkung (= LTE - Loss of Tailrotor Effectiveness) auf Simulatoren: Seit Jahrzehnten ist das Auftreten von LTE's eine häufige Ursache von Unfällen mit Hubschraubern.
Piloten sind sich in vielen Fällen nicht bewusst, dass sie sich in einer Flugsituation befinden, die einen LTE begünstigt. Sie erkennen nach dem Auftreten oft nicht, dass es sich um einen LTE handelt und ergreifen daher auch nicht die notwendigen Maßnahmen zu dessen Behebung.
Bei der Ausbildung, bei Prüfungs- und Checkflügen wird das Auftreten und Ausleiten von LTE's nur theoretisch geschult bzw. geprüft.
Da es sich um einen unkontrollierten Flugzustand mit deutlich erhöhtem Risiko handelt, wird der LTE deshalb richtigerweise praktisch nicht geschult und geprüft.Um das Auftreten eines LTE's rasch zu erkennen bzw. um einen LTE sofort wirksam beheben zu können wäre jedoch eine praktische Schulung erforderlich.
Das Auftreten und das Beheben von LTE's kann auf dafür geeigneten und zertifizierten Simulatoren geübt werden.
Die EASA soll bei der Ausbildung, bei Prüfungs- und Überprüfungsflügen von Hubschrauberpiloten auch das Üben des Auftretens und Behebens von LTE's auf dafür geeigneten und zertifizierten Simulatoren vorschreiben.

Reply No. 1 sent on 02/06/2017:

Loss of tail rotor effectiveness (LTE) is part of the helicopter flight instruction syllabus (Executive Director's Decision ED 2011/016/R published 15 November 2011; AMC1 FCL.210.H 'PPL(H) — Experience requirements and crediting'; exercise 18 'Hover out of ground effect (OGE) and vortex ring'). The Agency published a Safety Information Bulletin on LTE (SIB No. 2010-12R1), which covers the conditions under which LTE may be encountered, how it can be prevented and recovery techniques to be applied if LTE is encountered.

In addition, the European Helicopter Safety Team issued several leaflets published on EASA website that address LTE phenomenon and provide practical guidance:

- EHEST Helicopter Flight Instructor Manual
- HE 1 Leaflet – Safety considerations
- HE 5 Leaflet – Risk Management in Training
- HE11 Leaflet - Training and Testing of Emergency and Abnormal Procedures in Helicopters

It is acknowledged that Flight Simulator Training Devices (FSTD) can support the training on LTE phenomenon.

For Commercial Air Transport, AMC1 ORO.FC.230 Recurrent training and checking already states the following:

RECURRENT TRAINING SYLLABUS

(a) Recurrent training

(4) Aircraft/FSTD training

(ii) Helicopters

(A) Where a suitable FSTD is available, it should be used for the aircraft/FSTD training programme. If the operator is able to demonstrate, on the basis of a compliance and risk assessment, that using an aircraft for this training provides equivalent standards of training with safety levels similar to those achieved using an FSTD, the aircraft may be used for this training to the extent necessary.

(B) The recurrent training should include the following additional items, which should be completed in an FSTD:

- settling with power and vortex ring
- loss of tail rotor effectiveness.

Therefore, the regulation promotes the use of simulators for LTE training in a proportionate manner, which also takes into account the availability of simulators.

There are currently around 23,000 helicopter pilots in EASA Member States that fly on 76 different types currently defined by EASA for licence endorsement purposes. Of those 76 type ratings, only around 20-25 have an FSTD that is representative of its type. It represents a small category of around 40 Full Flight Simulators (FFS) in EASA countries that are not appropriate for LTE demonstration of lighter helicopter types.

Building a cost-effective FSTD with current technology is probably only feasible for less than 30% of the 76 different types being flown. In some cases, the cost of a helicopter FSTD exceeds by far the cost of flying the machine, especially for the light end category of helicopters.

Therefore, mandating the use of FSTDs for LTE training is not realistic today.

CS-FSTD(H) already address antitorque device ineffectiveness in Helicopter Full Flight Simulators with subjective testing of the loss of anti-torque effectiveness. Nevertheless, the Agency will review the requirements for helicopters 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 to enhance LTE simulation aspects on Helicopter Full Flight Simulators.

Status: Open – Category:

Belgium

Registration	Aircraft Type	Location	Date of event	Event Type
	PILATUS PC6	GELBRESSEE	19/10/2013	Accident

Synopsis of the event:

The aeroplane was used for the dropping of parachutists from the parachute club of Namur1. It was the 15th flight of the day. The aeroplane took off from the Namur/Suarlée (EBNM) airfield at around 13:25 with 10 parachutists on board. After 10 minutes of flight, when the aeroplane reached FL50, a witness noticed the aeroplane in a level flight, at a lower altitude than normal. He returned to his occupation. Shortly after he heard the sound he believed to be a propeller angle change and turned to look for the aeroplane. The witness indicated that he saw the aeroplane diving followed by a steep climb (major pitch up, above 45°), followed by the breaking of the wing. Subsequently, the aeroplane went into a spin. Another witness standing closer to the aircraft reported seeing the aeroplane flying in level flight with the wings going up and down several times and hearing, at the same time an engine and propeller sound variation before seeing the aeroplane disappearing from his view. The aeroplane crashed in a field in the territory of Gelbressée, killing all occupants. The aeroplane caught fire. A big part of the left wing and elements thereof were found at 2 km from the main wreckage.

Cause(s):

The cause of the accident is a structural failure of the left wing due to a significant negative g aerodynamic overload, leading to an uncontrollable aeroplane and subsequent crash.

The most probable cause of the wing failure is the result of a manoeuvre intended by the pilot, not properly conducted and ending with an involuntary negative g manoeuvre, exceeding the operating limitations of the aeroplane.

Contributing safety factors:

- The weakness of the monitoring of the aeroplane operations by the operator.
- The lack of organizational structure between the operator and the parachute club.

Safety Recommendation BELG-2015-001 (AAIU-BE)

It is recommended that the EASA mandates the installation of a lightweight recording system in aircraft used for parachuting activities.

Reply No. 2 sent on 28/04/2017:

Depending on the specific nature of the undertaking, parachute operations in EASA Member States are covered by the provisions in Part-SPO (Specialised Operations) or Part-NCO (Non-Commercial operations with Other than complex motor-powered aircraft) of Commission Regulation (EU) No 965/2012 (the air operations regulation), applicable from 01 July 2014.

The Agency published, on 03 April 2017, Notice of Proposed Amendment NPA 2017-03 under rulemaking task RMT.0271 'In-flight recording for light aircraft'.

The NPA includes a proposal to mandate the carriage of lightweight flight recorders for turbine-engined aircraft with a Maximum Certified Take-Off Mass (MCTOM) greater than or equal to 2 250 kg, when the aircraft is newly manufactured, is commercially operated (including commercial specialised operations under Part-SPO such as parachuting activities), and is not currently required to carry a flight data recorder. This includes the Pilatus PC6, for example.

The outcome of the impact assessment is that voluntary installation (through safety promotion channels) of in-flight recording systems is the most appropriate way forward for all other cases. The rationale is based on the principles of proportionality for general aviation in line with the EASA General Aviation Roadmap.

The next RMT.0271 deliverable, an EASA Opinion, is planned to be published in 2018. Pending adoption of the Opinion and publication of the related amending regulation to Commission Regulation (EU) No 965/2012, an Executive Director's Decision containing the associated Acceptable Means of Compliance and Guidance Material will be published.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
	SOCATA TBM700	Aerodrome of Genk	17/12/2015	Serious incident

Synopsis of the event:

At the end of a short 12-minute flight from EBLG to EBZW the pilot checked the landing gear position indication lights, confirmed he saw three greens and no red light and entered the landing circuit. In the final leg, after the flaps were extended to landing position, the pilot checked again the landing gear position lights. The touchdown and the first phase of the landing were uneventful, however the nose landing gear collapsed as soon as it made contact with the runway.

Cause:

The cause of the serious incident is the failure of the nose landing gear actuator to lock down combined with the landing gear control system wrongly indicating that this landing gear was properly extended and locked.

The root cause of the serious incident is a spurious triggering of the NLG actuator extend dual switch into "extend and locked".

Investigation determined that the activation system of the dual switches has the potential to cause simultaneously a false indication (showing 3 greens and no red light) on the LGCP and stop the operation of the electro-hydraulic generator, interrupting the landing gear leg extension before reaching the locked position.

Contributing factors:

- The mechanical improvement of the actuators involving the installation of differential plungers (MOD70-0334-32), introduced in December 2012, was not applied to the aircraft.
- The possibility to improve the safety of the landing gear system by installing the differential plungers (MOD70-0334-32) was not communicated and was not recommended to the end-users.

Safety Recommendation BELG-2017-011 (AAIU-BE)

It is recommended that EASA mandates the improvement of the switch kinematics using hydraulic pressure to help the plunger movement by the application of Part 4.2. of MOD70-0334-32 to all landing gear actuators not already modified during application of EASA AD 2013-0227. This would include the prohibition of the installation of unmodified actuators, which is currently allowed by EASA AD 2013-0227.

Reply No. 1 sent on 07/07/2017:

EASA will review with the Type Certificate Holder (TCH) the documentation referenced in the Airworthiness Directive (AD) 2013-0227 in the frame of the Continued Airworthiness Review process and will evaluate the need of an AD update.

Status: Open – **Category**:

Bulgaria

Registration	Aircraft Type	Location	Date of event	Event Type
1) VP-CGD 2) SP-LDK	1) DASSAULT FALCON900 2) EMBRAER ERJ170	over Black Sea	30/06/2015	Serious incident

Synopsis of the event:

On 30.06.2015 at 12:26 h UTC, in the controlled upper airspace of the Republic of Bulgaria, particularly in Sofia Control FS Varna East Upper airspace an infringement of the standards on the minimum radar separation between two aircraft occurred. An unidentified unknown aircraft flying without two way radio communication and without transmitting transponder (Mode A/C) passed by a controlled aircraft Falcon 900, registration marks VP-CGD, of „VOLKSWAGEN AIR SERVICE" AO, performing flight with flight number WGT62N, at a minimal horizontal distance at 0.9 nm at same FL 370. Later on the unidentified unknown aircraft established radio communication with Sofia ACC FS Varna West and it was identified as Embraer 170 aircraft, registration marks SP-LDK, performing flight with flight number LOT7293 of „LOT" AO.

Based on the grounds of the performed investigation, including the research and analysis of the available factual information, the Investigation Commission concluded that the serious incident resulted from the following main and several accompanying causes:

Main cause:

Unintentional interruption of the Air Traffic Service in regard to LOT7293 on the side of ACC Bucharest after changing of the aircraft transponder mode of operation to STANDBY, particularly in Bucharest Control BANAP sector, during the its flight in Bucharest FIR and later on in Sofia FIR.

Accompanying causes:

- Not implemented procedures by the flight crew of Embraer 170, registration marks SP-LDK, after the momentary failure of the transponder system.
- Not provided information in timely manner on the location, direction of flight and height of the unidentified aircraft by ACC Bucharest to ACC Sofia, previously received from NATO07.
- Not implemented procedures by ACC Bucharest from the LETTER OF AGREEMENT between BULATSA SOFIA ACC and ROMATSA BUCUREŞTI ACC/CONSTANŢA APP.
- E.1 Transfer of Control
- E.2 Transfer of Communications;
- F.2.5 Transfer of Aircraft Identification.

Safety Recommendation BULG-2016-001 (AAIU)

EASA and ICAO to request that the AOs operating Embraer 170/175/190/195 aircraft upgrade the Primus Epic Load software with a version that can display caution CAS message XPDR (1/2) IN STBY. [BG.SIA-2015/03/07]

Reply No. 1 sent on 14/03/2017:

The Agency has reviewed the alert system in use on the aircraft at the time of the event where a Network Interface Module (NIM) reset caused the transponder to go to STANDBY mode and found it adequately effective when the existing procedures are correctly followed by the crew.

In fact, during the time the NIM reset took place causing the activation of the STANDBY mode, the pilot should have received a “NAVCOM1(2) FAIL” CAS display message in addition to an aural alert. Furthermore, the active and pre-selected frequencies and squawking code fields in the COM, NAV and transponder windows on the Primary Flight Display (PFD) and on the Radio Multifunction Control Display Units (MCDUs) would have been replaced by dashes.

After the reset, when the transponder was in STANDBY and the above mentioned CAS message and dashes had disappeared, there was an amber “TCAS OFF” message on the Primary Flight Display (PFD), and if checked according to the procedures, the Radio MCDU page would have shown the status of the transponder.

There is no evidence to suggest the alerts did not function as expected during the incident.

So, even if the crew misses the “NAVCOM1(2) FAIL” message, whose associated procedure requests them to check the status of the transponder, the remaining amber “TCAS OFF” message on the PFD should lead them to check it in the Radio MCDU page.

Status: Closed – **Category**: Disagreement

Canada

Registration	Aircraft Type	Location	Date of event	Event Type
HB-IWF	MCDONNELL DOUGLAS MD11	Peggy's Cove, Nova Scotia 5 nm SW, Canada	02/09/1998	Accident

Synopsis of the event:

On 2 September 1998, Swissair Flight 111 departed New York, United States of America, at 2018 eastern daylight savings time on a scheduled flight to Geneva, Switzerland, with 215 passengers and 14 crew members on board. About 53 minutes after departure, while cruising at flight level 330, the flight crew smelled an abnormal odour in the cockpit. Their attention was then drawn to an unspecified area behind and above them and they began to investigate the source. Whatever they saw initially was shortly thereafter no longer perceived to be visible. They agreed that the origin of the anomaly was the air conditioning system. When they assessed that what they had seen or were now seeing was definitely smoke, they decided to divert. They initially began a turn toward Boston; however, when air traffic services mentioned Halifax, Nova Scotia, as an alternative airport, they changed the destination to the Halifax International Airport. While the flight crew was preparing for the landing in Halifax, they were unaware that a fire was spreading above the ceiling in the front area of the aircraft. About 13 minutes after the abnormal odour was detected, the aircraft's flight data recorder began to record a rapid succession of aircraft systems-related failures. The flight crew declared an emergency and indicated a need to land immediately. About one minute later, radio communications and secondary radar contact with the aircraft were lost, and the flight recorders stopped functioning. About five and one-half minutes later, the aircraft crashed into the ocean about five nautical miles southwest of Peggy's Cove, Nova Scotia, Canada. The aircraft was destroyed and there were no survivors.

Safety Recommendation CAND-1999-002 (TSB)

As of 01 January 2005, all aircraft that require both an FDR and a CVR be required to be fitted with a CVR having a recording capacity of at least two hours. [A99-02]

Reply No. 4 sent on 20/01/2017:

Commission Regulation (EU) 2015/2338 (resulting from EASA rulemaking task RMT.0400) in December 2015 amended Commission Regulation (EU) No 965/2012 on Air Operations. Among other changes, the provisions related to Cockpit Voice Recorder (CVR) recording duration were modified.

- Commission Regulation (EU) No 965/2012 contains the following provisions on CVR recording duration for Commercial Air Transport (CAT) operations:

For aeroplanes: CAT.IDE.A.185 Cockpit voice recorder

(a) The following aeroplanes shall be equipped with a cockpit voice recorder (CVR):

(1) aeroplanes with an MCTOM of more than 5 700 kg; and

(2) multi-engined turbine-powered aeroplanes with an MCTOM of 5 700 kg or less, with an MOPSC of more than nine and first issued with an individual CofA on or after 1 January 1990.

(b) Until 31 December 2018, the CVR shall be capable of retaining the data recorded during at least:

(1) the preceding 2 hours in the case of aeroplanes referred to in (a)(1) when the individual CofA has been issued on or after 1 April 1998;

(2) the preceding 30 minutes for aeroplanes referred to in (a)(1) when the individual CofA has been issued before 1 April 1998; or

(3) the preceding 30 minutes, in the case of aeroplanes referred to in (a)(2).

(c) By 1 January 2019 at the latest, the CVR shall be capable of retaining the data recorded during at least:

(1) the preceding 25 hours for aeroplanes with an MCTOM of more than 27 000 kg and first issued with an individual CofA on or after 1 January 2021; or

(2) the preceding 2 hours in all other cases.

For helicopters: CAT.IDE.H.185 Cockpit voice recorder

(a) The following helicopter types shall be equipped with a cockpit voice recorder (CVR):

(1) all helicopters with an MCTOM of more than 7 000 kg; and

(2) helicopters with an MCTOM of more than 3 175 kg and first issued with an individual CofA on or after 1 January 1987.

(b) The CVR shall be capable of retaining the data recorded during at least:

(1) the preceding two hours for helicopters referred to in (a)(1) and (a)(2), when first issued with an individual CofA on or after 1 January 2016;

(2) the preceding one hour for helicopters referred to in (a)(1), when first issued with an individual CofA on or after 1 August 1999 and before 1 January 2016;

(3) the preceding 30 minutes for helicopters referred to in (a)(1), when first issued with an individual CofA before 1 August 1999; or

(4) the preceding 30 minutes for helicopters referred to in (a)(2), when first issued with an individual CofA before 1 January 2016.

- Commission Regulation (EU) No 965/2012 contains the following provisions on CVR recording duration for Non-Commercial operations with Complex motor-powered aircraft (NCC), and for Specialised Operations (SPO):

For aeroplanes: NCC.IDE.A.160/SPO.IDE.A.140 Cockpit voice recorder

(a) The following aeroplanes shall be equipped with a CVR:

(1) aeroplanes with an MCTOM of more than 27 000 kg and first issued with an individual CofA on or after 1 January 2016; and

(2) aeroplanes with an MCTOM of more than 2 250 kg:

(i) certified for operation with a minimum crew of at least two pilots;

(ii) equipped with turbojet engine(s) or more than one turboprop engine; and

(iii) for which a type certificate is first issued on or after 1 January 2016.

(b) The CVR shall be capable of retaining data recorded during at least:

(1) the preceding 25 hours for aeroplanes with an MCTOM of more than 27 000 kg and first issued with an individual CofA on or after 1 January 2021; or

(2) the preceding 2 hours in all other cases.

For helicopters: NCC.IDE.H.160/SPO.IDE.H.140 Cockpit voice recorder

(a) Helicopters with an MCTOM of more than 7 000 kg and first issued with an individual CofA on or after 1 January 2016 shall be equipped with a CVR.

(b) The CVR shall be capable of retaining data recorded during at least the preceding 2 hours.

With the publication of the above-mentioned provisions, the Agency has completed its actions to ensure that the CVR has a recording duration which is adequate for the aircraft it is installed in, with a minimum baseline duration of 2 hours for all aeroplanes used for CAT or SPO, and for complex aeroplanes used for non-commercial operations.

Status: Closed – **Category**: Agreement

Safety Recommendation CAND-1999-003 (TSB)

As of 01 January 2005, for all aircraft equipped with CVRs having a recording capacity of at least two hours, a dedicated independent power supply be required to be installed adjacent or integral to the CVR, to power the CVR and the cockpit area microphone for a period of 10 minutes whenever normal aircraft power sources to the CVR are interrupted. [A99-03]

Reply No. 5 sent on 20/01/2017:

This safety recommendation is taken into account within rulemaking task RMT.0249. The terms of reference are published on the Agency's website.

The Notice of Proposed Amendment (NPA) from this rulemaking task, which will include the topic cockpit voice recorder (CVR) power supply, is planned to be published first quarter 2017.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
C-GZCH	SIKORSKY S92	St. John's, Newfoundland and Labrador, 35 nm E	12/03/2009	Accident

Synopsis of the event:

On 12 March 2009, at 0917 Newfoundland and Labrador daylight time, a Cougar Helicopters' Sikorsky S-92A (registration C-GZCH, serial number 920048), operated as Cougar 91 (CHI91), departed St. John's International Airport, Newfoundland and Labrador, with 16 passengers and 2 flight crew, to the Hibernia oil production platform. At approximately 0945, 13 minutes after levelling off at a flight-planned altitude of 9000 feet above sea level (asl), a main gearbox oil pressure warning light illuminated. The helicopter was about 54 nautical miles from the St. John's International Airport. The flight crew declared an emergency, began a descent, and diverted back towards St. John's. The crew descended to, and levelled off at, 800 feet asl on a heading of 293° Magnetic with an airspeed of 133 knots. At 0955, approximately 35 nautical miles from St. John's, the crew reported that they were ditching. Less than 1 minute later, the helicopter struck the water in a slight right-bank, nose-high attitude, with low speed and a high rate of descent. The fuselage was severely compromised and sank quickly in 169 metres of water. One passenger survived with serious injuries and was rescued approximately 1 hour and 20 minutes after the accident. The other 17 occupants of the helicopter died of drowning. There were no signals detected from either the emergency locator transmitter or the personal locator beacons worn by the occupants of the helicopter.

Safety Recommendation CAND-2011-001 (TSB)

The Board recommends that The Federal Aviation Administration, Transport Canada and the European Aviation Safety Agency remove the "extremely remote" provision from the rule requiring 30 minutes of safe operation following the loss of main gearbox lubricant for all newly constructed Category A transport helicopters and, after a phase-in period, for all existing ones.

Reply No. 5 sent on 07/07/2017:

Rulemaking task RMT.0608 started on 22 May 2014 with the publication of its terms of reference (ToR) and group composition (which includes TCCA and FAA) on the EASA Website. A reference to this accident and safety recommendation is included in the ToR.

Notice of Proposed Amendment (NPA) 2017-07 has been published on 31 May 2017 on the EASA Website:

https://www.easa.europa.eu/document-library/notices-of-proposed-amendment/npa-2017-07

The specific objective of the NPA is to reduce the level of risk associated with loss of lubrication of rotorcraft gearboxes and to implement recommendations arising from the Joint Certification Team (JCT) review of rotorcraft gearbox certification specifications (CSs). This aims to both reduce the potential for lubrication system failures from occurring and to mitigate the consequences of any failure.

The NPA proposes to achieve this objective by improving the safety assessment of pressurised lubrication systems, and by improving the certification and development testing specifications for the 'loss of lubrication' condition in order to substantiate a maximum period of continued operation which can be included in the rotorcraft flight manual (RFM) emergency procedures. More specifically, this NPA proposes to amend CS 29.917(a) to include rotor drive system gearbox lubrication systems in the definition of the rotor drive system. This means that these lubrication systems will be considered to be within the scope of the design assessment of CS 29.917(b). As the design assessment specification currently addresses the risk of single hazardous and catastrophic failures, additional material has been added to complement the Federal Aviation Administration (FAA) Advisory Circular (AC) 29-2C, supporting 29.917(b), specifically in the domain of lubrication systems.

CS 29.927(c) on 'loss of lubrication' has been completely revised and replaced by a more objective-based specification that requires substantiation of the gearbox ability to continue safe operation (for at least 30 minutes) after a loss of lubrication to be followed by a safe landing; the 'unless such failures are extremely remote' provision has been removed. This is supported by substantial changes to the associated acceptable means of compliance (AMC). Finally, CS 29.1521 has also been amended to include an additional power plant limitation that describes how the RFM emergency procedures should reflect the test evidence relating to a loss of lubrication.

The next step of RMT.0608 is the publication of a Decision amending CS-27 and CS-29, envisaged 03Q2017.

Regarding existing Category A transport helicopters certified in accordance with the current CS 29.927(c), a review has shown that most types complied without using the 'extremely remote' rationale to exclude particular lubrication system failure modes. For helicopter types where potential lubrication system failure modes were excluded from the 'loss of lubrication' test on the basis of extremely remote likelihood of occurrence, additional actions have been taken to ensure that an acceptable level of safety is maintained, and the Agency will continue to address any identified type-specific unsafe condition within the scope of Part-21.

Status: Open – **Category**:

Cyprus

Registration	Aircraft Type	Location	Date of event	Event Type
5B-CLI	DIAMOND DA42	47NM SOUTH EAST OF THE COAST OF LARNACA	22/10/2014	Accident

Synopsis of the event:

On the 22nd October 2014 the AAIIB was notified by the JRCC of an aircraft accident which occurred 47 NM south east, off the coast of Larnaca, involving a twin aircraft (DA42), registration 5B-CLI. This aircraft departed Paphos Airport with destination Beirut Airport. Last communication with Nicosia ATC was at 16:02:25 UTC and then disappeared from the radar screen.

Safety Recommendation CYPR-2015-001 (AIIB)

EASA to re-examine the required minimum hours of night flying training.

Reply No. 2 sent on 14/03/2017:

The privilege to fly at night in accordance with FCL.810 (Night rating) was reviewed in the frame of the rulemaking activity that delivered Commission Regulation (EU) No 245/2014. The group considered the existing minimum training provisions of 5 hours of flight time in the appropriate aircraft category at night, including 3 hours of dual instruction, 1 hour of cross-country navigation and 5 solo take-offs and full-stop landings, to be proportionate to the safety risk of this activity. Additional training is required for instrument rating to ensure a safe conduct of flights in IMC conditions.

Based on the safety recommendation received, the subject was brought again to the rulemaking group constituted to conduct rulemaking task RMT.0188 amending Commission Regulation (EU) No 1178/2011 on aircrew. The group of experts did not find new evidence that indicates that the existing night rating provisions are presenting a disproportionate risk. The review confirmed the previous opinion that the required minimum hours of night flying training appear coherent with the risk level.

Status: Closed – **Category**: Partial agreement

Finland

Registration	Aircraft Type	Location	Date of event	Event Type
OH-CKB	CESSNA FA152	Alastaro	08/05/2012	Accident

Synopsis of the event:

An aircraft accident occurred at Alastaro Circuit on Tuesday 8 May 2012 at 18.32 Finnish time. A Cessna FA152 Aerobat aircraft registered OH-CKB, owned and operated by the Finnish Aviation Academy based at Pori Airport, collided with the ground. The aircraft caught fire on impact and was completely destroyed. The pilot, who was alone on board, was killed immediately.

The pilot had departed for a VFR cross-country flight (under visual flight rules) from Pori in accordance with the flight training syllabus. The meteorological conditions were good at the time of departure. According to radar recordings, the pilot had flown at a height of about 1000 feet to the village of Yläne, from where he intended to fly to Huittinen via Alastaro. He followed the planned route quite roughly. About 13 km before Alastaro he reached road no. 9 leading from Turku to Tampere. Alastaro Circuit is located along this road, and the next turnpoint at Huittinen follows after it. When the pilot reached the road, he started to follow it towards Huittinen without flying to Alastaro. The circuit is located about five kilometres from the point where the pilot started to follow the road towards the north. After reaching the circuit the pilot began circling above it at a height of about 600–1000 feet (180–300 m) from the ground, as a result of this he lost control of the aircraft and crashed onto the circuit.

People who saw the crash reported the accident immediately to the local emergency response centre.

The investigation showed that student pilots sometimes regarded the daily cross-country flights as tedious and not challenging enough, especially as there could be three to five successive flights on the same day. On such cross-country flights many students had been performing activities that were not included in the flying exercise, such as aerial photography. It also came out that the requirements for spin avoidance training in PPL instruction were partly unclear, and the flight schools' training instructions were inadequate in the same respect.

The probable cause of the accident was a sudden asymmetric turn stall which developed during the climbing, steepening turn. It caught the pilot by surprise and led to a complete loss of flight attitude control. The stall developed because the pilot failed to sufficiently monitor the aircraft's attitude and flight data as he was circling above the motor circuit and paying too much attention to the events on the circuit.

Because of the pilot's short flying experience and the low flight altitude, he was unable to make the correct recovery manoeuvres quickly enough and the aircraft collided with the ground.

A contributing factor to the accident was that the pilot decided to divert from the planned route to look for Alastaro racing circuit, which he had previously not found. After he located the circuit and noticed that there was an event going on, he started circling above it.

Safety Recommendation FINL-2014-002 (SIA)

JAR-FCL 1 requires the inclusion of exercise 11: "Spin avoidance" in the PPL(A) syllabus, which includes "stalling and recovery at the incipient spin stage" and "instructor induced distractions during the stall". The English language version of the document does not infer any active "distraction" to the use of flight controls, for example, as it almost invariably is understood – and done in Finland.

Safety Investigation Authority Finland recommends that the European Aviation Safety Agency (EASA) consider the translation, provide more detailed comments on the purpose of this exercise, and clarify it with practical examples.

Reply No. 3 sent on 17/11/2017:

The Acceptable Means of Compliance (AMC) to Commission Regulation (EU) No 1178/2011 (Regulation Aircrew) covers flight instruction syllabus for the Private Pilot Licence (Aeroplanes) [PPL(A)]. The Agency does not provide a translation of AMC and Guidance Material in various EASA countries language and has no responsibility in translation provided by the Competent Authorities.

Exercise 11 in this syllabus concerns 'Spin Avoidance' training and it includes stalling and recovery at the incipient spin stage as well as instructor induced distractions during the stall. The Agency has reviewed these materials within the framework of rulemaking task RMT.0581 and published Opinion No 06/2017 on "loss of control prevention and recovery training" on 29 June 2017.

In relation to PPL(A) and Light Aircraft Pilot Licence (Aeroplanes) [LAPL(A)], EASA considers that the existing AMC is still adequate, but will now consider this recommendation in a dedicated General Aviation task force.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
OH-OTL	CESSNA F406	at Oulu Airport	03/10/2016	Accident

Synopsis of the event:

Landing gear failure during landing run at Oulu Airport on 3 October 2016

A Reims F406 Caravan II aircraft (OH-OTL), operated by the Finnish company Lapin Tilauslento Oy, departed for a routine cargo flight from Rovaniemi Airport to Oulu on 3 October 2016. The aircraft had a crew of two pilots and carried mail as cargo.

When the landing gear was retracted after take-off, the warning lights for the landing gear and hydraulic system remained on. The gear was then selected back down, and the three green lights indicating that the gear was down and locked illuminated normally. The crew continued the flight to Oulu in good weather with the gear extended. When approaching at Oulu, it was already dark.

When landing at Oulu, the aircraft touched down at the beginning of the runway. The landing run was normal at first. After the speed had decreased and the pilot-in-command started braking, the right main landing gear failed and the aircraft tilted to the right. The aircraft stopped quickly after the landing gear had collapsed, within a distance of about 80 m, but remained on the runway. The aircraft sustained significant damage in the area between the right propeller and the inner wing flap on the right-hand side. There were no injuries to persons.

Before the accident flight, the aircraft main landing gear had been subjected to maintenance, for which the gear had to be removed and reinstalled. When the right main landing gear was installed, its forward pivot pin had been secured incorrectly. As a result of this error the pivot pin moved out of its place, eventually causing the gear to collapse at landing.

The investigation revealed shortcomings in the main landing gear installation instructions, and the order of actions was found to be impractical in places. Therefore they did not support the correct performance of maintenance actions and related inspections. These factors have contributed to the accident besides human factor elements.

The Safety Investigation Authority, Finland recommends that the type certificate holder of Reims F406 aircraft review and update the maintenance instructions so that any deficiencies in main landing gear installation instructions are rectified. In addition, it is recommended that the type certificate holder of Cessna 404 aircraft, which has a similar type of landing gear, also review the corresponding instructions, including those for other similar aircraft types.

The recommendations are issued to improve safety, to prevent similar accidents in the future, and to minimise any damage resulting from such accidents.

Safety Recommendation FINL-2017-026 (SIA)

The European Aviation Safety Agency (EASA) require the aircraft type certificate holder to review and update the maintenance instructions for Reims F406 aircraft, so that any deficiencies in main landing gear installation instructions are rectified. The landing gear installation instructions do not cover all necessary phases of work, and the order of phases is impractical in some places. The instructions provide no warning of the possibility of incorrect pivot pin installation. [2017-S26]

Reply No. 1 sent on 07/07/2017:

The Agency agrees with the aim of the Safety Recommendation (review of the maintenance documentation) and will discuss with the Type Certificate Holder (TCH) the required activities and documentation updates in the frame of the Continued Airworthiness Review process.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
OH-COV	CESSNA 172	Vampula Aerodrome	24/09/2016	Accident

Synopsis of the event:

Pilot incapacitation during landing at Vampula Aerodrome on 24 September 2016

The accident occurred on Saturday, 24 September 2016 to the pilot of a Cessna 172N aircraft. At 12.21 the pilot took off from Tuulikki-Vampula aerodrome for a local flight with two passengers. The pilot decided to abort the flight because he did not feel well. Following the landing the aircraft drifted off the runway into a ditch at 12.36. The pilot died soon after the landing as a result of a heart attack. One passenger had a sudden attack, requiring hospitalisation.

The pilot suffered from multi-vessel coronary heart disease and sleep apnoea. Within the five years prior to the accident he had had three heart attacks which were treated with coronary angioplasty.

On the basis of the investigation the pilot's higher overall risk of a recurring heart attack, as regards flight safety, was not recognised. The European guidance material only partly provides for decision-making associated with overall risk assessment.

The pilot was unaware of the privileges of a medical certification and the validities of the licence. Moreover, while the public health care system was aware of the pilot's flying hobby, national legislation does not lay down any duty of notification associated with medical certification to doctors treating licence holders.

On the basis of the investigation Safety Investigation Authority, Finland issues four safety recommendations:

The International Civil Aviation Organization (ICAO) should include such a risk assessment model in the Manual of Civil Aviation Medicine that can be used in aeromedical decision-making for assessing the risk of pilots who have had recurring heart attacks.

The European Aviation Safety Agency (EASA) should improve AME risk assessment competency in aeromedical decision-making through training and by increasing their competency in consultation and in the use of limitations.

The Finnish Ministry of Transport and Communications should standardise the duty of notification between aviation and road transport associated with a person's state of health as part of advancing the safety of flight.

The Finnish Transport Safety Agency should see to it that the practitioners of general and sport aviation receive clarifying information pertaining to the privileges associated with the pilot's licence and the significance of the requirement to report medical issues.

Safety Recommendation FINL-2017-035 (SIA)

The European Aviation Safety Agency (EASA) improve AME risk assessment competency through safety promotion, competency based recurrent training and specific training on the national procedures for referral and consultation as well as for the use of limitations. [2017-S35]

Reply No. 1 sent on 23/08/2017:

Part-MED of Commission Regulation (EU) No 1178/2011 already provides guidance regarding the risk assessment for fitness.

EASA Opinion No 09/2016 published on 11 August 2016 includes new requirements for Aeromedical Examiners (AMEs) to demonstrate maintenance of aero-medical competency in order to revalidate/renew their certificate.

The opinion mentioned above sets new learning objectives to reinforce risk management and decision-making principles and the number of hours for training is increased to give more time for subject related to risk assessment, such as acceptable aero-medical risk of incapacitation, types of incapacitation, operational aspects and basic principles in assessment of fitness for aviation.

AMEs shall be able to make a proper risk assessment taking into consideration the severity of the principal pathology and the additional comorbidities. As every applicant is unique, the risk assessment is based on the knowledge and competency of the AME who must give proper consideration to stage of the disease, existence of risk factors and other comorbidities as well as effects and side effects of any associated medication.

Therefore, in addition, the Agency has initiated a safety promotion task to better support AME with low exposure to aero-medical assessment.

Status: Open – **Category**:

France

Registration	Aircraft Type	Location	Date of event	Event Type
F-GMPG	FOKKER F28	Pau Pyrénées	25/01/2007	Accident

Synopsis of the event:

L’avion décolle en piste 13. Peu après l’envol, il s’incline à gauche, à droite, puis à gauche. L’aile gauche de l’avion, maintenant en descente, frotte sur le revêtement en limite droite du bord de piste. L’avion touche le sol légèrement incliné à droite, rebondit, roule dans les servitudes à droite de la piste, traverse le grillage d’enceinte de l’aérodrome et franchit une route en heurtant la cabine d’un camion. Les trains d’atterrissage principaux heurtent le talus opposé de la route et se séparent de l’avion. Celui-ci glisse dans un champ sur environ 535 mètres, à droite de la rampe d’approche de la piste 31.

Safety Recommendation FRAN-2009-001 (BEA)

[French] - Le BEA recommande que tout en veillant à maintenir les exigences opérationnelles relatives au contrôle du dégivrage avant le vol, l’AESA s’attache à faire évoluer les spécifications de certification pour demander l’analyse du comportement des avions lorsque les surfaces d’ailes sont contaminées au sol et pour garantir le maintien des marges de sécurité acceptables en cas de contamination légère.

Reply No. 3 sent on 02/06/2017:

This safety recommendation is being taken into account in rulemaking task RMT.0118 entitled 'Analysis of on-ground wing contamination effect on take-off performance degradation' which started with the publication of its terms of reference on 21/03/2017:

https://www.easa.europa.eu/document-library/terms-of-reference-and-group-compositions/tor-rmt0118

The specific objective of this task is to mitigate the risk of loss of control of an aeroplane (in particular during, but not limited to, the take-off phase), and the risk of runway excursion after an aborted take-off at high speed, caused by an aerodynamic performance or controllability degradation, as a result of aerodynamic surfaces contamination by ice or de/anti-icing fluids.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
F-GVPD	BEECH C90	Besançon - La Vèze	18/10/2006	Accident

Synopsis of the event:

Le 18 octobre 2006 à 22 h 40, l'avion débute son décollage en piste 23 revêtue sur l'aérodrome de Besançon - La Vèze. Après avoir roulé pendant 950 mètres, il quitte le sol mais prend peu de hauteur. Quelques instants plus tard, il heurte la cime d'arbres situés dans l'axe de piste, prend feu et tombe dans un bois. Le pilote n'a signalé aucune difficulté et n'a pas émis de message de détresse.

Safety Recommendation FRAN-2009-007 (BEA)

[French] - Le BEA recommande que l'AESA étudie l'élargissement des conditions imposant la présence d'un équipage à deux pilotes en transport public.

Reply No. 4 sent on 14/03/2017:

The Agency conducted a safety review of worldwide single-pilot commercial air transport occurrences during the last 10 years.

Instrument Flight Rules (IFR) or night operation are common contributing factors evidenced in the review of occurrences and ORO.FC.200 (c) of Regulation (EU) No 965/2012 issued on 5 October 2012 sets the following specific requirements when operating under such conditions:

- For aeroplanes, the minimum flight crew shall be two pilots for all turbo-propeller aeroplanes with a maximum operational passenger seating configuration (MOPSC) of more than nine and all turbojet aeroplanes.
- For helicopters, the minimum flight crew shall be two pilots for all operations with an MOPSC of more than 19 and for operations under IFR of helicopters with an MOPSC of more than 9.
- When single pilot operation is permitted, additional requirements are added in ORO.FC.202 in terms of crew training and qualification.

The occurrence review does not show a predominant risk in single-pilot commercial air transport operations, considering that many historical single-pilot occurrence would require a second crew if those EASA operational rules were applicable.

To be complete, a more specific review of helicopters emergency medical services (HEMS) occurrences was conducted, because it introduces specific risks when selecting the landing site and the MOPSC is often below 9. This type of operation is covered by a Specific Approval (Part SPA Subpart J) and a minimum crew of 2 pilots at night or one pilot and one HEMS technical crew member under specific conditions is defined (SPA.HEMS.130 (e)). Part-ORO subpart TC defines training requirements for HEMS technical crews.

On this basis, the restrictions and mitigation means applied for single-pilots operations appear coherent with the safety review.

Status: Closed – **Category**: Agreement

Registration	Aircraft Type	Location	Date of event	Event Type
F-GRRA	MUDRY CAP10	Saint Rambert d'Albon, France	04/06/2010	Accident

Synopsis of the event:

Le vendredi 4 juin 2010, les 2 pilotes décollent à bord du CAP10 C immatriculé F-GRRA pour réaliser un vol de réentraînement à la voltige. L'instructeur est en place gauche. Ils montent à une hauteur de 5 000 ft à la verticale de l'aérodrome de Saint Rambert d'Albon (26) pour débuter les exercices qui ont été préparés lors d'un briefing avant le décollage. Après avoir exécuté une vrille « dos », ils remontent à la même altitude pour débuter une vrille « plate ». La mise en vrille plate à droite est réalisée selon la procédure décrite au briefing par l'instructeur. Après plusieurs tours de vrille, le pilote en place droite puis l'instructeur tentent sans succès d'arrêter la rotation de l'avion. L'instructeur décide de l'évacuation et largue la verrière. Le pilote en place droite s'extrait de l'avion et actionne la commande d'ouverture du parachute qui s'ouvre normalement. L'instructeur n'a pas le temps d'évacuer avant que l'avion entre en collision avec le sol.

Causes de l'accident

L'accident est dû à la perte de contrôle de l'avion par l'équipage lors de l'exécution d'un exercice de vrille aplatie, en raison de l'application erronée de la procédure de sortie de vrille.

Ont contribué à l'accident:

- les changements de stratégie répétés au cours de la tentative d'arrêt de la figure.
- une hauteur de début de figure insuffisante et l'absence d'une hauteur de sécurité définie.
- l'application d'une procédure de sortie de vrille correspondant à un autre type d'avion.

Safety Recommendation FRAN-2011-006 (BEA)

[French] - L'AESA étudie l'obligation d'équiper les avions de voltige de parachutes avec une sangle d'ouverture automatique qui permette l'ouverture du parachute quel que soit l'état de conscience du pilote qui a évacué.

Reply No. 3 sent on 12/09/2017:

The Agency has considered the recommendation and concluded that requiring Personnel Emergency Parachutes (PEPs) of a particular design for pilots of aerobatic flights would not support the principles of proportionality and risk-based rulemaking established for general aviation, including aerobatic flights, in the EU regulatory framework for air operations (see the General Aviation Roadmap published on the EASA website).

Aerobatic flights are addressed under Part-SPO (specialised operations), Part-ORO (organisation requirements for air operations) and/or Part-NCO (non-commercial operations with other-than complex motor-powered aircraft) of Commission Regulation (EU) No 965/2012 on air operations (applicable for aerobatic flights since 21 April 2017 at the latest). The applicability of the provisions depends on the nature of the operation ie commercial or non-commercial, and on the complexity of the aircraft ie complex motor-powered or not (as defined under Regulation (EC) No 216/2008).

Although PEPs are not a specific requirement for pilots of aerobatic flights, operators are required to conduct a risk assessment of their operation/s, and to establish suitable mitigating measures, which could include PEPs, depending on the type of aircraft and the type of aerobatic manoeuvres to be undertaken.

The design and functionality of the PEP is also not specified in the regulations, as this should be decided by the operator, depending on the risks associated with the individual operations. However, it should be noted that parachutes with a strap or static line for automatic opening of the parachute could create new risks, which the operator should take into account when considering whether to use a PEP and, if so, which type to use.

Status: Closed – **Category**: Partial agreement

Registration	Aircraft Type	Location	Date of event	Event Type
F-GRZK	BOMBARDIER CL600 2B19	AD Paris - Charles de Gaulle, France	19/01/2010	Incident

Synopsis of the event:

Vertical flight path excursion during ILS approach with autopilot engaged

LVP procedures were in force at Paris – Charles de Gaulle. Established on runway 08RILS on a CAT III A precision approach, the crew noticed that from 1,700 ft AMSL radio-altimeter 1 was working intermittently. The crew performed a missed approach at around 800 ft AMSL after detecting an APCH WARN message displayed on the head-up guidance system (HGS) and on the PFD. The origin of this message was a greater deviation to the permissible limits between the heights measured by both of the aeroplane's radio altimeters.

A second CAT III A approach was performed on runway 08R. At around 1,700 ft AMSL, radio altimeter 1 was operating intermittently again. At 1,000 ft AMSL, a MASTER CAUTION warning message, accompanied by the EFIS COMP MON message at EICAS and the APCH WARN message on the HGS were triggered for a few seconds for the same reasons as during the first approach. The crew performed a missed approach about fifteen seconds later, at an altitude of about 800 ft AMSL. The EFIS COMP MON and APCH WARN warning messages were triggered again.

The RVR was sufficient to perform a CAT I precision approach on runway 08R. Using the cloud ceiling noted during the two previous approaches, the crew told the controller that they wished to make a CAT I approach and that in the event of another missed approach, they would divert to Lille airport. At around 1,700 ft AMSL, radio altimeter 1 was working intermittently again. The AP was connected. From 700 ft AMSL, that is 160 ft above DA and up to 340 ft AMSL radio altimeter 1 was not supplying height data. During this period, the aircraft's pitch attitude started to fluctuate. At the altitude corresponding to DA, it was slightly positive (0.3 degrees nose up) then it increased to 1.3 degrees nose up before decreasing rapidly to an attitude of about 7 degrees nose down at 100 ft AGL. The G/S deviation was then one point below the ILS glide path. The PF disconnected the AP as soon as he noted the decrease in attitude, at 120 ft AGL. He altered the glide path and, in sight of the approach lights, continued on to land without further difficulty on runway 08R.

Safety Recommendation FRAN-2012-010 (BEA)

The BEA recommends that EASA ensure that Aircraft manufacturers modify maintenance procedures that could have consequences on the radio altimetry system in order to take into account the risks of damage.

Reply No. 2 sent on 28/04/2017:

The safety concern with radio altimeter failures is addressed through the Continuing Airworthiness Review Item (CARI) 25-04, "DESIGN REVIEW OF AUTO THROTTLE/AUTOPILOT AND OTHER SYSTEMS IN RELATION TO LOW RANGE RADIOALTIMETERS FAILURES"

Through this CARI, the Type Certificate Holder (TCH) is requested to:

1. Review the design of aircraft systems and in particular the auto throttle/autopilot system which use output from low range radio altimeter, and determine:

a. The effect of internally undetected radio altimeter errors on other aircraft systems such as auto throttle/autopilot.

b. Where there is an effect on other systems, identify any potential consequences.

c. Review flight deck alerts and indications that may contribute to crew awareness of undetected radio altimeter failures, and determine whether these are sufficient to make crews aware and lead to action to alleviate any adverse effects which may result.

d. Review existing flight crew procedures, and determine if these are adequate to prevent adverse consequences.

e. Review training material to ensure crew awareness of potential consequences of radio altimeter failures.

2. Review the in service experience regarding radio altimeter failures and highlight the identified causes.

Based on the replies received, there have been modifications on the European designs and recommendations have been provided to non-EU authorities.

As a result:

- the combination of airplane systems design, crew procedures and crew training is now expected to be robust enough to avoid that internally undetected radio altimeter failures can cause severe consequences.
- radio altimeters with a lower reliability than expected are replaced by new designs.

In addition, in response to the request made through the CARI 25-04, some TCHs have additionally improved the radio altimeter maintenance procedures.

Status: Closed – **Category**: Partial agreement

Registration	Aircraft Type	Location	Date of event	Event Type
F-GABB	AVIONS ROBIN DR400	AD Le Touquet Paris-Plage, France	04/04/2011	Accident

Synopsis of the event:

Nose gear failure on landing roll, during instruction flight

The student was undertaking a dual-control instruction flight between Dunkirk and Le Touquet aerodromes. On arrival, he flew the downwind leg for a landing on runway 32. The flare and main landing gear touchdown occurred without any problems. When the nose gear touched down, the aeroplane was subject to strong vibrations. The instructor pushed the control column forwards and braked. The nose gear collapsed and the aeroplane came to a stop on the runway.

Safety Recommendation FRAN-2012-031 (BEA)

EASA, in collaboration with the DGAC, implement a technical solution in order to prevent the appearance of new failures of this type and, consequently, modify Airworthiness Directive EU-2010-0231. [Recommendation FRAN-2012-031]

Reply No. 3 sent on 28/09/2017:

EASA has reviewed the issue with the Type Certificate Holder (TCH) CEAPR and considering the nature of the damage, the different designs available for the affected parts (upper and lower support plates) of the landing gear, and the corresponding service histories of the various aeroplane types affected by Airworthiness Directive (AD) EU-2010-0231 (DR253, DR300, DR400, HR100 and R1180), has agreed the following actions:

- A new Service Bulletin SB BS_160403 has been issued in September 2017 by the TCH for the aeroplane types DR253, DR300, DR400 that provides revised inspections instructions and intervals and defines a life time for the replacement of the affected parts.
- The associated Major Change documentation package is under review by EASA.
- A new AD has been drafted and will be issued once the Major Change is approved and it will mandate such service bulletin and will supersede AD EU-2010-0231.
- A new service bulletin BS_160402 has been issued in September 2017 for the aeroplane types HR100 and R1180, that provides revised inspections instructions and intervals. For these aeroplane types, considering the service history, it has been deemed not necessary to define a life time for the replacement of the affected parts and furthermore, it has been assessed that such SB does not need to be mandated by an AD.
- The associated Major Change documentation package is under review by EASA.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
F-GLZU	AIRBUS A340	Paris Charles de Gaulle	13/03/2012	Serious incident

Synopsis of the event:

Approach above glide path, interception of ILS sidelobe signal, increase in pitch angle commanded by autopilot

The crew took off from Bamako (Mali) aerodrome on 12 March 2012 at 23 h 59 heading for Paris Charles de Gaulle (CDG) airport. On arrival, the ATIS indicated that the low visibility procedure (LVP) was in force. The crew prepared themselves for a CAT III precision approach.

The aeroplane was stable at FL90 at about 30 NM from the threshold of runway 08R. Autopilot 1 was engaged in HDG and ALT mode. The ATHR was engaged in SPEED mode. The speed was stable at 250 kt in accordance with the controller's request. The crew was in contact with CDG approach. They were cleared to intercept localizer 08R.

At 04 h 40 min 20, the controller cleared the crew to descend to FL80 and five seconds later the aeroplane, stable at FL90, passed above the 3° glide path. The crew was then cleared to descend to FL60. They selected an altitude of 6,000 ft on the FCU and the autopilot mode changed to OP DES. The autopilot captured the localizer 08R signal (LOC*) and then the LOC mode engaged. When the aeroplane descended to 7,220 ft, and was 17.5 NM from the threshold, or about 1,275 ft above the glide path, the controller requested that a speed of more than 200 kt be maintained. The aeroplane's speed was about 250 kt. The crew read back and requested to continue the descent.

The controller apologised for his omission then cleared the crew to descend to 3,000 ft to intercept the 08R ILS.

The crew selected 220 kt and 3,000 ft. The OP DES mode remained active. The aeroplane speed and rate of descent decreased which resulted in increasing the deviation from the glide path. The crew extended the airbrakes. When the aeroplane speed reached the target speed of 220 kt, the rate of descent increased again to a value of -1,840 ft/min.

At 10 NM from the runway threshold and at an altitude of 5,500 ft, the approach controller requested that the crew maintain a speed of more than 160 kt and that they contact the tower. He did not inform the tower controller that the aeroplane was above the glide path. The crew selected a speed of 210 kt then 183 kt and wing slats/flaps configuration 1. Again, the rate of descent decreased and the aeroplane deviated from the 3° glide path.

The crew contacted the tower and indicated that they were 9 NM out. The aeroplane was at an altitude of 4,950 ft (1,750 ft above the glide path). The controller initially cleared the crew to continue the approach. The latter read back "Cleared to land 08 right… ". The controller indicated that he then checked that the CAT III ground services were clear then confirmed clearance to land. The crew selected slats/flaps configuration 2 and retracted the airbrakes. About one minute later, they re-extended the airbrakes, set the G/S mode using the APPR switch and engaged autopilot 2. The glide deviation displayed on the PFD indicated to the crew that they were approaching the glide path from above. The aeroplane was 4 NM from the runway threshold, at about 3,700 ft (that is 2,100 ft above the glide path at 3°) and was located in an ILS signal sidelobe.

About 30 seconds later, the crew extended the landing gear. The glide path capture mode (G/S*) was activated when the aeroplane was 2 NM from the runway threshold at 2,850 ft (that is about 1,600 ft above the glide path at 3°). The ATHR changed to SPEED mode. The pitch attitude increased from 1° to 26° in 12 seconds. The PNF stated that he had called out the difference in the pitch attitude when the chevrons appeared. When the aeroplane pitched up, the speed dropped from 163 kt to 130 kt, the vertical speed changed from – 1,600 ft/min to + 3,300 ft/min. When the pitch attitude reached 26°, the crew disconnected both autopilots and the PF made a pitch down input almost down to the stop. The pitch attitude and vertical speed decreased.

The crew retracted the airbrakes. The throttle levers were in the IDLE position. The speed was 143 kt and the ATHR disengaged. About 30 seconds later, autopilot 1 was engaged, the levers were repositioned on the CL setting and the ATHR was activated. The PF explained that he engaged autopilot 1 to perform a go-around on automatic.

The LOC and G/S modes were active and the ATHR was in SPEED mode. The speed was 147 kt. The aeroplane was directly above the runway threshold at an altitude of about 2,700 ft. The pitch attitude then decreased from 2° to -5° and the aeroplane descended.

The PF stated that he realised that the modes displayed on the FMA were not appropriate. He then disengaged the AP 8 seconds after having activated it and then displayed a pitch attitude of about 6° and placed the throttle levers in the TOGA setting at an altitude of about 2,000 ft.

The crew made a second approach and landed without further difficulties.

Safety Recommendation FRAN-2013-008 (BEA)

The investigation showed that it was possible to intercept a sidelobe ILS glide path in autopilot without alerting the crew. Furthermore, under these conditions, the autopilot put the aeroplane in an unusual attitude (26° pitch-up) during a critical phase of the flight. This issue could well involve other aircraft in public transport.

Consequently the BEA recommends that EASA ensure that aircraft ILS modes are not engaged on an ILS signal other than the one corresponding to the published descent path; that failing this, a system enabling the crew to be alerted be put in place.

Reply No. 3 sent on 20/10/2017:

In discussions with industry in the context of the EUROCAE WG-101 on “Runway Overrun Awareness and Alerting System (ROAAS)” it was concluded that combining a ROAAS function and a warning function identifying a capturing of the glide slope from above, as proposed to EUROCAE by EASA, is not sufficiently similar to be handled in one standard. The EUROCAE WG, therefore, did not consider appropriate taking on board the development of a dedicated function generating a warning or prohibiting the ILS capturing in case there is a risk to intercept a side lobe having a reverse signal characteristic.

As a follow-up, EASA has identified some issues, leading to the conclusion that a technical solution has some principle challenges to deal with:

- The ILS approach angle is not published systematically.
- The ILS approach is defined by physical reference to the runway and not by reference to waypoints. The agreed standard for AIP publication allows for a margin of +/- 50 metres between the airport reference system and the ICAO WGS 84 worldwide coordinate system. This poses difficulties to use GPS for comparison with ILS.
- The system would have difficulties to cope with steep approach situations and would most likely not work for those conditions.

- The functioning of such system would assume a “standard” antenna use on the ground. This may be a practical initial assumption while there is no such standard and no verification demand where the side slope is located. When using other antennae e.g. with more or less antenna gain, the side slope is different. Consequently, there is no way to verify the assumptions used to create the ILS beam. All verifications are concentrating on the main slope.

In summary, the identified technical limitations do not allow to design an independent monitoring function able to protect the aircraft safely under all foreseeable conditions from capturing the side slope.

EASA has also considered the mandate of such function. A preliminary qualitative impact assessment shows that it is difficult to justify a mandatory equipment of aircraft due to the low number of events happening and considering, on the other hand, the typical estimated effort for aircraft equipage.

This does not preclude some protection being developed by industry. The potential are not sufficiently mature, at this stage, to allow the development of an industry standard for such function, which would be a precondition for a mandate.

While disagreeing that a technical solution should be implemented on a mandatory basis, EASA considers that good airmanship principles should be reminded, which would help to avoid those conditions in the day-to-day environment. To raise awareness on this issue EUROCONTROL published an article ‘Unstabilised Approach: Vectoring Resulting in Intercepting the Glidepath from Above’ on the SKYbrary webpage on 5th November 2014, and EASA published SIB 2014-07R1 ‘Unexpected Autopilot Behaviour on Instrument Landing System (ILS) Approach’, dated 12 August 2015.

In a broader context, the potential safety relevance of the topic is shared by the Agency being the False or Disrupted ILS Signal Capture a safety issue now included in the Commercial Air Transport (CAT) aeroplanes Safety Risk Portfolio (SRP). This safety issue will be regularly monitored through safety performance monitoring activities.

Status: Closed – **Category**: Partial agreement

Registration	Aircraft Type	Location	Date of event	Event Type
ASAGA STUDY			#Missing#	

Synopsis of the event:

Study on Aeroplane State Awareness during Go-Around (ASAGA)

Towards the end of the 2000’s, the BEA observed that a number of public air transport accidents or serious incidents were caused by a problem relating to “aeroplane state awareness during go-around” (ASAGA). Other events revealed inadequate management by the flight crew of the relationship between pitch attitude and thrust, with go-around mode not engaged, but with the aeroplane close to the ground and with the crew attempting to climb.

Moreover, these events seemed to have some common features, such as surprise, the phenomenon of excessive preoccupation by at least one member of the crew, poor communication between crew members and difficulties in managing the automatic systems.

A study was thus initiated with a view to:

Determining if this type of event is associated with a particular type of aircraft;

Listing and analysing the factors common to these events;

Suggesting strategies to prevent their recurrence.

Safety Recommendation FRAN-2013-017 (BEA)

The BEA recommends that EASA in coordination with manufacturers, operators and major non-European aviation authorities ensure that go-around training integrates instruction explaining the methodology for monitoring primary flight parameters, in particular pitch, thrust then speed. [Recommendation FRAN-2013-017]

Reply No. 4 sent on 31/08/2017:

The dispersion of attention/channelized attention phenomena is a human performance issue. EASA Rulemaking Task RMT.0188 reviewed this recommendation and delivered Opinion No 05/2017 amending Commission Regulation (EU) No 1178/2011 related to flight crew licensing (FCL) on 29 June 2017. The Opinion coordinates Part–FCL safety and regulatory issues and takes benefit from ED Decision 2016/008/R of 2 May 2016 that addresses performance-based navigation (PBN) operations with new Applicable Means of Compliance (AMC) and Guidance Material (GM). This decision introduces new learning objectives (LOs) for ATPL, MPL, CPL and IR for aeroplanes and helicopters and the theoretical aspect of the monitoring of primary flight parameters is highlighted in LO 033 06 01 03.

In addition, dispersion and/or channelized attention is mitigated by teaching the flight crew about such risks during realistic training scenarios that contain surprise and startle effects conducive to high workload in a short time frame. Effective monitoring of the primary flight parameters is a major criteria to prevent Loss of Control In-flight (LOC-I), and the Agency has published provisions on flight crew Upset Prevention and Recovery Training (UPRT) with the specific objective to ensure that flight crew acquire the necessary competencies to prevent and recover from developing or developed upsets.

ED Decision 2015/012/R published on the EASA website entered into force on 04 May 2016. It defines Applicable Means of Compliance (AMC) and Guidance Material (GM) to Commission Regulation (EU) No 965/2012 for recurrent training programmes (ORO.FC.230) and operator conversion training (ORO.FC.220) pertaining to Commercial Air Transport (CAT) operators using ‘complex motor-powered aeroplanes’.

In addition, the Agency published Opinion No 06/2017 on “loss of control prevention and recovery training” in the wake of rulemaking task RMT.0581 on 29 June 2017.

This Opinion proposes to introduce mandatory UPRT, testing and checking at various stages for pilots who intend to pursue a pilot career with a commercial airline.

The newly developed advanced UPRT course, which is to be mandated as an addendum to ATP and MPL training courses and also to serve as a prerequisite prior to commencing the first type rating course in multi-pilot operations, is an important step towards enhancing a commercial pilot’s resilience to the psychological and physiological aspects often associated with upset conditions. It develops the ability of the pilot to cope with unforeseen events.

In support of the new standards, appendix 9 — Training, skill test and proficiency checks for MPL, ATPL, type and class ratings, and proficiency checks for IRs is amended to include UPRT. It emphasizes regular training on go-arounds with all engines operating from various stages during instrument approach (4.2) and also on manual flying manoeuvres and procedures with or without flight directors and at different speeds and altitudes (3.1).

In line with ICAO, the opinion and the decision mentioned above propose UPRT to proficiency during initial and recurrent training. The amended skill test and proficiency checks supported by operators' UPRT recurrent training and conversion course reinforce pilot competence through regular training. UPRT instructors are also required to match minimum experience and receive dedicated UPRT training to deliver effective teaching and avoid negative transfer of training.

Status: Closed – **Category**: Agreement

Safety Recommendation FRAN-2013-018 (BEA)

The BEA recommends that EASA, in cooperation with the national civil aviation authorities and major non-European aviation authorities, ensure that during recurrent and periodic training, training organizations and operators give greater importance to the assessment and maintenance of the monitoring capabilities of public transport pilots. [Recommendation FRAN-2013-018]

Reply No. 5 sent on 31/08/2017:

The dispersion of attention/channelized attention phenomena is a human performance issue. EASA Rulemaking Task RMT.0188 reviewed this recommendation and delivered Opinion No 05/2017 amending Commission Regulation (EU) No 1178/2011 related to flight crew licensing (FCL) on 29 June 2017. The opinion coordinates Part–FCL safety and regulatory issues and takes benefit from ED Decision 2016/008/R of 2 May 2016 that addresses performance-based navigation (PBN) operations with new Applicable Means of Compliance (AMC) and Guidance Materials (GM).This decision introduces new learning objectives (LOs) for ATPL, MPL, CPL and IR for aeroplanes and helicopters and the theoretical aspect of the monitoring of primary flight parameters is highlighted in LO 033 06 01 03.

In addition, dispersion and/or channelized attention is mitigated by teaching the flight crew about such risks during realistic training scenarios that contain surprise and startle effects conducive to high workload in a short time frame. Effective monitoring of the primary flight parameters is a major criteria to prevent Loss of Control In-flight (LOC-I), and the Agency has published provisions on flight crew Upset Prevention and Recovery Training (UPRT) with the specific objective to ensure that flight crew acquire the necessary competencies to prevent and recover from developing or developed upsets.

ED Decision 2015/012/R published on the EASA website entered into force on 04 May 2016. It defines Applicable Means of Compliance (AMC) and Guidance Materials (GM) to Commission Regulation (EU) No 965/2012 for recurrent training programmes (ORO.FC.230) and operator conversion training (ORO.FC.220) pertaining to Commercial Air Transport (CAT) operators using 'complex motor-powered aeroplanes'.

The material takes into account the International Civil Aviation Organization (ICAO) Annex 6 amendment 38, ICAO Doc 9868 'Procedures for Air Navigation Services - Training' (PANS-TRG) amendment 3 relating to UPRT, and ICAO Doc 10011 'Manual on Aeroplane UPRT'. Reference is also made to the Original Equipment Manufacturers' (OEMs') Aeroplane Upset Recovery Training Aid (AURTA). Respective components of UPRT includes effective scanning (effective monitoring).

In addition, the Agency published Opinion No 06/2017 on "loss of control prevention and recovery training" in the wake of rulemaking task RMT.0581 on 29 June 2017.

This Opinion proposes to introduce mandatory UPRT, testing and checking at various stages for pilots who intend to pursue a pilot career with a commercial airline.

The newly developed advanced UPRT course, which is to be mandated as an addendum to ATP and MPL training courses and also to serve as a prerequisite prior to commencing the first type rating course in multi-pilot operations, is an important step towards enhancing a commercial pilot's resilience to the psychological and physiological aspects often associated with upset conditions. It develops the ability of the pilot to cope with unforeseen events.

In support of the new standards, appendix 9 — Training, skill test and proficiency checks for MPL, ATPL, type and class ratings, and proficiency checks for IRs is amended to include UPRT. It emphasizes regular training on manual flying manoeuvres and procedures with or without flight directors and at different speeds and altitudes (3.1).

In line with ICAO, the opinion and the decision mentioned above propose UPRT to proficiency during initial and recurrent training. The amended skill test and proficiency checks supported by operators' UPRT recurrent training and conversion course reinforce pilot competence through regular training. The National Competent Authority ensures through its Air Operators and Aviation Training Organisations oversight that the training objectives are met.

Status: Closed – **Category**: Agreement

Safety Recommendation FRAN-2013-022 (BEA)

The BEA recommends that EASA review the regulatory requirements for initial and periodic training in order to ensure that go-arounds with all engines operating are performed sufficiently frequently during training.

Reply No. 4 sent on 31/08/2017:

Mitigating Loss of Control In-flight (LOC-I) is one of the European Aviation Safety Agency's (EASA's) highest priorities, and the Agency has published provisions on flight crew Upset Prevention and Recovery Training (UPRT) with the specific objective to ensure that flight crew acquire the necessary competencies to prevent and recover from developing or developed upsets.

ED Decision 2015/012/R published on the EASA website entered into force on 04 May 2016. It defines Applicable Means of Compliance (AMC) and Guidance Material (GM) to Commission Regulation (EU) No 965/2012 for recurrent training programmes (ORO.FC.230) and operator conversion training (ORO.FC.220) pertaining to Commercial Air Transport (CAT) operators using 'complex motor-powered aeroplanes'. UPRT shall be trained at least every 12 calendar months and all elements shall be covered over a period not exceeding 3 years.

In addition, the Agency published Opinion No 06/2017 on "loss of control prevention and recovery training" in the wake of rulemaking task RMT.0581 on 29 June 2017. This Opinion proposes to introduce mandatory UPRT, testing and checking at various stages for pilots who intend to pursue a pilot career with a commercial airline.

The newly developed advanced UPRT course, which is to be mandated as an addendum to ATP and MPL training courses and also to serve as a prerequisite prior to commencing the first type rating course in multi-pilot operations, is an important step towards enhancing a commercial pilot's resilience to the psychological and physiological aspects often associated with upset conditions. It develops the ability of the pilot to cope with unforeseen events.

In support of the new standards, appendix 9 — Training, skill test and proficiency checks for MPL, ATPL, type and class ratings, and proficiency checks for IRs is amended to include UPRT. It now includes go-arounds with all engines operating from various stages during instrument approach (4.2) and rejected landing with all engines operating from various heights below DH/MDH and after touchdown (4.5).

In line with ICAO, the opinion and the decision mentioned above propose UPRT to proficiency during initial and recurrent training. The amended skill test and proficiency checks supported by operators' UPRT recurrent training and conversion course implement the recommendation that go-arounds with all engines operating are performed sufficiently frequently.

Status: Closed – **Category**: Agreement

Safety Recommendation FRAN-2013-025 (BEA)

The BEA recommends that EASA, in coordination with major non-European aviation authorities, amend the CS-25 provisions so that aircraft manufacturers add devices to limit thrust during a go-around and to adapt it to the flight conditions.

Reply No. 4 sent on 07/07/2017:

Rulemaking task RMT.0647 ('Loss of control or loss of flight path during go-around or other flight phases') has started with the publication of its Terms of Reference and its Group Composition on 06/07/2015 (https://www.easa.europa.eu/document-library/terms-of-reference-and-group-compositions/tor-rmt0647).

A Notice of Proposed Amendment (NPA) 2017-06 was published on 11 May 2017 on the EASA Website:

https://www.easa.europa.eu/document-library/notices-of-proposed-amendment/npa-2017-06

This NPA proposes to amend CS-25 to ensure that:

- the design of large aeroplanes is such that the go-around (G/A) procedure with all engines operating (AEO) can be safely conducted by the flight crew without requiring exceptional piloting skills or alertness. Risk of excessive crew workload and risk of somatogravic illusion must be carefully evaluated, and design mitigation measures must be put in place if those risks are too high; implementing a reduced G/A thrust function is one of the possible solutions which can be used, and it is considered as an acceptable means of compliance with the proposed new specification;
- the design of large aeroplanes provides an adequate longitudinal controllability and authority during G/A and other flight phases (focusing on low speed situations).

The first proposed measure addresses the intent of this safety recommendation without being prescriptive and allowing manufacturers to propose other means of compliance.

The next step of RMT.0647 is the publication of a Decision amending CS-25, envisaged 01Q2018.

Status: Open – **Category**:

Safety Recommendation FRAN-2013-026 (BEA)

The BEA recommends that EASA examine, according to type certificate, the possibility of retroactively extending this measure in the context of PART 26 / CS-26, to the most high-performance aircraft that have already been certified.

Reply No. 4 sent on 07/07/2017:

Rulemaking task RMT.0647 ('Loss of control or loss of flight path

during go-around or other flight phases') has started with the publication of its Terms of Reference and its Group Composition on 06/07/2015 (https://www.easa.europa.eu/document-library/terms-of-reference-and-group-compositions/tor-rmt0647).

A Notice of Proposed Amendment (NPA) 2017-06 was published on 11 May 2017 on the EASA Website:

https://www.easa.europa.eu/document-library/notices-of-proposed-amendment/npa-2017-06

This NPA proposes to amend CS-25 to ensure that:

- the design of large aeroplanes is such that the go-around (G/A) procedure with all engines operating (AEO) can be safely conducted by the flight crew without requiring exceptional piloting skills or alertness. Risk of excessive crew workload and risk of somatogravic illusion must be carefully evaluated, and design mitigation measures must be put in place if those risks are too high; implementing a reduced G/A thrust function is one of the possible solutions which can be used, and it is considered as an acceptable means of compliance with the proposed new specification;
- the design of large aeroplanes provides an adequate longitudinal controllability and authority during G/A and other flight phases (focusing on low speed situations).

The rulemaking group has conducted a regulatory impact assessment which considered options requiring already certified large aeroplanes, in particular the most-at-risk ones (wing-mounted twin turbofan), to implement design changes to mitigate the risk of excessive work load and somatogravic illusion during G/A, such as reduced G/A thrust function. This assessment concluded that such options are not suitable, and that amending CS-25 is the best option.

The next step of RMT.0647 is the publication of a Decision amending CS-25, envisaged 01Q2018.

Status: Open – **Category**:

Safety Recommendation FRAN-2013-033 (BEA)

The BEA recommends that EASA, in cooperation with the national civil aviation authorities and major non-European aviation authorities, ensure that the risks associated with dispersion and/or channelized attention during the go-around, to the detriment of the primary flight parameters, be taught to crews.

Reply No. 4 sent on 23/08/2017:

Risks associated with high workload are addressed in CS 25.1523 and Appendix D to CS-25. Systems and controls, including indications and annunciations shall be designed to minimise crew errors, which could create additional hazards according to CS 25.1302 and CS 25.1309 (c).

The dispersion of attention/channelized attention phenomena is a human performance issue. EASA Rulemaking Task RMT.0188 reviewed this recommendation and delivered Opinion No 05/2017 amending Commission Regulation (EU) No 1178/2011 related to flight crew licensing (FCL) on 29 June 2017. The opinion coordinates Part–FCL safety and regulatory issues and takes benefit from ED Decision 2016/008/R of 2 May 2016 that addresses performance-based navigation (PBN) operations with new Applicable Means of Compliance (AMC) and Guidance Materials (GM).This decision introduces new learning objectives (LOs) for ATPL, MPL, CPL and IR for aeroplanes and helicopters and the theoretical aspect of the monitoring of primary flight parameters is highlighted in LO 033 06 01 03.

In addition, dispersion and/or channelized attention is mitigated by teaching the flight crew about such risks during realistic training scenarios that contain surprise and startle effects conducive to high workload in a short time frame. Effective monitoring of the primary flight parameters is a major criteria to prevent Loss of Control In-flight (LOC-I), and the Agency has published provisions on flight crew Upset Prevention and Recovery Training (UPRT) with the specific objective to ensure that flight crew acquire the necessary competencies to prevent and recover from developing or developed upsets.

The Agency published, on 08 April 2014, Safety Information Bulletin SIB 2014-09 'Aeroplane Go-Around Training' to raise awareness on the risks associated with unexpected or poorly executed go-around manoeuvres and to encourage operators to specifically address these risks in their safety management systems.

ED Decision 2015/012/R published on the EASA website entered into force on 04 May 2016. It defines Applicable Means of Compliance (AMC) and Guidance Materials (GM) for recurrent training programme of Commission Regulation (EU) No 965/2012 (ORO.FC.230) and conversion training (ORO.FC.220) pertaining to Commercial Air Transport (CAT) operators using 'complex motor-powered aeroplanes'.

The material takes into account the International Civil Aviation Organization (ICAO) Annex 6 amendment 38, ICAO Doc 9868 'Procedures for Air Navigation Services - Training' (PANS-TRG) amendment 3 relating to UPRT, and ICAO Doc 10011 'Manual on Aeroplane UPRT'. Reference is also made to the Original Equipment Manufacturers' (OEMs') Aeroplane Upset Recovery Training Aid (AURTA).

In addition, the Agency published Opinion No 06/2017 on "loss of control prevention and recovery training" in the wake of rulemaking task RMT.0581 on 29 June 2017.

This Opinion proposes to introduce mandatory UPRT, testing and checking at various stages for pilots who intend to pursue a pilot career with a commercial airline:

- advanced UPRT course (new FCL.745.A) as a prerequisite for training courses for single-pilot aeroplanes operated in multi-pilot operation, single-pilot high-performance complex aeroplanes and multi-pilot aeroplanes (amendments to FCL.720.A);
- Inclusion of UPRT elements considering the specificities of the particular class or type during the relevant class or type rating training course (amendments to FCL.725.A);
- Amendments to Appendix 9, paragraphs 5 and 6 in Annex I (Part-FCL) of Commission Regulation (EU) No 1178/2011 for including upset prevention and recovery exercises into training courses, skill test and proficiency checks related to single-pilot aeroplanes operated in multi-pilot operations, single-pilot high-performance complex aeroplanes and multi-pilot type rating training courses;

The newly developed advanced UPRT course, which is to be mandated as an addendum to ATP and MPL training courses and also to serve as a prerequisite prior to commencing the first type rating course in multi-pilot operations, is an important step towards enhancing a commercial pilot's resilience to the psychological and physiological aspects often associated with upset conditions. It develops the ability of the pilot to cope with unforeseen events.

In support of the new standards, appendix 9 — Training, skill test and proficiency checks for MPL, ATPL, type and class ratings, and proficiency checks for IRs is amended to include UPRT. It now includes go-arounds with all engines operating from various stages during instrument approach (4.2).

In line with ICAO, the opinion and the decision mentioned above propose UPRT to proficiency during initial and recurrent training.

Status: Closed – **Category**: Agreement

Safety Recommendation FRAN-2013-035 (BEA)

The BEA recommends that EASA, in coordination with manufacturers, operators and major non-European aviation authorities, study whether to extend these measures to other procedures requiring a high workload in a short time frame.

Reply No. 4 sent on 23/08/2017:

Risks associated with high workload are addressed in CS 25.1523 and Appendix D to CS-25. Systems and controls, including indications and annunciations shall be designed to minimise crew errors, which could create additional hazards according to CS 25.1302 and CS 25.1309 (c).

The dispersion of attention/channelized attention phenomena is a human performance issue. EASA Rulemaking Task RMT.0188 reviewed this recommendation and delivered Opinion No 05/2017 amending Commission Regulation (EU) No 1178/2011 related to flight crew licensing (FCL) on 29 June 2017. The opinion coordinates Part–FCL safety and regulatory issues and takes benefit from ED Decision 2016/008/R of 2 May 2016 that addresses performance-based navigation (PBN) operations with new Applicable Means of Compliance (AMC) and Guidance Materials (GM).This decision introduces new learning objectives (LOs) for ATPL, MPL, CPL and IR for aeroplanes and helicopters and the theoretical aspect of the monitoring of primary flight parameters is highlighted in LO 033 06 01 03.

In addition, dispersion and/or channelized attention is mitigated by teaching the flight crew about such risks during realistic training scenarios that contain surprise and startle effects conducive to high workload in a short time frame. Effective monitoring of the primary flight parameters is a major criteria to prevent Loss of Control In-flight (LOC-I), and the Agency has published provisions on flight crew Upset Prevention and Recovery Training (UPRT) with the specific objective to ensure that flight crew acquire the necessary competencies to prevent and recover from developing or developed upsets.

ED Decision 2015/012/R published on the EASA website entered into force on 04 May 2016. It defines Applicable Means of Compliance (AMC) and Guidance Materials (GM) for recurrent training programme of Commission Regulation (EU) No 965/2012 (ORO.FC.230) and conversion training (ORO.FC.220) pertaining to Commercial Air Transport (CAT) operators using ‘complex motor-powered aeroplanes’.

The material takes into account the International Civil Aviation Organization (ICAO) Annex 6 amendment 38, ICAO Doc 9868 ‘Procedures for Air Navigation Services - Training’ (PANS-TRG) amendment 3 relating to UPRT, and ICAO Doc 10011 ‘Manual on Aeroplane UPRT’. Reference is also made to the Original Equipment Manufacturers’ (OEMs’) Aeroplane Upset Recovery Training Aid (AURTA).

In addition, the Agency published Opinion No 06/2017 on “loss of control prevention and recovery training” in the wake of rulemaking task RMT.0581 on 29 June 2017.

This Opinion proposes to introduce mandatory UPRT, testing and checking at various stages for pilots who intend to pursue a pilot career with a commercial airline:

- advanced UPRT course (new FCL.745.A) as a prerequisite for training courses for single-pilot aeroplanes operated in multi-pilot operation, single-pilot high-performance complex aeroplanes and multi-pilot aeroplanes (amendments to FCL.720.A);
- Inclusion of UPRT elements considering the specificities of the particular class or type during the relevant class or type rating training course (amendments to FCL.725.A);
- Amendments to Appendix 9, paragraphs 5 and 6 in Annex I (Part-FCL) of Commission Regulation (EU) No 1178/2011 for including upset prevention and recovery exercises into training courses, skill test and proficiency checks related to single-pilot aeroplanes operated in multi-pilot operations, single-pilot high-performance complex aeroplanes and multi-pilot type rating training courses;

The newly developed advanced UPRT course, which is to be mandated as an addendum to ATP and MPL training courses and also to serve as a prerequisite prior to commencing the first type rating course in multi-pilot operations, is an important step towards enhancing a commercial pilot's resilience to the psychological and physiological aspects often associated with upset conditions. It develops the ability of the pilot to cope with unforeseen events.

In support of the new standards, appendix 9 — Training, skill test and proficiency checks for MPL, ATPL, type and class ratings, and proficiency checks for IRs is amended to include UPRT. It now includes go-arounds with all engines operating from various stages during instrument approach (4.2) and also cover other procedures requiring a high workload in a short time frame such as rejected landing with all engines operating from various heights below DH/MDH and after touchdown (4.5).

In line with ICAO, the opinion and the decision mentioned above propose UPRT to proficiency during initial and recurrent training.

Status: Closed – **Category**: Agreement

Safety Recommendation FRAN-2013-042 (BEA)

The BEA recommends that EASA, in cooperation with the major non-European certification authorities, make mandatory the implementation of means to make crews aware of a low speed value and, where necessary, prevent an unusual nose-up trim position from occurring or being maintained.

Reply No. 4 sent on 07/07/2017:

1) Low speed awareness:

Certification Specifications for Large Aeroplanes (CS-25) contains provisions to protect the aircraft against low speed.

The current CS 25.1329(h) (dated December 2007-Amendment 4) requires, when the Flight Guidance System (FGS) is in use (like Autopilot engaged), a means to avoid excursions beyond an acceptable margin from the speed range of the normal flight envelope. Such means can be either an automatic control or guidance from the FGS, or the implementation of an alert to increase flight crew's awareness of a potential airspeed excursion.

AMC N°1 to CS 25.1329 provides guidance on FGS alerting functions. In chapter 9.3 it is reminded that alerting information should follow the provisions of CS 25.1322 (Flight Crew Alerting) and its associated advisory material. In addition, chapter 9.3.1 is dedicated to Alerting for Speed protection:

"To assure crew awareness, an alert should be provided when a sustained speed protection condition is detected. This is in addition to any annunciations associated with mode reversions that occur as a consequence of invoking speed protection (see Section 10.4, Speed Protection). Low speed protection alerting should include both an aural and a visual component. [...]"

In manual flight mode, other means exist to increase flight crew awareness, like flight envelope protection features or stick force gradients. Furthermore, in practice, aeroplanes equipped with a low speed or low energy alerting system provide this functionality not only with the FGS engaged, but also in manual mode.

Therefore the current CS-25 specifications provide adequate protection against airspeed excursions, including low speed situations.

Concerning in-service aeroplanes, further to the delivery of the Avionics System Harmonization Working Group - ASHWG (combined aviation authorities and industry working group) report to the FAA through Aviation Rulemaking Advisory Committee (ARAC), the review of accidents conducted by the ASHWG did not provide enough safety evidence to justify mandating a costly retroactive design change for incorporation of a low speed or low energy alerting system. However further ASHWG discussions have taken place since 03Q2014 with Agency participation, and the Agency continues to monitor relevant in-service experience.

2) Unusual nose-up trim position

Rulemaking task RMT.0647 ('Loss of control or loss of flight path during go-around or other flight phases') has started with the publication of its Terms of Reference and its Group Composition on 06/07/2015 (https://www.easa.europa.eu/document-library/terms-of-reference-and-group-compositions/tor-rmt0647).

A Notice of Proposed Amendment (NPA) 2017-06 was published on 11 May 2017 on the EASA Website:

https://www.easa.europa.eu/document-library/notices-of-proposed-amendment/npa-2017-06

This NPA proposes to amend CS-25 to ensure that:

- the design of large aeroplanes is such that the go-around (G/A) procedure with all engines operating (AEO) can be safely conducted by the flight crew without requiring exceptional piloting skills or alertness. Risk of excessive crew workload and risk of somatogravic illusion must be carefully evaluated, and design mitigation measures must be put in place if those risks are too high; implementing a reduced G/A thrust function is one of the possible solutions which can be used, and it is considered as an acceptable means of compliance with the proposed new specification;
- the design of large aeroplanes provides an adequate longitudinal controllability and authority during G/A and other flight phases (focusing on low speed situations).

The second proposed measure addresses the intent of this safety recommendation related to nose-up trim condition. More specifically, the NPA proposal to upgrade the existing certification specifications and acceptable means of compliance to require:

- for G/A: to demonstrate adequate longitudinal controllability and adequate stall margin during transition from any approved approach and landing configuration to G/A and up to the next flight phase and level-off (All Engine Operating (AEO) and full thrust/power, different combinations of automatisms to be evaluated). For other flight phases, when the aeroplane has an automatic pitch trim function, the stabiliser (or trim tab) travel should be limited before or at stall warning activation to prevent excessive pitch trim such that it is possible to command a prompt pitch down of the aircraft for control recovery.

The next step of RMT.0647 is the publication of a Decision amending CS-25, envisaged 01Q2018.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
F-GXES	PIPER PA42	3NM from Saint Martin Grand case aerodrome	05/05/2012	Accident

Synopsis of the event:

Le pilote décolle à 2 h 39 en piste 12 de l'aérodrome de Saint Martin Grand Case à destination de Fort-de-France. Quelques minutes plus tard à environ 3 NM, l'avion entre en collision avec la surface de la mer, légèrement à droite de l'axe de la piste. Le pilote n'a signalé aucune difficulté et n'a pas émis de message de détresse.

L'examen de l'épave n'a pas mis en évidence de défaillance technique susceptible d'affecter significativement les performances de l'avion. L'absence d'enregistreurs de vol n'a pas permis de préciser les circonstances de l'accident.

Les causes de l'accident n'ont pu être déterminées avec certitude. Cependant, l'état d'astreinte quasi-permanent pour les personnels navigants et l'exploitation en monopilote ont pu contribuer à l'accident.

Le BEA a adressé à l'AESA trois recommandations de sécurité relatives à:

l'obligation d'emport d'enregistreurs de vols à tous les avions exploités en transport aérien commercial;

l'obligation de présence d'un équipage à deux pilotes en vol d'évacuation sanitaire;

la prise en compte des réserves autres qu'à l'aéroport dans la future réglementation relative à la sécurité en matière de limitations de temps de vol applicables aux vols d'évacuation sanitaire.

Dans l'attente de la mise en place de cette nouvelle réglementation, le BEA a adressé à la DGAC une recommandation de sécurité relative aux actions de surveillance de la DGAC, afin qu'elle s'assure que les exploitants veillent à ce que leurs pilotes, lorsqu'ils sont en réserve hors aéroport, soient aptes à entreprendre un vol à tout moment.

Safety Recommendation FRAN-2013-052 (BEA)

[French] - Le BEA recommande que L'AESA prévoie la mise en place en priorité de la réglementation imposant la présence d'un équipage à deux pilotes en vol d'évacuation sanitaire.

Reply No. 3 sent on 14/03/2017:

The Agency conducted a safety review of worldwide single-pilot commercial air transport occurrences during the last 10 years. This includes air ambulance flights.

Instrument Flight Rules (IFR) or night operation are common contributing factors evidenced in the review of occurrences and ORO.FC.200 (c) of Regulation (EU) No 965/2012 issued on 5 October 2012 sets the following specific requirements when operating under such conditions:

- For aeroplanes, the minimum flight crew shall be two pilots for all turbo-propeller aeroplanes with a maximum operational passenger seating configuration (MOPSC) of more than nine and all turbojet aeroplanes.
- For helicopters, the minimum flight crew shall be two pilots for all operations with an MOPSC of more than 19 and for operations under IFR of helicopters with an MOPSC of more than 9.
- When single pilot operation is permitted, additional requirements are added in ORO.FC.202 in terms of training and qualification.

The occurrence review does not show a predominant risk in single-pilot commercial air transport operations, considering that many historical single-pilot occurrence would now require a second crew if those EASA operational rules were applicable.

To be complete, a more specific review of helicopters emergency medical services (HEMS) occurrences was conducted, because it introduces specific risks when selecting the landing site compared to air ambulance flight and the MOPSC is often below 9. This type of operation is covered by a Specific Approval (Part SPA Subpart J) and a minimum crew of 2 pilots at night or one pilot and one HEMS technical crew member under specific conditions is defined (SPA.HEMS.130 (e)). Part-ORO subpart TC defines training requirements for HEMS technical crews.

On this basis, the restrictions and mitigation means applied for single-pilots operations appear coherent with the safety review.

Status: Closed – **Category**: Partial agreement

Registration	Aircraft Type	Location	Date of event	Event Type
TAE STUDY			#Missing#	

Synopsis of the event:

Since 2003, events relating to powerplant malfunctions on aircraft equipped with Thielert engines have frequently been notified to the BEA. By the end of August 2011, 44 had been the subject of a BEA investigation.

In 2005, the BEA recommended to the European Aviation Safety Agency (EASA) that the Thielert TAE 125-01 engine certification be reviewed. This recommendation gave rise to several actions by EASA and Thielert regarding maintenance, operational documentation and training maintenance personnel and in relation to the design of one part. However, although EASA classified its answer as “agreement”, no certification review action was undertaken.

New events have occurred since 2004. Most of these notifications came from flying schools. Not all the events notified required investigation. Nevertheless, the considerable number of notifications bears witness to operators’ specific concerns about these engines. Some training organisations decided in particular to apply usage restrictions (no night flights or IFR in IMC in single-engine aircraft, no solo flights on DA40).

Given the number of notifications, the recurrence of specific malfunctions and the technological novelty of these engines, the BEA decided in 2009 to conduct this study, the aim of which was to establish if a new request for review of the engine certification was justified or not and if safety recommendations were required.

To do this, the BEA invited the following flying schools to take part in the study and to notify events according to predefined criteria. These schools operate numerous aeroplanes equipped with Thielert engines:

- ENAC: Ecole Nationale de l’Aviation Civile (French National Civil Aviation School);
- EPAG: Ecole de Pilotage Amaury de la Grange (French Flight Training Organisation);
- ESMA: Ecole Supérieure des Métiers de l’Aéronautique (French Flight Training Organisation).

This study is based on the investigations conducted by the BEA on malfunctions to Thielert engines during the period under consideration.

Safety Recommendation FRAN-2013-084 (BEA)

The European regulatory definition of in-flight shutdown (AMC 20-6) is not adapted to light aviation. Therefore, comparisons between a reference rate and the different manufacturers' engine shutdown rates seem difficult to establish. Moreover, losses of power that prevent level flight being maintained should systematically be counted, their consequences being similar to those of an engine shutdown.

Consequently, the BEA recommends that:

EASA, in cooperation with FAA, adopt a definition of engine shutdown for aircraft certified in accordance with CS-23.

Reply No. 3 sent on 07/07/2017:

The current regulatory framework for CS-23 small aeroplanes used for private operations requires to report engine in-flight shut down (IFSD) and engine power loss related occurrences to EASA, but there is no obligation to report fleet flight hours of the involved engines or aeroplanes. Therefore EASA cannot determine IFSD rates for all specific engine models of this fleet of aeroplanes, and it is not deemed necessary to create a specific definition of 'engine shut down' for CS-23 aeroplanes.

Nevertheless, some Type Certificate holders (TCH) have established their own systems for collecting flight hours. For TAE 125 engines, statistical figures have been published here:

http://www.continentaldiesel.com/typo3/fileadmin/_centurion/news/newsuploads/149/PR_150414_4.5%20million_EN_final.pdf

The IFSD rate of TAE 125 engines is monitored by EASA. Regular joint continuing airworthiness meetings between aircraft TCH, engine TCH, and EASA have been established to review all engine and engine installation related occurrences, and to define the appropriate corrective actions.

However, for single-engined turbine aeroplanes used in commercial air transport, Commission regulation (EU) 2017/363 issued on 1 March 2017 introduced specific requirements for the approval of operations at night or in instrument meteorological conditions that include an acceptable level of turbine engine reliability achieved in service by the world fleet for the particular airframe-engine combination (see paragraph (a) of SPA.SET-IMC.105 SET-IMC operations approval).

Through ED Decision 2017/004/R, AMC1 SPA.SET-IMC.105(a) has been created and provides more details on the turbine engine reliability data requirements which includes a definition of engine 'loss of power', which itself encompasses engine 'in-flight shut down':

"(a) The operator should obtain the power plant reliability data from the type certificate (TC) holder and/or supplemental type certificate (STC) holder.

(b) The data for the engine-airframe combination should have demonstrated, or be likely to demonstrate, a power loss rate of less than 10 per million flight hours. Power loss in this context is defined as any loss of power, including in-flight shutdown, the cause of which may be traced to faulty engine or engine component design or installation, including design or installation of the fuel ancillary or engine control systems.

(c) The in-service experience with the intended engine-airframe combination should be at least 100 000 h, demonstrating the required level of reliability. If this experience has not been accumulated, then, based on analysis or test, in-service experience with a similar or related type of airframe and turbine engine might be considered by the TC/STC holder to develop an equivalent safety argument in order to demonstrate that the reliability criteria are achievable."

Status: Closed – **Category**: Partial agreement

Safety Recommendation FRAN-2013-085 (BEA)

In France, the majority of events occurred during a flight performed in VMC by day. The pilot was generally able to land in the country or at a nearby aerodrome. However, one accident occurred during a night flight, and other malfunctions may have appeared in IMC, at night or in solo flight, conditions in which the success of an emergency landing is uncertain. Thus the operational consequences of the same powerplant malfunction may vary greatly depending on the flight rules adopted. However, in CS-23, classification of engine failure does not depend on operating conditions.

Consequently, the BEA recommends that:

- EASA define the acceptable occurrence rate for drops in engine power, particularly those that make it impossible to maintain level flight, in order to establish a classification appropriate to operating conditions.

Reply No. 3 sent on 07/07/2017:

The current regulatory framework for CS-23 small aeroplanes requires to report engine in-flight shut down (IFSD) and engine power loss related occurrences to EASA, but there is no obligation to report fleet flight hours of the involved engines or aeroplanes. Therefore EASA cannot determine IFSD rates for all specific engine models of this fleet of aeroplanes, and it is not deemed necessary to define 'the acceptable frequency of occurrences of decrease in power'.

Nevertheless, some Type Certificate holders (TCH) have established their own systems for collecting flight hours. For TAE 125 engines, statistical figures have been published here:

http://www.continentaldiesel.com/typo3/fileadmin/_centurion/news/newsuploads/149/PR_150414_4.5%20million_EN_final.pdf

The IFSD rate of TAE 125 engines is monitored by EASA. Regular joint continuing airworthiness meetings between aircraft TCH, engine TCH, and EASA have been established to review all engine and engine installation related occurrences, and to define the appropriate corrective actions.

However, for single-engined turbine aeroplanes used in commercial air transport, Commission Regulation (EU) 2017/363 issued on 1 March 2017 introduced specific requirements for the approval of operations at night or in instrument meteorological conditions that include an acceptable level of turbine engine reliability achieved in service by the world fleet for the particular airframe-engine combination (see paragraph (a) of SPA.SET-IMC.105 SET-IMC operations approval).

Through ED Decision 2017/004/R, AMC1 SPA.SET-IMC.105(a) has been created and provides more details on the turbine engine reliability data requirements which meet the intent of this safety recommendation:

"(a) The operator should obtain the power plant reliability data from the type certificate (TC) holder and/or supplemental type certificate (STC) holder.

(b) The data for the engine-airframe combination should have demonstrated, or be likely to demonstrate, a power loss rate of less than 10 per million flight hours. Power loss in this context is defined as any loss of power, including in-flight shutdown, the cause of which may be traced to faulty engine or engine component design or installation, including design or installation of the fuel ancillary or engine control systems.

(c) The in-service experience with the intended engine-airframe combination should be at least 100 000 h, demonstrating the required level of reliability. If this experience has not been accumulated, then, based on analysis or test, in-service experience with a similar or related type of airframe and turbine engine might be considered by the TC/STC holder to develop an equivalent safety argument in order to demonstrate that the reliability criteria are achievable."

Status: Closed – **Category**: Partial agreement

Registration	Aircraft Type	Location	Date of event	Event Type
VP-CAZ	RAYTHEON 390	Near Annemasse aerodrome, in the commune of Cranves-Sales	04/03/2014	Accident

Synopsis of the event:

Stall after takeoff in icing conditions, collision with the ground, fire

The pilot and two passengers arrived at Annemasse aerodrome at about 7 h 00 for a private flight of about five minutes towards Geneva airport. The temperature was -2°C and the humidity was 98% with low clouds. The aeroplane had been parked on the parking area of the aerodrome since the previous evening. The taxiing and the takeoff run were nominal. As soon as the main landing gear wheels left the ground, the aeroplane stalled, as a result of the presence of ice on the surface of the wings. The low height reached by the aeroplane did not allow the pilot to exit the stall situation and to avoid the collision with the ground. The pilot and the passenger seated to his right were killed. The female passenger seated at the rear was seriously injured.

The investigation showed that the pilot's insufficient appreciation of the risks associated with ground-ice led him to take off with contamination of the critical airframe surfaces. This may have contributed to the occurrence of 32 accidents recorded since 1989 for which no de-icing of the aeroplane had been undertaken before takeoff.

The investigation also showed that an onboard device for the detection of ice on the ground could have prevented the accident and that Annemasse aerodrome does not have any ground de-icing facilities.

The BEA addressed three safety recommendations to EASA and the DGAC relating to:

- training on the risks associated with takeoff with contaminated wings;
- the installation of ice detection systems;
- the availability of anti-icing/de-icing facilities on aerodromes.

Safety Recommendation FRAN-2014-005 (BEA)

The BEA recommends that EASA, in coordination with national civil aviation authorities, make changes to the training requirements for pilots so as to include periodic reminders on the effects of contaminants such as ice on stall and loss of control on takeoff.

Reply No. 3 sent on 14/03/2017:

Mitigating Loss of Control In-flight (LOC-I) is one of the highest priorities and the Agency has launched several actions to mitigate the risk of icing which is identified as a major LOC-I contributor.

Safety Information Bulletin SIB 2011-29 raised awareness regarding the operation of affected aircraft in cold weather or icing conditions during take-off.

Icing is covered in the initial flight crew training provisions. The instrument rating course includes icing hazards and de-icing operation in its learning objectives. The recurrent skill test for high performance complex aeroplanes covers flight preparation and anti-icing / de-icing systems (Part-FCL Appendix 9 of Commission Regulation (EU) No 1178/2011 related to civil aviation aircrew) but it cannot detail all safety threats. It provides a reference for the flight examiner to review the various tasks of a pilot.

However, in the case of non-commercial operations with complex motor-powered aircraft (NCC), additional requirements apply in terms of a management system for the operator and designation of a pilot-in-command with adequate knowledge of the aerodromes, facilities and procedures to be used (ORO.FC.105 of Commission Regulation (EU) No 965/2012 related to air operations). Part-NCC of air operations regulation contains specific provisions regarding ice and other contaminants (NCC.OP.185 & 190). Detailed guidance on de / anti-icing procedures are provided as well as a reference to the operator's initial and recurrent de-icing and/or anti-icing training programme for crew involved in such operations.

Other safety initiatives such as the Operations Manual template for NCC operations published on the EASA website in August 2016 guide the operator and recall the pilot responsibilities on de-icing / anti-icing. For operators subject to winter operation, it promotes an annual training / familiarization of crews and appropriate operator's personnel to be done by self-study prior the winter period.

In line with the proportionality of the rules, extra requirements apply to flight crew engaged in commercial air transport operation. This includes recurrent training and checking (ORO.FC.230) with an operator proficiency check every six calendar month and line check every 12 calendar month.

For Commercial Air Transport, the Agency is taking benefit of this recurrent training and checking scheme to mandate recurrent flight crew Upset Prevention and Recovery Training (UPRT) (see ED Decision 2015/012/R, published on 04 May 2015). Its related AMC1 ORO.FC.220&230 identifies icing and contamination effects as key component of upset prevention training programme and recurrent training now covers all upset aspects over a period not exceeding 3 years.

In all cases, the Aircraft Flight Manual (AFM) describes the operating limitations and remains the valid reference to operate safely. The involved aircraft AFM reminds to check that the wing leading edge and upper surface are clear of frost or other contaminants. This reference available to the aircrew provides reminders on the effects of contaminants, such as ice, and the applicable procedures. More prescriptive requirements in terms of the management system (see ORO.GEN.200 of the air operations regulation) and recurrent UPRT training for Commercial Air Transports are introduced in line with the proportionality of the rules to the risks of each activity but it is not intended to apply similar provisions to all operations.

Status: Closed – **Category**: Partial agreement

Registration	Aircraft Type	Location	Date of event	Event Type
F-HTAV	CIRRUS SR22	Aix les Milles	11/05/2013	Accident

Synopsis of the event:

The owner of the aeroplane wanted to make a two-day trip to Spain with another person. Not holding a licence himself, he asked a pilot to undertake the flight. On 10 May 2013, the pilot, accompanied by those two passengers, took off from Aix les Milles aerodrome bound for Madrid Cuatro Vientos (Spain) aerodrome. The flight took place without incident.

The following day he took off, accompanied by the same two passengers, at about 13 h 00 to return to Aix les Milles aerodrome. The flight plan planned the first part of the flight in VFR as far as AGENA and continuation of the flight in IFR until Aix les Milles aerodrome.

On the approach to Aix les Milles, following a request by the owner, the pilot called out to the approach controller his intention to reroute to Castellet aerodrome in order to carry out a touch-and-go, before returning to Aix les Milles. Given the wind on the ground at Castellet, he performed an approach followed by a go-around. The pilot was then cleared to perform a visual approach for runway 33 at Aix les Milles aerodrome. The approach was stabilised. The speed was about 90 kt, the aeroplane was in fully extended flap configuration and the auto-pilot was disengaged. The atmosphere was turbulent due to a strong wind in the north-west sector.

During the landing flare, the aeroplane banked about 10° to the left, then returned to a wings horizontal attitude. The left wheel touched the runway and the aeroplane bounced. The pilot started a go-around. At that instant, the air speed was about 60 kt, the stall warning sounded. The pitch increased to 12° and at the same time the aeroplane banked sharply to the left, turned over and then struck the grassy strip located between the runway and the taxiway.

It crossed the taxiway perpendicular to it and came to a halt on its back in front of the hangar at the foot of the control tower. The passengers evacuated the aeroplane before the emergency services arrived.

Safety Recommendation FRAN-2015-007 (BEA)

The investigation showed that the pilot inputs on the flight controls during the go-around were inadequate and that the pilot may have been surprised by the intensity of the p-factor from the Cirrus SR22 engine. A significant number of losses of control in g-around on Cirrus SR20 and SR22 were due to inappropriate pilot inputs on the controls. The manufacturer has identified the need for specific training on the SR22 which specifically takes into account its relatively high engine power. European regulations do not provide for specific training on these aeroplanes.

Consequently the BEA recommends that EASA require specific training linked to aeroplane performance for pilots of the Cirrus SR20 and SR22.

Reply No. 2 sent on 28/04/2017:

According to Part-FCL (Flight Crew Licensing) of Commission Regulation (EU) No 1178/2011, the Cirrus SR22 is in the category of the single engine piston single pilot aircraft (SEP) class rating (See FCL.700). Differences or familiarisation training, according to FCL.710, is not required for exercising the SEP class rating privileges with the Cirrus SR22 if the class rating was acquired for the Cirrus SR20, for example.

The establishment of mandatory pilot training requirements through Operational Suitability Data (OSD), according to Part-21 (Commission Regulation (EU) No 748/2012) is limited to aircraft type ratings. Consequently, OSD does not address training requirements for aircraft within class ratings beyond those already required by Part-FCL.

The operation involved in the accident is covered by the provisions in Part-NCO (Non-Commercial operations with Other than complex motor-powered aircraft) of Commission Regulation (EU) No 965/2012 (the air operations regulation), applicable since 25 August 2016 at the latest.

According to Part-NCO, the Pilot-In-Command (PIC) is required to ensure that all operational procedures and checklists are complied with as referred to in 1.b of Annex IV to Regulation (EC) No 216/2008 (See NCO.GEN.105). It is the PIC's responsibility to familiarise him/herself with the operating procedures under normal, abnormal and emergency conditions and situations as specified in the flight manual associated with the aircraft operated.

Furthermore, according to ARO.GEN.300 in Part-ARO (Authority Requirements for air Operations) of the air operations regulation, the competent authority is required to verify continued compliance with Part-NCO. Such oversight should detect any non-compliances or safety issues, which should be required by the competent authority to be corrected.

Regarding the potential need for specific training linked to aeroplane performance for pilots of the Cirrus SR20 and SR22, the Agency has analysed, together with the Manufacturer and the FAA, the available data on service experience and training material. This analysis confirmed the following:

- the SR20 and SR22 design and operational characteristics do not differ from other Types included in the SEP class and
- the Cirrus basic and advanced trainings, along with their Safety Promotion Programmes are considered to be adequate for this class of aeroplanes without the need of any further mandatory training elements.

Therefore, in line with the "GA Roadmap" concept, the Agency believes that additional mandatory measures against this class of aeroplanes (SEP) will have no significant positive impact on safety while constituting an unreasonable economic burden for Industry and Operators.

Status: Closed – **Category**: Disagreement

Registration	Aircraft Type	Location	Date of event	Event Type
1) F-GHSH 2) BGA4926	1) PIPER PA25 2) SLINGSBY T31	Buno Bonnevaux Airport	05/05/2012	Accident

Synopsis of the event:

Collision between a tug and a glider, on an aerodrome circuit, during an air display

At about 16 h 45, the pilot of the PA25 took off from runway 28 at Buno Bonnevaux aerodrome while towing a glider. Following the release, he began a continuous descent towards the aerodrome in order to land back there. At about 16 h 50, flying over the southern threshold of runway 10, at a height of about 100 metres above some woods, the aeroplane collided with another glider. The latter had taken off from runway 28, with the assistance of a winch, a few minutes earlier.

Safety Recommendation FRAN-2015-057 (BEA)

EASA encourage the development, use and generalisation of interoperable onboard traffic detection systems. This can be achieved through standardisation of the broadcast and exchange formats between the various systems. [Recommendation 2015-057]

Reply No. 2 sent on 28/04/2017:

The European Aviation Safety Plan 2011-2014 already contained first actions on Mid-air collision/Near mid-air collision (MAC/NMAC) by improving the “see and avoid” for general aviation. Among the actions already taken, EASA is facilitating the voluntary installation of electronic conspicuity devices via Standard Changes, as defined in 21.A.90B of Commission Regulation (EU) 748/2012 (refer to CS-SC002a, CS-SC051a in CS-STAN Issue 1 dated 8 July 2015, CS-SC058a in CS-STAN Issue 2 dated 30 March 2017) and installation approvals of this type of devices.

In addition, EASA is in the process of publishing a CS-ETSO for Traffic Awareness Beacon System (TABS). There are currently several technical solutions for general aviation for electronic conspicuity devices with varied strengths and weaknesses. The main issue is the interoperability between all of these solutions.

According to the EASA Annual Safety Review 2016, MACs contributed to 6% of the fatalities in the 2006-2015 period in Non-Commercial operations with aeroplanes. The related fatalities mainly involved loss of control (47%) or controlled flight into terrain (15%). The Agency recognises that the safety barriers of the Visual Flight Rules (VFR), which rely on the “see and avoid” principles, should be reinforced. Cost-efficient electronic conspicuity devices can be one contributor.

The European Plan for Aviation Safety (EPAS) 2016-2020 already addressed the issue under the umbrella of the safety topic “general aviation safety”. The current version of the plan, (EPAS 2017-2021) includes further actions for MAC/NMAC in general aviation, under the strategic safety area “General Aviation - Preventing mid-air collisions”.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
F-HBNI	AIRBUS A320	Bordeaux Airport-France	02/08/2013	Serious incident

Synopsis of the event:

Entrée dans un orage de grêle lors de l’approche, cisaillement de vent lors de l’approche, déclenchement bref de l’alarme de décrochage

En approche sur l’aérodrome de Bordeaux Mérignac, l’équipage d’un Airbus A320 d’Air France traverse un orage de grêle. L’avion est soumis à un important cisaillement de vent. L’assiette de l’avion augmente jusqu’à environ 25° sous pilote automatique et la vitesse descend jusqu’à 109 kt (VLS - 27 kt). L’avion descend au maximum d'environ 200 pieds. L'équipage remet les gaz. L'alarme de décrochage retentit furtivement et la protection « Alpha Floor » se déclenche. L'équipage poursuit l'approche après être sorti de l'orage de grêle.

L'équipage effectuait le troisième et dernier vol de la journée. Une passagère, qui est copilote dans la compagnie, était présente dans le poste de pilotage lors de la totalité du vol. Elle est intervenue dans les échanges de l'équipage pour décider de la trajectoire à suivre.

L'enquête du BEA a conclu que la décision inappropriée du commandant de bord de débuter l'approche, alors qu'une cellule orageuse se trouvait sur la trajectoire d'approche résulte de la rupture progressive du fonctionnement CRM de l'équipage, qui n'a pas su arriver à une décision partagée sur la trajectoire d'arrivée et d'approche. Les interventions spontanées de la troisième personne présente dans le cockpit, et le souvenir d'une rotation que le commandant de bord et le copilote avaient réalisée ensemble trois ans auparavant ont probablement contribué à cette déstructuration du CRM et à l'inefficacité de leur stratégie TEM.

L'absence d'information de vol précise sur la situation météorologique fournie par le contrôleur, la répétition de messages d'une situation météorologique dégagée sur l'aérodrome ont pu contribuer à la sous-estimation des risques liés à la situation météorologique.

Le BEA a émis onze recommandations de sécurité à l'attention de l'AESA et la DGAC sur les thématiques suivantes:

- interférence d'une tierce personne dans le poste de pilotage;
- gestion des menaces et des erreurs;
- évaluation par les exploitants de la performance individuelle des pilotes;
- la formation des équipages;
- entraînement à la détection humaine d'un phénomène de type cisaillement de vent;
- aide à la détection du phénomène de cisaillement de vent;
- information de vol sur les situations météorologiques;
- réglage de l'alarme de décrochage pour les avions protégés en incidence.

Safety Recommendation FRAN-2015-062 (BEA)

[French] - L'AESA définisse les modalités permettant à un exploitant de mettre en oeuvre la formation basée sur les risques telle que précisée dans le doc OACI 9995 de l'OACI. [Recommandation 2015-062]

Reply No. 2 sent on 20/01/2017:

EASA Executive Director (ED) Decision 2015/027/R published on 16 December 2015 enables the implementation of evidence-based training (EBT) according to the principles established in International Civil Aviation Organization (ICAO) Doc 9995 taking into account the European Union regulatory framework.

'Evidence-based training' means training and assessment based on operational data that is characterised by developing and assessing the overall capability of a trainee across a range of core competencies rather than by measuring the performance during individual events or manoeuvres.

The Decision contains new Guidance Material (GM) to support implementation, by operators, of EBT conducted in Flight Simulation Training Devices.

The GM is linked to existing Organisation Requirements for Operators (ORO) sub-paragraph ORO.FC.230 (a);(b);(f) 'Recurrent training and checking' and sub-paragraph ORO.FC.A.245 'Alternative training and qualification programme' (see Commission Regulation (EU) No 965/2012).

While the development of EASA Rulemaking Task RMT.0599 'Evidence-based and competency-based training', launched on 05 February 2016, may further develop the concept, this Decision and the related ICAO guidance already define how an operator can take benefit from EBT.

Status: Closed – **Category**: Agreement

Safety Recommendation FRAN-2015-065 (BEA)

[French] - L'AESA, en coordination avec la FAA, évalue la faisabilité et l'opportunité d'élargir le domaine de disponibilité des alarmes de détection du phénomène de cisaillement de vent. [Recommandation 2015-065]

Reply No. 2 sent on 23/08/2017:

Airborne weather radars with forward looking windshear detection function are certified in compliance with RTCA standard DO-220 or DO-220A (revision A is the last revision dated 17.3.2016) 'Minimum Operational Performance Standards (MOPS) for Airborne Weather Radar with Forward-Looking Windshear Capability'.

These standards are respectively referred to in FAA TSO-C63d and FAA TSO C63e (the current revision).

EASA is in the process of adopting an equivalent ETSO-C63e (see NPA 2017-08 published on 22.6.2017, related to rulemaking task RMT.0457 'Regular update of CS-ETSO').

In the meantime, EASA has been certifying such radars as part of the aeroplane's design accepting the applicants' compliance with DO-220 or DO-220A under CS 25.1301.

The Agency has discussed this safety recommendation with the RTCA Special Committee (SC) 230 (Airborne Weather Detection Systems). This committee of experts is in charge of revising DO-220A.

The FAA is involved in the SC-230 and was therefore also consulted.

The windshear phenomenon is caused by a change of wind speed and/or direction which directly affect the airspeed of the aircraft. This type of event is hazardous at low altitudes where the available performance of the aircraft may not be sufficient to perform a safe go-around.

RTCA DO-220A states that windshear aural and visual textual alerts should be provided from ground level to a minimum of 1200 ft above ground level (AGL), unless inhibited under the following conditions:

Quote:

- Inhibit all new aural and visual textual alerts above 1200 ft AGL.
- At take-off, inhibit all new aural and visual textual alerts late in the take-off roll and re-enable after lift-off. This inhibit region is generally determined by aircraft speed, which should be specified by the manufacturer as appropriate for the intended aircraft installation. The intent of this requirement is to avoid high-speed rejected take-off.
- During final approach, inhibit all new aural and visual textual alerts from 50 feet AGL until touchdown.
- During final approach, provide automatic range scaling to prevent the annunciation of a windshear Warning alert beyond the touchdown zone [...].

Unquote.

The height of 1200 ft was selected for the following reasons:

- The predictive windshear detection system as defined by DO-220A is designed to provide detection and alerts of a particular class of windshear events, specifically microburst induced events,
- The 1200 ft altitude restriction was imposed to maintain validity to the underlying fluid dynamics assumptions on which windshear calculations are designed,
- At altitudes above 1200 ft, the probability of encountering a microburst-induced windshear event is low since the outflow region characteristics of microbursts are only present close to the ground,
- The determination of the range of heights on which a windshear alert has to be triggered is a balance between alerting when required and avoidance of nuisance alerts caused by turbulence.

Extending the altitude range of availability of the predictive windshear alerts would increase the risk of triggering alerts when encountering other atmospheric conditions. This can create confusion for the flight crew, and also potentially generate inappropriate reactions; for instance, at higher altitudes it may not be appropriate to make a missed approach but rather to make an avoidance manoeuvre.

For those reasons, it is considered not to be appropriate to 'extend the domain where windshear detection alarms are available' beyond the existing thresholds provided by RTCA DO-220A.

Status: Closed – **Category**: Disagreement

Registration	Aircraft Type	Location	Date of event	Event Type
HB-JFN	DASSAULT FALCON7X	Kuala Lumpur Airport	24/05/2011	Serious incident

Synopsis of the event:

Pitch trim runaway in normal law, during descent

On 24 May 2011 at 08 h 10, the crew of the Falcon 7X registered HB-JFN took off from Nuremberg (Germany) bound for Kuala Lumpur (Subang Airport) for a repositioning flight. The co-pilot was PF.

During the descent, the autopilot (AP) and auto-throttle were engaged and the calibrated airspeed was 300 kt. At approximately 19 h 55, the PF reduced the rate of descent on approaching the cleared altitude (11,000 ft). He selected a rate of descent of 1,300 ft per minute and activated vertical mode VS [Mode to maintain vertical speed]. A few seconds later, when the aeroplane had passed below 13,000 ft, the horizontal stabilizer THS [Tail Horizontal Stabilizer] went from neutral to maximum nose-up position (12 degrees) in fifteen seconds.

The AP remained engaged for the first eight seconds of THS deployment. The flight control laws counteracted the nose-up movement of the THS by a nose-down action on the elevators, which reached approximately two-thirds of their maximum travel before AP was disconnected. The THS continued its nose-up movement. The aeroplane's pitch attitude and load factor increased. The PF applied maximum nose-down input on the sidestick and placed the throttle levers in Take-Off position. The auto-throttle disconnected. The PF's nose-down input did not stop the nose-up movement of the THS, which reached its limit seven seconds after AP was switched off. The FCS displayed "TRIM LIMIT" on the PDU. Between disconnection of the AP and when the THS reached its stop, the calibrated airspeed dropped from 297 to 220 kt.

The increased pitch attitude during THS runaway was combined with a slight bank to the right and increased altitude. The PF made a leftwards input on the sidestick, causing the aircraft to bank 15 degrees to the left. The pitch attitude reached 25 degrees nose-up. Feeling that his pitch input was ineffective, the PF made a full rightwards input. He explained that he was trying to bank enough to decrease the pitch attitude, increase speed and regain pitch control. During the manoeuvre, the bank angle reached 98 degrees to the right.

Meanwhile, the Captain (PNF) made nose-down inputs and roll inputs contrary to those of the PF. These simultaneous inputs decreased the bank input of the PF and increased the pitch attitude, load factor and angle of attack once again. These simultaneous inputs triggered the "DUAL INPUT" alarm. The PF stated that he therefore asked the PNF to stop making inputs on his sidestick. He also took over priority of the controls by pressing the appropriate push-button on his sidestick for six seconds. The PF maintained the bank angle at 40 to 80 degrees to the right for about twenty seconds. After reaching 42 degrees nose-up, the pitch attitude gradually decreased to 10 degrees. The angle of attack and load factor fell quickly, from 22 to 5 degrees and from 4.5g to between 1.25 and 1.5g respectively. Meanwhile, the calibrated airspeed dropped from 300 kt to 150 kt.

The PF then made leftwards roll inputs until the bank angle was stabilised at about 50 degrees. The THS remained in full nose-up position, and the pitch attitude and calibrated airspeed remained stable for around forty seconds, at 10 degrees nose-up and 200 kt respectively. The PNF stated that he attempted to use the manual pitch trim and reengage the flight controls by pressing the "FCS ENGAGE" push-button on the upper panel.

Noticing no improvement, the PNF made roll inputs on his sidestick, in the opposite direction to those made by the PF, as well as full nose-down inputs. The simultaneous roll inputs of the two pilots gradually brought the bank angle to zero, which caused the pitch angle to increase once again to approximately 30 degrees, and the calibrated airspeed to drop to 125 kt. The crew stated that they heard the "INCREASE SPEED" alarm.

This second dual input phase lasted approximately twelve seconds. The Captain then took over the controls. The attitude began to decrease and the altitude reached a maximum of 22,500 ft. When the attitude reached 5 degrees nose-down, the Captain made nose-up inputs. The attitude increased again and the Captain resumed making full nose-down inputs.

For a reason unknown to the crew, the THS began to move towards a level position, going from twelve degrees to one degree nose-up in fifteen seconds. The aeroplane pitch was once again able to be controlled via inputs on the sidestick. The crew made the decision to continue in manual flight mode. The approach and landing took place with no any further incidents.

2 minutes and 36 seconds passed between the start of THS nose-up movement and its return to balanced position. During this time:

- the load factor reached 4.6g;
- altitude increased from 13,000 to 22,500 ft;

- the calibrated airspeed went from 300 to 125 kts;
- the pitch attitude reached 41 degrees.

Following this serious incident, the Falcon 7X fleet was temporarily grounded. It returned to service on 16 June 2011.

Safety Recommendation FRAN-2016-002 (BEA)

EASA, in coordination with FAA, SAE and EUROCAE, evaluate and propose alternative or additional methods to the FMEA for electronic equipment and software. [Recommendation 2016-002]

Reply No. 2 sent on 28/04/2017:

Currently, the Agency is actively involved with the SAE and in particular the committee A-6 which addresses all aspects of aerospace flight and utility actuation and control systems as well as fluid power systems. This working group has approved in January 2017 a new project 'Failure Modes and Effects Analysis Process for Flight Critical Actuation Electronic Systems and Software' aiming at improving the quality of FMEAs for Flight Critical Actuation Electronic Systems.

The final outcome, the ARP, will provide guidelines for improving the Failure Mode and Effect Analysis process, including alternative or additional methods, for flight critical actuation equipment electronics and software. The Agency intends to work together with the industry in the preparation of the ARP document at the next SAE A-6 meeting planned in April 2017 and the resulting document will be drafted by the end of 2017.

Furthermore, it has to be noted that the overall Safety Assessment Process, as applied to an aircraft, relies on the combination of different assessments: the Aircraft and System Functional Hazard Assessments (AFHA/SFHAs), the Preliminary Aircraft Safety Assessment (PASA), the Preliminary System Safety Assessments (PSSAs), the System Safety Assessments (SSAs), and the Aircraft Safety Assessment (ASA).

These safety assessments are conducted using different safety analysis methods such as Failure Modes and Effects Analyses (FMEAs), Fault Tree Analyses, Common Cause Analyses - including Common Mode Analyses (CMAs), Particular Risk Analyses, and Zonal Safety Analysis. These safety analysis methods complement one another, and combination thereof is key to assess aircraft and system architectures from different perspectives, e.g. top-down approach vs. bottom-up approach, functional view vs. geometrical view, independent failures vs. common cause failures, random failures vs. errors in development, manufacturing, installation, and maintenance.

The industry standard SAE ARP4761 "Guidelines and methods for conducting the safety assessment process on civil airborne systems and equipment", referenced in the AMC 25.1309, is currently being revised under the responsibility of the Working Groups (WG) EUROCAE WG-63 and SAE S-18.

Draft revision A of the SAE ARP4761 improves particularly the CMA appendix, and its role in the safety assessments at each stage of the development process (i.e. PASA, PSSAs, SSAs, ASA). The draft revision A puts emphasis on the identification of independence principles in the aircraft and system architectures, on the generation of the associated independence requirements, and on the validation and implementation verification of these requirements. In that respect, the Agency is confident that the future SAE ARP4761A will contribute to enhance the overall Safety Assessment Process, so that an error in a critical equipment FMEA does not develop into a single failure with potential catastrophic outcomes at aircraft level.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
OE-FKG	PIPER PA31T	Toulouse-Blagnac	28/10/2011	Accident

Synopsis of the event:

Asymmetric thrust, loss of control on final approach, collision with ground, fire

The pilot, accompanied by three passengers who were family members, took off at 16 h 35 from Kassel (Germany) aerodrome for a private flight under IFR to Toulouse-Blagnac. After about three hours of flight, he was cleared for approach and received radar vectoring for the runway 14R ILS. During the last exchange with the controller, as the aeroplane was on final at 900 feet, the pilot stated that he had a problem without specifying what type, as the message was interrupted. Shortly afterwards, radar and radio contact was lost. The wreckage was found close to the threshold of runway 14R.

The pilot and the three passengers were fatally injured.

Safety Recommendation FRAN-2016-007 (BEA)

EASA reinforce the content of training programmes related to complex high performance single-pilot aeroplanes by integrating exercises on management of asymmetrical flight during approaches with a view to a landing. [Recommendation FRAN-2016-007]

Reply No. 2 sent on 23/08/2017:

Mitigating Loss of Control In-flight (LOC-I) is one of the European Aviation Safety Agency's (EASA's) highest priorities, and the Agency has published provisions on flight crew Upset Prevention and Recovery Training (UPRT) with the specific objective to ensure that flight crew acquire the necessary competencies to prevent and recover from developing or developed upsets.

The Agency published Opinion No 06/2017 on "loss of control prevention and recovery training" in the wake of rulemaking task RMT.0581 on 29 June 2017.

This Opinion proposes to introduce mandatory UPRT, testing and checking at various stages:

- advanced UPRT course (new FCL.745.A) as a prerequisite for training courses for single-pilot aeroplanes operated in multi-pilot operation, single-pilot high-performance complex aeroplanes and multi-pilot aeroplanes (amendments to FCL.720.A);
- Inclusion of UPRT elements considering the specificities of the particular class or type during the relevant class or type rating training course (amendments to FCL.725.A);
- Amendments to Appendix 9, paragraphs 5 and 6 in Annex I (Part-FCL) of Commission Regulation (EU) No 1178/2011 to include upset prevention and recovery exercises into training courses, skill test and proficiency checks related to single-pilot aeroplanes operated in multi-pilot operations, single-pilot high-performance complex aeroplanes and multi-pilot type rating training courses;

In line with the safety recommendation, an exercise in Part-FCL Appendix 9 for the skill test in multi-pilot aeroplanes and single-pilot high-performance complex aeroplanes has been inserted (exercise 3.8.3.5), requiring a manually flown approach, with one engine simulated inoperative, during final approach until touchdown or through the complete missed approach procedure. This exercise aims at developing competence in managing asymmetrical situations and familiarise pilots with the type-specific characteristics of such an event.

Status: Closed – **Category**: Agreement

Registration	Aircraft Type	Location	Date of event	Event Type
D-AIPX	AIRBUS A320	Prads-Haute-Bléone	24/03/2015	Accident

Synopsis of the event:

The co-pilot had been flying for Germanwings since June 2014 and was the holder a class 1 medical certificate that was first issued in April 2008 and had been revalidated or renewed every year. Since July 2009, this medical certificate had contained a waiver because of a severe depressive episode without psychotic symptoms that had lasted from August 2008 until July 2009. This waiver stated that it would become invalid if there was a relapse into depression.

In December 2014, approximately five months after the last revalidation of his class 1 medical certificate, the co-pilot started to show symptoms that could be consistent with a psychotic depressive episode. He consulted several doctors, including a psychiatrist on at least two occasions, who prescribed anti-depressant medication. The co-pilot did not contact any Aero-Medical Examiners (AME) between the beginning of his decrease in medical fitness in December 2014 and the day of the accident.

In February 2015, a private physician diagnosed a psychosomatic disorder and an anxiety disorder and referred the co-pilot to a psychotherapist and psychiatrist. On 10 March 2015, the same physician diagnosed a possible psychosis and recommended psychiatric hospital treatment. A psychiatrist prescribed anti depressant and sleeping aid medication in February and March 2015. Neither of those health care providers informed any aviation authority, nor any other authority about the co-pilot's mental state. Several sick leave certificates were issued by these physicians, but not all of them were forwarded to Germanwings.

No action could have been taken by the authorities and/or his employer to prevent him from flying on the day of the accident, because they were informed by neither the co-pilot himself, nor by anybody else, such as a physician, a colleague, or family member.

In the cruise phase of the accident flight, the co-pilot waited until he was alone in the cockpit. He then intentionally modified the autopilot settings to order the aeroplane to descend. He kept the cockpit door locked during the descent, despite requests for access made via the keypad and the cabin interphone. He did not respond to the calls from the civil or military air traffic controllers, nor to knocks on the door. Security requirements that led to cockpit doors designed to resist forcible intrusion by unauthorized persons made it impossible to enter the flight compartment before the aircraft impacted the terrain in the French Alps.

The BEA investigation concluded that the process for medical certification of pilots, in particular self-reporting in case of decrease in medical fitness between two periodic medical evaluations, did not succeed in preventing the co-pilot, who was experiencing mental disorder with psychotic symptoms, from exercising the privilege of his licence.

The following factors may have contributed to the failure of this principle:

- the co-pilot's probable fear of losing his right to fly as a professional pilot if he had reported his decrease in medical fitness to an AME;
- the potential financial consequences generated by the lack of specific insurance covering the risks of loss of income in case of unfitness to fly;

- the lack of clear guidelines in German regulations on when a threat to public safety outweighs the requirements of medical confidentiality.

The BEA has addressed eleven safety recommendations to the WHO, IATA, the European Commission, EASA, BMVI and BÄK relating to:

- medical evaluation of pilots with mental health issues;
- routine analysis of in-flight incapacitation;
- mitigation of the consequences of loss of licence;
- anti-depressant medication and flying status;
- balance between medical confidentiality and public safety;
- promotion of pilot support programmes.

Safety Recommendation FRAN-2016-011 (BEA)

EASA require that when a class 1 medical certificate is issued to an applicant with a history of psychological/psychiatric trouble of any sort, conditions for the follow-up of his/her fitness to fly be defined. This may include restrictions on the duration of the certificate or other operational limitations and the need for a specific psychiatric evaluation for subsequent revalidations or renewals. [Recommendation FRAN-2016-011]

Reply No. 2 sent on 14/03/2017:

An EASA-led task force was established on 06 May 2015 to examine the preliminary findings of the technical investigation by the French Bureau d'Enquêtes et d'Analyses, and to assess the adequacy of the current European air safety regulations.

Six recommendations were proposed in the resulting task force report which was published on 17 July 2015. EASA published an action plan on 07 October 2015 to implement these recommendations.

Annex IV Part-MED and Annex VI Part-ARA (Authority Requirements for Aircrew) of Commission Regulation (EU) No 1178/2011 and the associated Executive Director Decisions contain provisions which are intended to ensure that suitable conditions/limitations are imposed if a class 1 medical certificate is issued to an applicant with a history of psychological/psychiatric trouble of any sort [see MED.B.001, MED.B.055 and ARA.MED.125 and the related Acceptable Means of Compliance (AMC) and Guidance Material (GM)].

Nevertheless, EASA launched rulemaking Task RMT.0700 which delivered Opinion 09/2016 on 15 August 2016. This opinion updates Part-MED and improves the medical follow-up by introducing new requirements:

- to strengthen class 1 medical examination for applicants for and holders of certificates by comprehensive mental health assessment as well as improved follow-up in case of medical history of psychiatric conditions. This includes the introduction of a limitation for a specific regular medical examination for revalidation or renewal for applicants with a history of a psychiatric condition; and
- to increase the quality of the aero-medical examinations and assessments by improving the training, oversight and competency assessment of the AMEs.

Status: Closed – **Category**: Agreement

Safety Recommendation FRAN-2016-012 (BEA)

EASA include in the European Plan for Aviation Safety an action for the EU Member States to perform a routine analysis of in-flight incapacitation, with particular reference but not limited to psychological or psychiatric issues, to help with continuous re-evaluation of the medical assessment criteria, to improve the expression of risk of in-flight incapacitation in numerical terms and to encourage data collection to validate the effectiveness of these criteria. [Recommendation FRAN-2016-012]

Reply No. 2 sent on 14/03/2017:

Regulation (EU) No 376/2014 on the reporting, analysis and follow-up of occurrences in civil aviation, requires crew incapacitation occurrences related to the operation of the aircraft to be reported when these occurrences may represent a significant risk to aviation safety.

The associated Commission Implementing Regulation (EU) No 2015/1018 requires reporting by aircrew of incapacitation of any member of the flight or cabin crew that results in the reduction below the minimum certified crew complement.

Analysis of accident and incident data is systematically performed by the European Aviation Safety Agency (EASA) and also by the Network of Analysts (NoA) as required in accordance with their role under Regulation (EU) No 376/2014, to support the continual development and monitoring of Safety Risk Portfolios, which in turn supports the development of the European Plan for Aviation Safety (EPAS).

The Annual Safety Review 2014 introduced the EASA Safety Risk Portfolio for fixed wing Commercial Air Transport which identifies crew impairment as a contributory safety issue. Consequently, EASA performed an analysis of crew impairment which identified mental illness, gastrointestinal illnesses and fatigue as main hazards. The Agency decided to include in its safety performance framework the annual in-flight incapacitation rates to facilitate a uniform monitoring of incapacitation occurrences across the EASA Member States.

In addition, the anticipated or perceived consequences of reporting occurrences related to psychological or psychiatric issues can also deter full reporting. An EASA-led task force examined the findings of the technical investigation by the French Bureau d'Enquêtes et d'Analyses and published its recommendations on 17 July 2015 followed by an action plan on 07 October 2015.

As part of this action plan, EASA decided to overcome the challenge of such reporting by launching Rulemaking Task RMT.0700 which delivered Opinion 14/2016 on 09 December 2016. This opinion proposes changes to Commission Regulation (EU) No 965/2012 on air operations to carry out a psychological assessment of the flight crew before commencing line flying, and ensure access to a flight crew support programme.

It further proposes to establish the principles governing a support programme (draft Acceptable Means of Compliance and Guidance Material to new CAT.GEN.MPA.215) to ensure that pilots have access to peer support groups to report and discuss personal and mental health issues. It provides the assurance that information will be kept in-confidence, and that pilots will be supported and helped with the aim of allowing them to return to flying duties without jeopardising flight safety. Such support systems will also deliver aggregated statistical data for purposes of safety management, albeit whilst respecting confidentiality issues.

Status: Closed – **Category**: Agreement

Safety Recommendation FRAN-2016-013 (BEA)

EASA, in coordination with the Network of Analysts, perform routine analysis of in-flight incapacitation, with particular reference but not limited to psychological or psychiatric issues, to help with continuous re-evaluation of the medical assessment criteria, to improve the expression of risk of in-flight incapacitation in numerical terms and to encourage data collection to validate the effectiveness of these criteria. [Recommendation FRAN-2016-013]

Reply No. 2 sent on 14/03/2017:

Regulation (EU) No 376/2014 on the reporting, analysis and follow-up of occurrences in civil aviation, requires crew incapacitation occurrences related to the operation of the aircraft to be reported when these occurrences may represent a significant risk to aviation safety.

The associated Commission Implementing Regulation (EU) No 2015/1018 requires reporting by aircrew of incapacitation of any member of the flight or cabin crew that results in the reduction below the minimum certified crew complement.

Analysis of accident and incident data is systematically performed by the European Aviation Safety Agency (EASA) and also by the Network of Analysts (NoA) as required in accordance with their role under Regulation (EU) No 376/2014, to support the continual development and monitoring of Safety Risk Portfolios, which in turn supports the development of the European Plan for Aviation Safety (EPAS).

The Annual Safety Review 2014 introduced the EASA Safety Risk Portfolio for fixed wing Commercial Air Transport which identifies crew impairment as a contributory safety issue. Consequently, EASA performed an analysis of crew impairment which identified mental illness, gastrointestinal illnesses and fatigue as main hazards. The Agency decided to include in its safety performance framework the annual in-flight incapacitation rates to facilitate a uniform monitoring of incapacitation occurrences across the EASA Member States.

In addition, the anticipated or perceived consequences of reporting occurrences related to psychological or psychiatric issues can also deter full reporting. An EASA-led task force examined the findings of the technical investigation by the French Bureau d'Enquêtes et d'Analyses and published its recommendations on 17 July 2015 followed by an action plan on 07 October 2015.

As part of this action plan, EASA decided to overcome the challenge of such reporting by launching Rulemaking Task RMT.0700 which delivered Opinion 14/2016 on 09 December 2016. This opinion proposes changes to Commission Regulation (EU) No 965/2012 on air operations to carry out a psychological assessment of the flight crew before commencing line flying, and ensure access to a flight crew support programme.

It further proposes to establish the principles governing a support programme (draft Acceptable Means of Compliance and Guidance Material to new CAT.GEN.MPA.215) to ensure that pilots have access to peer support groups to report and discuss personal and mental health issues. It provides the assurance that information will be kept in-confidence, and that pilots will be supported and helped with the aim of allowing them to return to flying duties without jeopardising flight safety. Such support systems will also deliver aggregated statistical data for purposes of safety management, albeit whilst respecting confidentiality issues.

Status: Closed – **Category**: Agreement

Safety Recommendation FRAN-2016-014 (BEA)

EASA ensure that European operators include in their Management Systems measures to mitigate socio-economic risks related to a loss of licence by one of their pilots for medical reasons. [Recommendation FRAN-2016-014]

Reply No. 2 sent on 14/03/2017:

The anticipated or perceived consequences of reporting psychological or psychiatric issues can deter full reporting in case of a decrease in medical fitness of operating crew. An EASA-led task force examined the findings of the technical investigation by the French Bureau d'Enquêtes et d'Analyses and published its recommendations on 17 July 2015 followed by an action plan on 07 October 2015.

As part of this action plan, EASA decided to overcome the challenge of such reporting by launching Rulemaking Task RMT.0700 which delivered Opinion 14/2016 on 09 December 2016. This opinion proposes changes to Commission Regulation (EU) No 965/2012 on air operations to ensure access to a flight crew support programme.

The principles governing a support programme should enable self-declaration in case of a decrease in medical fitness and, if appropriate, allow the crew member to receive temporary relief from flight duties, and to be referred for professional advice. To effectively and efficiently foster self-declaration, the support system should ensure that risks related to fear of loss of licence are properly mitigated.

Such support systems will also deliver aggregated statistical data for purposes of safety management, albeit whilst respecting confidentiality issues.

Status: Closed – **Category**: Agreement

Safety Recommendation FRAN-2016-021 (BEA)

EASA ensure that European operators promote the implementation of peer support groups to provide a process for pilots, their families and peers to report and discuss personal and mental health issues, with the assurance that information will be kept in-confidence in a just-culture work environment, and that pilots will be supported as well as guided with the aim of providing them with help, ensuring flight safety and allowing them to return to flying duties, where applicable. [Recommendation FRAN-2016-021]

Reply No. 2 sent on 14/03/2017:

The anticipated or perceived consequences of reporting psychological or psychiatric issues can deter full reporting of cases of a decrease in medical fitness of operating crew. An EASA-led task force examined the findings of the technical investigation by the French Bureau d'Enquêtes et d'Analyses and published its recommendations on 17 July 2015 followed by an action plan on 07 October 2015.

As part of this action plan, EASA decided to overcome the challenge of such reporting by launching Rule-making Task RMT.0700 which delivered Opinion 14/2016 on 09 December 2016. This opinion proposes changes to ensure access to a flight crew support programme.

It further proposes to establish the principles governing a support programme (draft Acceptable Means of Compliance and Guidance Material to new CAT.GEN.MPA.215) to ensure that pilots have access to peer support groups to report and discuss personal and mental health issues. It provides the assurance that information will be kept in-confidence, and that pilots will be supported and helped with the aim of allowing them to return to flying duties without jeopardising flight safety.

Status: Closed – **Category**: Partial agreement

Registration	Aircraft Type	Location	Date of event	Event Type
F-GXEC	TECNAM P2002	Andermos-Les-Bains Aerodorome	26/10/2013	Accident

Synopsis of the event:

Failure of a rudder control component, runway excursion during landing, coming to a standstill in a ditch

The aeroplane landed shortly beyond the displaced threshold on unpaved runway 13, rolled about 100 metres and exited the runway to the right. After crossing the taxiway, it came to rest in the adjacent ditch.

Safety Recommendation FRAN-2016-038 (BEA)

The BEA recommends that EASA ensure that the improvements made in production are effective and places an obligation on the Tecnam P 2002 manufacturer to establish means to detect cracks on aeroplanes in service that are more reliable than those mentioned in the two Service Bulletins relating to rudder pedal linkage inspection. [Recommendation 2016-038]

Reply No. 2 sent on 02/06/2017:

Regarding the improvement to the production process of the part in subject (Rudder pedal linkage to the Nose Landing Gear (NLG)), the Italian Authority, ENAC (Ente Nazionale Aviazione Civile), in charge of the manufacturing oversight, has investigated the issue together with the type certificate holder (TCH) Tecnam. The TCH has concluded that, considering also the criticality of the failure of the linkage, the manufacturing process and the corresponding quality inspections are adequate and no further action is necessary. ENAC has agreed to such conclusion in their response to BEA Safety Recommendation FRAN-2016-037 (Ref. FACTOR 01/2017). EASA acknowledges such response and has no further comment regarding improvements in the manufacturing process.

Regarding the inspection of the rudder pedal linkage on the aeroplanes in service, EASA has investigated with the TCH the effectiveness of the Service Bulletin SB-018 CS (applicable to the certified version of the P2002 type only) and has concluded that the inspection method is adequate. Such conclusion keeps into account also the severity of the linkage failure (impairment of the steering capability of the NLG on ground only, with no impact on the rudder control during flight) and the service history of the type.

Regarding the SB-017 UL (applicable only to P2002 serial numbers classified as Annex II according to Regulation (EC) No 216/2008), EASA has requested Tecnam to inform the National Aviation Authorities of the State of Registry about the occurrence and about the actions taken on EASA certified type design.

Status: Closed – **Category**: Partial agreement

Registration	Aircraft Type	Location	Date of event	Event Type
N129AG	SOCATA TBM700	near Meaux	06/08/2014	Accident

Synopsis of the event:

The pilot, accompanied by four passengers took off from Cannes-Mandelieu aerodrome (France) at about 10 h 40 min bound for Courtrai aerodrome in Belgium, under an IFR flight plan. Cruise was performed at FL240 in a thick cloud layer. After about 1 h 40 min of flight, the aeroplane dived suddenly in a right turn, down to FL149. During this descent, the speed increased significantly and the overspeed warning (VMO warning) was triggered. About forty-five seconds after the beginning of the dive, the aeroplane climbed back up, reaching a climb rate of over 10,000 ft/min. The speed dropped until a stall at around FL201, while the aeroplane was still in IMC. The aeroplane then went into a spin, which flattened out during the descent. When the aeroplane came out of the clouds at an altitude between 1,000 and 2,000 ft, in a flat spin, the height was insufficient to allow the pilot to take the necessary actions to pull out of the spin and regain control of the aeroplane.

The difficulty in identifying the spin and applying the appropriate recovery inputs, when there were no visual references, made it impossible for the pilot to regain control of the aeroplane and to avoid the collision with the ground.

In the absence of flight recorders, the investigation was unable to establish with any certainty the circumstances of the accident. Eight safety recommendations have already been issued by European safety investigation authorities aimed at introducing installation of recorders on light aircraft. In response, EASA studied this subject through a regulatory task. The BEA thus addressed two additional safety recommendations to EASA to include the case of this accident in the evaluation of the regulatory task under way and to install flight recorders on aeroplanes classified as “high performance”.

Safety Recommendation FRAN-2016-045 (BEA)

Consequently the BEA recommends that:

EASA add this accident to the TBM700 registered N129AG on 6 August 2014 at Saint-Jean-les-Deux-Jumeaux in the terms of reference for regulatory task RMT.0271.

Reply No. 2 sent on 28/04/2017:

The Agency has included this safety recommendation in the Notice of Proposed Amendment NPA 2017-03, published on 03 April 2017, from rulemaking task RMT.0271 'In-flight recording for light aircraft'.

Status: Closed – **Category**: Agreement

Safety Recommendation FRAN-2016-046 (BEA)

EASA require or promote the installation of on-board recorders on aeroplanes categorised as high performance aircraft (HPA), in accordance with the type of aircraft operation.

Reply No. 2 sent on 28/04/2017:

The Agency published, on 03 April 2017, Notice of Proposed Amendment NPA 2017-03 under rulemaking task RMT.0271 'In-flight recording for light aircraft'.

The NPA includes a proposal to mandate the carriage of lightweight flight recorders for turbine-engined aircraft with a Maximum Certified Take-Off Mass (MCTOM) greater than or equal to 2 250 kg, and for aeroplanes with a Maximum Operational Passenger Seating Configuration (MOPSC) of more than 9, when the aircraft is newly manufactured, is commercially operated (commercial air transport and commercial specialised operations), and is not currently required to carry a flight data recorder. This includes the Socata TBM 700, for example.

The outcome of the impact assessment is that voluntary installation (through safety promotion channels) of in-flight recording systems is the most appropriate way forward for all other cases. The rationale is based on the principles of proportionality for general aviation in line with the EASA General Aviation Roadmap.

The next RMT.0271 deliverable, an EASA Opinion, is planned to be published in 2018. Pending adoption of the Opinion and publication of the related amending regulation to Commission Regulation (EU) No 965/2012, an Executive Director's Decision containing the associated Acceptable Means of Compliance and Guidance Material will be published.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
1) F-BXIU 2) G-DANT	1) Reims Aviation F172 2) COMMANDER 114	St. Martin de Brethencourt	08/09/2009	Accident

Synopsis of the event:

Déroulement des vols

Le pilote du F 172 immatriculé F-BXIU décolle de l'aérodrome de Toussus-le-Noble à 12 h 15 pour un vol local en instruction. Lors de ce vol de début de formation, l'instructeur et l'élève effectuent divers exercices de maniabilité, à altitude sensiblement constante. Ils ne sont pas en contact avec un organisme de la circulation aérienne au moment de l'accident. Le code transpondeur affiché est 7000 avec le mode C.

Le pilote du Commander 114 immatriculé G-DANT décolle de l'aérodrome de Montbéliard à destination de l'aérodrome de Lognes où il atterrit en milieu de journée. Un passager le rejoint et, après un repas rapide, ils décollent à 12 h 12 à destination de Dinard. Le pilote se dirige vers le sud en direction de Melun puis s'établit sur une trajectoire rectiligne au cap 260 en direction de Chartres, à une vitesse sensiblement constante de 100 kt et à une altitude stable de 1 500 pieds QNH. Le pilote est en contact avec le CIV Paris Info avec le code 7010 affiché au transpondeur (mode C en panne).

A 12 h 40, les deux avions entrent en collision en vol au dessus de la commune de Saint-Martin-de-Bréthencourt:

- le F 172 perd une partie de l'aile droite, heurte le sol à quelques centaines de mètres du lieu de la collision en vol et prend feu;
- le pilote du Commander 114 conserve le contrôle de son avion, se déclare en détresse sur la fréquence et annonce avoir heurté « un ULM ou quelque chose comme ça ». Il atterrit dans un champ situé sur la commune de Boinville-le-Gaillard, à environ trois kilomètres du lieu de la collision en vol.

Causes de l'accident

L'accident est dû à une absence de détection réciproque de la part des pilotes.

Ont contribué à l'accident:

- la configuration à aile haute du F 172 en sortie de virage à droite et à aile basse du Commander 114 en croisière;
- la fausse impression de sécurité du pilote du Commander 114 qui pensait recevoir une information de vol sur tout trafic potentiellement conflictuel de la part du CIV Paris Info alors que les dispositions réglementaires applicables à un CIV ne le prévoient pas.

La position du soleil dans le champ de vision du pilote du Commander 114 a pu contribuer à l'accident.

Safety Recommendation FRAN-2016-100 (BEA)

[French] - En conséquence le BEA renouvelle sa recommandation auprès de l'AESA afin d'accélérer l'évaluation des différents systèmes d'aide à la détection de trafics existants et d'assurer la promotion de leur déploiement dans le domaine de l'aviation générale.

Reply No. 2 sent on 28/04/2017:

The European Aviation Safety Plan 2011-2014 already contained first actions on Mid-air collision/Near mid-air collision (MAC/NMAC) by improving the “see and avoid” for general aviation. Among the actions already taken, EASA is facilitating the voluntary installation of electronic conspicuity devices via Standard Changes, as defined in 21.A.90B of Commission Regulation (EU) 748/2012 (refer to CS-SC002a, CS-SC051a in CS-STAN Issue 1 dated 8 July 2015, CS-SC058a in CS-STAN Issue 2 dated 30 March 2017) and installation approvals of this type of devices.

In addition, EASA is in the process of publishing a CS-ETSO for Traffic Awareness Beacon System (TABS). There are currently several technical solutions for general aviation for electronic conspicuity devices with varied strengths and weaknesses. The main issue is the interoperability between all of these solutions.

According to the EASA Annual Safety Review 2016, MACs contributed to 6% of the fatalities in the 2006-2015 period in Non-Commercial operations with aeroplanes. The related fatalities mainly involved loss of control (47%) or controlled flight into terrain (15%). The Agency recognises that the safety barriers of the Visual Flight Rules (VFR), which rely on the “see and avoid” principles, should be reinforced. Cost-efficient electronic conspicuity devices can be one contributor.

The European Plan for Aviation Safety (EPAS) 2016-2020 already addressed the issue under the umbrella of the safety topic “general aviation safety”. The current version of the plan, (EPAS 2017-2021) includes further actions for MAC/NMAC in general aviation, under the strategic safety area “General Aviation - Preventing mid-air collisions”.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
F-HKCR	CIRRUS SR22	Salon de Provence	07/04/2015	Accident

Synopsis of the event:

Le 7 avril 2015, une mission de liaison est effectuée avec un Cirrus SR 22. Pendant la phase de décollage depuis le terrain de Salon de Provence, le siège recule violemment ce qui conduit à une perte de contrôle de l’appareil.

Celui-ci impacte la piste et est détruit. Le pilote et les deux passagers sont indemnes.

Safety Recommendation FRAN-2016-991 (BEAD-Air)

[French] - Le bureau enquêtes accidents defense air (BEAD) recommande a Cirrus en relation avec l’agence européenne de la sécurité aérienne (AESA) d’étudier la possibilité de mise en place d’un système de sécurité (mécanique, lumineux on sonore,...) permettant de s’assurer du bon verrouillage.

Reply No. 2 sent on 14/03/2017:

EASA has investigated with Cirrus and FAA (Federal Aviation Administration), primary Certification Authority for the aeroplane, and concluded that there is not a safety issue with the design and/or the installation of the seat when the aircraft inspection and maintenance instructions in the existing AMM (Aircraft Maintenance Manual) are complied with. This conclusion is based on the review of the AMM procedures and aircraft service history. In addition, the Pilot Operating Handbook requires the flight crew to verify the seat position and security prior to take-off. This is considered sufficient to ensure a proper seat locking.

Moreover, on the basis of the demonstrated strong safety record (of models SR20, SR22 and SR22T), Cirrus does not consider adding further mechanical, light or sound devices, since such devices will only add complexity that may negatively impact safety.

Status: Closed – **Category**: Disagreement

Registration	Aircraft Type	Location	Date of event	Event Type
F-HCIC	CESSNA 525	10 NM au NE Paris-Orly aerodrome climbing through FL 180	22/07/2013	Serious incident

Synopsis of the event:

L'équipage décolle à 05 h 40 de l'aérodrome de Paris Le Bourget à destination de l'aérodrome de Lannion pour un vol de mise en place. À 05 h 47, en contact avec le secteur départ du CRNA/Nord (CRNA/N), il est autorisé à monter vers le FL 240 en direction de KOKOS. Le copilote est PF et le pilotage est effectué en manuel. À partir de 05 h 47 min 37 s, la pression d'huile du moteur gauche commence à fluctuer. L'examen réalisé par le constructeur a mis en évidence la rupture du palier intermédiaire n° 2 du moteur gauche (moteur 1). Les conditions météorologiques sont CAVOK à Orly.

Alors qu'ils passent le FL 180 à 05 h 47 min 55 s, les deux membres d'équipage sentent une forte odeur de brûlé. En quelques secondes, une fumée opaque envahit le poste de pilotage par l'arrière. Le Commandant de bord (CdB) prend les commandes et donne l'ordre de mettre les masques. Ce faisant, il perd ses lunettes de vue et son casque radio avec lequel il communiquait. Il n'arrive pas à retrouver ses lunettes en raison de la densité de la fumée et prend alors ses lunettes de secours. Les deux pilotes ne mettent pas leurs lunettes de protection. Le CdB ramène les deux manettes de poussée au ralenti à 05 h 48 min 19 s. Six secondes plus tard, l'alarme sonore « Left engine oil pressure » retentit. Le CdB entame immédiatement une descente d'urgence et l'aéronef prend progressivement une assiette à piquer de 15°. La température d'huile du moteur gauche augmente à partir de 05 h 48 min 43 s. Pendant ce temps, le copilote informe le contrôleur de la descente d'urgence puis annonce une phase d'urgence PAN PAN. Le copilote pointe ensuite le cadran du moteur 1. Le contrôleur du CRNA/N accuse réception de la descente mais ne reçoit pas le message PAN PAN, la fréquence étant occupée par un autre équipage à cet instant. Le contrôleur et son coordinateur assurent alors la séparation du F-HCIC avec un trafic conflictuel au départ de l'aéroport d'Orly en direction de l'ouest.

À partir de 05 h 49 min 09 s, le CdB procède à l'arrêt du moteur gauche, sans l'annoncer. Il place dans un premier temps la manette de poussée sur OFF. L'alarme TCAS « Trafic Advisory » retentit à 05 h 49 min 12 s. Le CdB arrête la génératrice associée au moteur gauche à 05 h 49 min 29 s. Environ quinze secondes plus tard, n'ayant pas reçu de réponse à son message PAN PAN, le copilote passe un message de détresse MAYDAY et demande un guidage radar pour effectuer une approche ILS piste 07 au Bourget. Le contrôleur accepte la demande.

À partir de 05 h 49 min 48 s, l'alarme survitesse retentit pendant près d'1 minute 30 s en concomitance avec l'alarme «left engine oil pressure». L'assiette longitudinale varie entre - 13° et - 6° à la suite d'une action à cabrer du copilote. Celui-ci n'annonce pas son action sur les commandes. La vitesse varie entre 295 kt et 215 kt et la vitesse verticale entre - 8 000 ft/min et - 1 500 ft/min.

Le CdB ne répond pas au copilote lorsque celui-ci lui signale à plusieurs reprises une survitesse en criant «vitesse». Le CdB indiquera aux enquêteurs qu'il se préoccupait en priorité de descendre le plus vite possible. L'avion tourne à gauche. Le CdB passe le sélecteur d'air en position FRESH AIR. Selon les deux membres d'équipages, les fumées dans le poste sont toujours denses et ne se dissipent pas. Le CdB voit moins bien les instruments de bord que le copilote.

À 05 h 50 min 20 s, le contrôleur demande à l'équipage s'il peut changer de fréquence.

Cette communication n'est pas entendue car elle est masquée en raison d'un appui sur l'alternat du CdB qui tente de passer un message MAYDAY. Le contrôleur radariste en conclut que l'équipage n'est plus en mesure de changer de fréquence.

Il le garde alors en fréquence et un contrôleur organique de la position coordonne par téléphone les clairances avec les contrôleurs d'approche de Roissy en charge de l'approche du Bourget et de l'espace aérien où se situe maintenant l'avion. Peu après, la position de contrôle est renforcée par une troisième personne qui s'occupe des coordinations avec Roissy. Ces coordinations génèrent des échanges continus entre contrôleurs au niveau de la position.

À 05 h 50 min 26 s, l'avion passe l'altitude de 9 384 ft en descente avec un vario moyen de 3 000 ft/min. Le contrôle guide l'avion au cap 290. Constatant que cette consigne n'est pas prise en compte, le copilote hurle à six reprises « cap deux!neuf!zéro!». L'avion se stabilise au cap 030 et se dirige alors vers la ville de Paris.

À 05 h 50 min 58 s, les aérofreins sont sortis pendant 1 min 19 s. La vitesse passe de 286 kt à 225 kt.

L'avion entre dans la zone interdite P23 à 05 h 51 min 24 s à l'altitude de 5 275 ft et continue de descendre. À 05 h 51 min 25 s, la température d'huile du moteur gauche atteint un maximum de 131 °C alors que celle du moteur droit reste stable à 71 °C. L'équipage vire ensuite vers la gauche à 05 h 51 min 48 s. Dix secondes plus tard, le copilote reçoit une clairance de descente à 3 000 ft qu'il collationne en indiquant que l'avion se situe à une altitude de 2 800 ft. L'avion est alors au cap 270°, et toujours dans la zone interdite. Le CdB indique que la fumée commence à se dissiper. Les communications au sein de l'équipage, qui étaient quasiment inexistantes depuis l'apparition de la fumée, reprennent. Le CdB n'a pas remis son casque.

Un contrôleur de Roissy détecte que l'avion est trop bas. Cette information est transmise in fine au contrôleur du CRNA/N en contact avec l'avion. Celui-ci annonce à l'équipage qu'il est trop bas. L'avion sort de la zone interdite de Paris. Le CdB réduit le taux de descente et ordonne au copilote d'indiquer qu'ils ont le feu à bord, ce qui est réalisé par le copilote peu de temps après. Les contrôleurs donnent ensuite un cap radar 040 à l'aéronef. L'avion stoppe sa descente à 05 h 52 min 46 s à l'altitude de 2 000 ft.

La fumée se dissipe peu à peu bien qu'une odeur irritante reste présente. Après avoir été guidé radar, l'équipage est autorisé ensuite à atterrir en piste 07 au Bourget.

Le CdB passe sous le plan afin de pouvoir faire un arrondi doux. Des alarmes GPWS « Glideslope » se déclenchent à partir de 05 h 56 min 53 s.

Le toucher des roues a lieu à 05 h 57 min 09 s. Les pompiers de l'aéroport suivent l'avion qui ne présente aucun dégât apparent. Après s'être arrêté au parking, l'équipage est surpris par l'absence de dégât extérieur apparent et effectue un débriefing qu'il enregistre sur un smartphone. Il notifie ensuite l'incident aux autorités de l'aviation civile.

Safety Recommendation FRAN-2017-001 (BEA)

The crew was not sufficiently trained on application of the fire/smoke or emergency descent procedures. The European Air OPS regulation in force allows for the use of different types of FSTD simulators while the part FCL regulation makes mandatory the FFS level for emergency descent exercises. Due to the prohibitive cost, FFS simulators are not available. Today, fixed FSTD simulators can answer the requirements for crew training in emergency situations on HPA aircraft.

Consequently, the BEA recommends that:

- EASA amend the regulations so as to authorise, in the context of FCL, the use of types of FSTD simulators with a lower level than FFS during smoke or emergency descent training on Cessna 525B aeroplane types and, more generally, on complex HPA aeroplanes. [Recommendation FRAN-2017-001]*]*

Reply No. 1 sent on 23/08/2017:

EASA Opinion No 05/2017 amending Commission Regulation (EU) No 1178/2011 on Flight Crew Licensing (FCL) was published on 29 June 2017. It resolves inconsistencies identified after the adoption of the FCL implementing rules and reflects the best practices developed in the Member States in the field of pilot training, testing and checking with the objective to maintain a high level of safety.

The opinion brings new definitions in FCL.010 for flight simulation training device (FSTD) availability and accessibility to clarify when an FSTD, and in particular a full-flight simulator (FFS) must be used for training, testing and checking. It provides special conditions for single-pilot high-performance complex aeroplanes.

The introduction of the definition comes together with a new wording in Appendix 9 — Training, skill test and proficiency check for MPL, ATPL, type and class ratings and proficiency check for IRs. It stipulates that the suitability of the FSTDs used shall be verified against the applicable 'Table of functions and subjective tests' and the applicable 'Table of FSTD validation tests' contained in the primary reference document applicable for the device used. All restrictions and limitations indicated on the device's qualification certificate shall be considered.

As a consequence, in section 6 'Multi-pilot aeroplanes and single-pilot high-performance complex aeroplanes', the text is amended to refer to Other Training Devices directly when acceptable or mentioning the use of an 'FSTD' when required. Inputs received for the use of a specific FSTD have resulted in an intensive review of the training, testing and checking programme for class and type ratings contained in Appendix 9 and are now more connected to the performance of each individual simulator, thus allowing to make use of the latest technical developments in the FSTD area.

Status: Closed – **Category**: Agreement

Safety Recommendation FRAN-2017-002 (BEA)

When the smoke filled the cockpit, the Captain lost his goggles and his headset. Due to the absolute necessity to descend, he did not have time to don his spare goggles. The co-pilot didn't don his goggles either and his eyes stung after the incident. In an emergency situation, it is difficult to quickly don a protective mask and protective goggles when smoke appears in the cockpit. A full-face mask allows time to be saved and better protects crew members. A search in the DGAC database for event reports brought to light crew reports relating to the difficulty in the use of separate masks and goggles.

Consequently, the BEA recommends that:

- EASA, in cooperation with the FAA, study the in-service experience on the use of masks with separate goggles compared to the use of full-face masks, and that it draws conclusions on making it mandatory for full-face masks to be installed on HPA type aeroplanes mainly used for public transport. [Recommendation FRAN-2017-002]

Reply No. 1 sent on 23/08/2017:

EASA has registered a candidate safety issue in the Commercial Air Transport (CAT) Aeroplanes Safety Risk Portfolio on the subject of continued safe aircraft operations in emergency situations with degraded vision/smoke-filled cockpit environments. A candidate safety issue analysis will be performed within the context of the European Plan for Aviation Safety (EPAS) strategic analysis programme to support decision-making on whether the safety issue and associated actions should be included in the relevant Safety Risk Portfolio for the EPAS.

Status: Open – **Category**:

Germany

Registration	Aircraft Type	Location	Date of event	Event Type
	BEECH 300	Freiburg aerodrome, Germany	12/01/2006	Accident

Synopsis of the event:

At 18:55 hrs on 12 January 2006, the German Federal Bureau of Aircraft Accidents Investigation (BFU) was advised by the Münster Search and Rescue centre that an aircraft accident had taken place in the vicinity of Freiburg Airfield. A BFU investigation team arrived at the accident site at about 01:00 hrs. Aided by local external expert for field investigation who was tasked the location and recording of any volatile traces, the team began the immediate investigation on-site.

The Beech 300 (B300) took off on the morning of 12 January 2006 from its home base at Freiburg im Breisgau (EDTF) Airfield for a commercial flight in which passengers were to be transported from Karlsruhe/Baden-Baden (EDSB) to Braunschweig (EDVE) and return.

The B300 landed back at Karlsruhe at 17:19 hrs. The passengers disembarked at their destination and the flight crew took off again at 17:59 hrs. This latter sector was flown under Visual Flight Rules Night (VFR-Night).

The flight continued south at 4,500 ft in radio contact to Strasbourg Approach (119,450 MHz). Before leaving this frequency at 18:12 hrs, the commander asked the Air Inspection Officer (‘Flugleiter’) at Freiburg for the current airfield weather. The cruising altitude was reduced to 3,500 ft.

In subsequent radio exchanges, the crew gave position reports to the Flight Information Service at Freiburg and received the current weather information. At 18:16 hrs the aircraft was above the destination aerodrome on a southerly heading.

When above the town, the aircraft then reversed heading to a northerly course to begin an approach to land. This was followed by a further 180 degree turn to intercept the approach path to Runway 16.

The undercarriage was lowered during final approach to Runway 16, and a short time later the commander gave his position to the Flight Information Service at Freiburg as 3 to 4 NM from the airfield. The aircraft made contact with trees at 18:26 hrs about 450 m from the threshold to Runway 16 at Freiburg Airfield. Both pilots were killed by the impact.

The accident occurred during the final stages of an approach under Visual Flight Rules, when the aircraft made controlled descent and then had contact with trees. The causes of the accident were:

- because the decision was made to undertake VFR Night flight although the weather was marginal, and
- the approach to Freiburg Airfield was continued in conditions of insufficient visibility.

Safety Recommendation GERF-2009-025 (BFU)

The European Aviation Safety Agency (EASA) should regulate to require that “Single-Pilot Aircraft” engaged in EU-OPS 1.940 flights made in accordance with Instrument Flight Rules and at night, must have a minimum crew of two pilots, and that their training is in accordance with JAR-FCL including Multi-Crew-concept (MCC) training.

Reply No. 5 sent on 14/03/2017:

Commission Regulation (EU) No 965/2012, of 5 October 2012 related to air operations laid down specific flight crew composition requirement in ORO.FC.100.

Even for single-pilot aircraft, the flight crew shall include additional flight crew members when required by the type of operation and shall not be reduced below the number specified in the operations manual. Therefore, two pilots are required to operate Commercial Air Transport operations under Instrument Flight Rules (IFR) or at night under the specific provisions defined in ORO.FC.200:

- For aeroplanes, the minimum flight crew shall be two pilots for all turbo-propeller aeroplanes with a maximum operational passenger seating configuration (MOPSC) of more than nine and all turbojet aeroplanes.
- For helicopters, the minimum flight crew shall be two pilots for all operations with an MOPSC of more than 19 and for operations under IFR of helicopters with an MOPSC of more than 9.
- When single pilot operation is permitted, additional requirements are added in ORO.FC.202 in terms of training and qualification.

It is the operator responsibility to designate one pilot-in-command/ commander amongst the flight crew. In accordance with ORO.FC.115:

- the flight crew member shall have received Crew Resource Management (CRM) training, appropriate to his/her role, as specified in the operations manual; and
- elements of CRM training shall be included in the aircraft type or class training and recurrent training as well as in the command course.

This address the Multi-Crew-concept (MCC) training.

Status: Closed – **Category**: Agreement

Registration	Aircraft Type	Location	Date of event	Event Type
FUMES STUDY			#Missing#	

Synopsis of the event:

For the last few years the German Federal Bureau of Aircraft Accident Investigation (BFU) has been receiving an increased number of reports of so-called fume events. These kinds of events include smell, smoke or vapour inside the airplane and/or health impairments of aircraft occupants. In addition, this topic is increasingly discussed among flight crew, occupational unions, the media and in political committees.

In the “study of reported occurrences in conjunction with cabin air quality in transport aircraft” a total of 845 cases were taken into consideration; Accidents, serious incidents and incidents, which have been reported to the BFU between 2006 and 2013.

A conjunction with cabin air could be determined in 663 reports. In 180 reports health impairments were described although a conjunction with cabin air quality could not be determined.

In 460 of the 663 reported fume events, smell development and in 188 cases smoke development was reported. In 15 cases there was neither smell nor smoke but health impairments which may possible have conjunction with a fume event.

For this study, the BFU has divided the reported occurrences into the following categories:

- Fume events affecting flight safety
- Fume events possibly affecting the occupational safety of crew members
- Fume events affecting the comfort of aircraft occupants
- Fume events and possible long-term effects on aircraft occupants.

Safety Recommendation GERF-2014-007 (BFU)

EASA should implement a demonstration of compliance of cabin air quality during type certification of aircraft (CS-25), engines (CS-E) and APU (CS-APU) such that the same requirements apply to all these products and permanent adverse health effects resulting from contaminated cabin air are precluded.

Aircraft, engine and APU type certification should include direct demonstration of compliance of all substances liable to cause cabin air contamination. Certification should be based on critical values which preclude permanent adverse health effects on passengers and crew.

Reply No. 3 sent on 02/06/2017:

On 23 March 2017, EASA published the final reports of two studies it commissioned with the aim to gain solid scientific knowledge about cabin air quality on board large aeroplanes operated for commercial air transport.

Study 1: Cabin air quality (CAQ) measurement campaign - study conducted by a consortium of the Fraunhofer Institute for Toxicology and Experimental Medicine and the Hannover Medical School.

In-flight measurements have been conducted on a number of commercial flights after defining adequate and reliable air contaminants measurement methods for cockpit and passenger cabin areas.

The results show that the cabin/cockpit air quality is similar or better than what is observed in normal indoor environments (offices, schools, kinder gardens or dwellings). No occupational exposure limits and guidelines were exceeded.

In total, 69 measurement flights were performed between July 2015 and June 2016 on 8 types of aeroplane/engine configurations. This included 61 flights on aeroplanes equipped with engine bleed air systems, and 8 flights on Boeing 787 which is equipped with electrical compressors ('bleed free' system). For all flights, measurement equipment was installed in the cockpit and in the cabin. Special attention was paid to organophosphates, in particular Tri Cresyl Phosphates (TCP) with the use of high sensitivity analysis techniques.

Study 2: Characterisation of the toxicity of aviation turbine engine oils after pyrolysis - study conducted by a consortium of the Netherlands Organisation for Applied Scientific Research and the Dutch National Institute for Public Health and the Environment.

This study characterised the chemical composition of some transport aeroplane turbine engine oils (including pyrolysis breakdown products), and the toxic effects of the chemical compounds that can be released in the cabin or cockpit air.

It concluded that 'neuroactive pyrolysis products are present, but that their concentration in the presence of an intact lung barrier is that low that it could not be appointed as a major concern for neuronal function'. TCP was present in the analysed oils, however no ortho-isomers could be detected. Finally the 'analysis of the human sensitivity variability factor showed that the complete metabolic pathway and the contribution of inter individual variability in the metabolic enzymes is still largely unknown for the majority of industrial chemicals, including cabin air contaminants'. Two brands of oil were used in this study, and both new and used oil samples were analysed.

Both reports can be found on EASA website:

https://www.easa.europa.eu/document-library/research-projects

Based on these results, a causal link between exposure to cabin/cockpit air contaminants and reported health symptoms is still considered unlikely. At this stage, a need for amending certification specifications is not supported.

As a follow-up activity, further research has started in a European Commission (EC) study, with technical support from EASA. It will take into account the findings and recommendations from the two EASA studies to develop a comprehensive understanding of the cockpit and cabin air quality.

The contract award notice was published on 22/02/2017 and can be found here:

http://ted.europa.eu/udl?uri=TED:NOTICE:66334-2017:TEXT:EN:HTML&src=0

Status: Closed – **Category**: Disagreement

Safety Recommendation GERF-2014-008 (BFU)

The European Aviation Safety Agency (EASA) should launch a research project to have an independent institute, e.g. institute of aerospace medicine or a medical university, study and assess the potential causal connection between transport aircraft cabin air contamination and chronic illnesses.

Reply No. 3 sent on 02/06/2017:

On 23 March 2017, EASA published the final reports of two studies it commissioned with the aim to gain solid scientific knowledge about cabin air quality on board large aeroplanes operated for commercial air transport.

Study 1: Cabin air quality (CAQ) measurement campaign - study conducted by a consortium of the Fraunhofer Institute for Toxicology and Experimental Medicine and the Hannover Medical School.

In-flight measurements have been conducted on a number of commercial flights after defining adequate and reliable air contaminants measurement methods for cockpit and passenger cabin areas.

The results show that the cabin/cockpit air quality is similar or better than what is observed in normal indoor environments (offices, schools, kinder gardens or dwellings). No occupational exposure limits and guidelines were exceeded.

In total, 69 measurement flights were performed between July 2015 and June 2016 on 8 types of aeroplane/engine configurations. This included 61 flights on aeroplanes equipped with engine bleed air systems, and 8 flights on Boeing 787 which is equipped with electrical compressors ('bleed free' system). For all flights, measurement equipment was installed in the cockpit and in the cabin. Special attention was paid to organophosphates, in particular Tri Cresyl Phosphates (TCP) with the use of high sensitivity analysis techniques.

Study 2: Characterisation of the toxicity of aviation turbine engine oils after pyrolysis - study conducted by a consortium of the Netherlands Organisation for Applied Scientific Research and the Dutch National Institute for Public Health and the Environment.

This study characterised the chemical composition of some transport aeroplane turbine engine oils (including pyrolysis breakdown products), and the toxic effects of the chemical compounds that can be released in the cabin or cockpit air.

It concluded that 'neuroactive pyrolysis products are present, but that their concentration in the presence of an intact lung barrier is that low that it could not be appointed as a major concern for neuronal function. TCP was present in the analysed oils, however no ortho-isomers could be detected. Finally the 'analysis of the human sensitivity variability factor showed that the complete metabolic pathway and the contribution of inter individual variability in the metabolic enzymes is still largely unknown for the majority of industrial chemicals, including cabin air contaminants'. Two brands of oil were used in this study, and both new and used oil samples were analysed.

Both reports can be found on EASA website:

https://www.easa.europa.eu/document-library/research-projects

Based on these results, a causal link between exposure to cabin/cockpit air contaminants and reported health symptoms is still considered unlikely.

As a follow-up activity, further research has started in a European Commission (EC) study, with technical support from EASA. It will take into account the findings and recommendations from the two EASA studies to develop a comprehensive understanding of the cockpit and cabin air quality.

The contract award notice was published on 22/02/2017 and can be found here:

http://ted.europa.eu/udl?uri=TED:NOTICE:66334-2017:TEXT:EN:HTML&src=0

Status: Closed – **Category**: Agreement

Indonesia

Registration	Aircraft Type	Location	Date of event	Event Type
PK-AXC	AIRBUS A320	SUB - SURABAYA, Indonesia	28/12/2014	Accident

Synopsis of the event:

On 28 December 2014 an Airbus A320-216 aircraft registered as PK-AXC was cruising at 32,000 feet on a flight from Juanda Airport, Surabaya, Indonesia to Changi Airport, Singapore with total occupants of 162 persons. The Pilot in Command (PIC) acted as Pilot Monitoring (PM) and the Second in Command (SIC) acted as Pilot Flying (PF).

The Flight Data Recorder (FDR) recorded that 4 master cautions activated following the failure of the Rudder Travel Limiter which triggered Electronic Centralized Aircraft Monitoring (ECAM) message of AUTO FLT RUD TRV LIM SYS. The crew performed the ECAM procedure on the first three master caution activations. After the 4th master caution, the FDR recorded different pilot action and the parameters showed similar signature to those on 25 December 2014 when the FAC CBs were pulled on the ground. This pilot action resulted on the 5th and 6th master caution activations which correspond respectively to ECAM message of AUTO FLT FAC 1 FAULT and AUTO FLT FAC 1+2 FAULT.

Following two FAC fault, the autopilot and auto-thrust disengaged and the flight control reverted to Alternate Law which means the aircraft lost several protections available in Normal Law. The aircraft entered an upset condition and the stall warning activated until the end of recording.

Participating in the investigation of this accident were Australian ATSB, French BEA, Singapore AAIB and MOT Malaysia as accredited representatives.

The investigation concluded that contributing factors to this accident were:

- The cracking of a solder joint of both channel A and B resulted in loss of electrical continuity and led to RTLU failure. The existing maintenance data analysis led to unresolved repetitive faults occurring with shorter intervals. The same fault occurred 4 times during the flight.

- The flight crew action to the first 3 faults in accordance with the ECAM messages. Following the fourth fault, the FDR recorded different signatures that were similar to the FAC CB" s being reset resulting in electrical interruption to the FAC's.

- The electrical interruption to the FAC caused the autopilot to disengage and the flight control logic to change from Normal Law to Alternate Law, the rudder deflecting 2° to the left resulting the aircraft rolling up to 54° angle of bank.

- Subsequent flight crew action leading to inability to control the aircraft in the Alternate Law resulted in the aircraft departing from the normal flight envelope and entering prolonged stall condition that was beyond the capability of the flight crew to recover.

Issues such as flight approval considered did not contribute to the accident and was not investigated. The FDR data did not show any indication of the weather condition affecting the aircraft.

Following this accident, the Indonesia Air Asia has performed several safety actions.

KNKT issued several recommendations to Indonesia Air Asia, Director General of Civil Aviation (DGCA), US Federal Aviation Administration and European Aviation Safety Administration (EASA) and Airbus.

Safety Recommendation INDO-2015-002 (AIB)

The KNKT recommend expediting the implementation of mandatory for upset recovery training earlier than 2019.

Reply No. 2 sent on 23/08/2017:

Mitigating Loss of Control In-flight (LOC-I) is one of the European Aviation Safety Agency's (EASA's) highest priorities, and the Agency has published provisions on flight crew Upset Prevention and Recovery Training (UPRT) with the specific objective to ensure that flight crew acquire the necessary competencies to prevent and recover from developing or developed upsets.

ED Decision 2015/012/R published on the EASA website entered into force on 04 May 2016. It defines Applicable Means of Compliance (AMC) and Guidance Materials (GM) for recurrent training programme of Commission Regulation (EU) No 965/2012 (ORO.FC.230) and conversion training (ORO.FC.220) pertaining to Commercial Air Transport (CAT) operators using 'complex motor-powered aeroplanes'.

The material takes into account the International Civil Aviation Organization (ICAO) Annex 6 amendment 38, ICAO Doc 9868 'Procedures for Air Navigation Services - Training' (PANS-TRG) amendment 3 relating to UPRT, and ICAO Doc 10011 'Manual on Aeroplane UPRT'. Reference is also made to the Original Equipment Manufacturers' (OEMs') Aeroplane Upset Recovery Training Aid (AURTA).

In addition, the Agency published Opinion No 06/2017 on "loss of control prevention and recovery training" in the wake of rulemaking task RMT.0581 on 29 June 2017.

This Opinion proposes to introduce mandatory UPRT, testing and checking at various stages for pilots who intend to pursue a pilot career with a commercial airline:

- advanced UPRT course (new FCL.745.A) as a prerequisite for training courses for single-pilot aeroplanes operated in multi-pilot operation, single-pilot high-performance complex aeroplanes and multi-pilot aeroplanes (amendments to FCL.720.A);
- Inclusion of UPRT elements considering the specificities of the particular class or type during the relevant class or type rating training course (amendments to FCL.725.A);
- Amendments to Appendix 9, paragraphs 5 and 6 in Annex I (Part-FCL) of Commission Regulation (EU) No 1178/2011 to include upset prevention and recovery exercises into training courses, skill test and proficiency checks related to single-pilot aeroplanes operated in multi-pilot operations, single-pilot high-performance complex aeroplanes and multi-pilot type rating training courses;

The newly developed advanced UPRT course, which is to be mandated as an addendum to ATP and MPL training courses and also to serve as a prerequisite prior to commencing the first type rating course in multi-pilot operations, is an important step towards enhancing a commercial pilot's resilience to the psychological and physiological aspects often associated with upset conditions.

UPRT in operators 'conversion course and recurrent training is already in force since May 2016. EASA envisages that from April 2019 (after entry into force in 2018 and with a subsequent one-year transitional period), ATP, CPL and type rating licensing aspect should also include UPRT in line with the safety recommendation.

Status: Closed – **Category**: Partial agreement

Ireland

Registration	Aircraft Type	Location	Date of event	Event Type
EC-ITP	SWEARINGEN SA227	Cork Airport	10/02/2011	Accident

Synopsis of the event:

On 10 February 2011, a Fairchild SA 227-BC Metro III registered EC-ITP, was operating a scheduled commercial air transport flight from Belfast City (EGAC) to Cork (EICK) with 2 Flight Crew members and 10 passengers on board. At 09.50 hrs during the third attempt to land at EICK in low visibility conditions, control was lost and the aircraft impacted the runway. The aircraft came to rest inverted in soft ground to the right of the runway surface. Post impact fires occurred in both engine nacelles which were extinguished by the Airport Fire Service (AFS). Six persons, including both pilots, were fatally injured. Four passengers were seriously injured and two received minor injuries.

As a result of this Investigation 11 Safety Recommendations have been made.

Safety Recommendation IRLD-2014-003 (AAIU)

The European Aviation Safety Agency should review Council Regulation (EEC) No 3922/91 as amended by Commission Regulation (EC) 859/2008, to ensure that it contains a comprehensive syllabus for appointment to commander and that an appropriate level of command training and checking is carried out.

Reply No. 3 sent on 24/11/2017:

Paragraphs ORO.FC.100 and ORO.FC.115 (a) of Annex III Part-ORO (Organisation Requirements for air Operations) of Commission Regulation (EU) No 965/2012 on air operations requires the operator to define the crew composition and provide Crew Resource Management (CRM) training appropriate to the flight crew member's role as specified in the operations manual.

ORO.FC.105 (b) and (c) specify the conditions to be fulfilled by a flight crew member before he/she can be assigned as commander. ORO.FC.205 lists the elements of the command course including training and checking. The development of a detailed course syllabus is the responsibility of the operator and needs to be approved by the authority in accordance with as per ORO.FC.145 (c).

ED Decision 2015/012/R published on 04 May 2015 on Upset Prevention and Recovery Training provides new Guidance Material (GM) to ORO.FC.105 to emphasise that the pilot-in-command/commander's knowledge of the route to be flown should include an understanding of environmental phenomena with the potential to induce an upset. It emphasises the need for understanding climatology relevant to the route of operation and relevant mitigating procedures because recent 'loss of control' aeroplane accidents appear to have been connected with convective cloud in the Inter Tropical Convergence Zone (ITCZ).

CRM is also a major contributing factor to many occurrences, therefore the Agency significantly extended and modernised the existing CRM training scheme with ED Decision 2015/022/R, which entered into force on 01 October 2016. In particular, AMC1 ORO.FC.115 now refers to the broader integration of CRM principles into flight crew training and operations and requires in-depth knowledge of CRM elements to be included in the command course (ORO.FC.115 (b)).

The CRM extension recognises the importance of Human Performance and its non-technical skills. Emphasis is given on Threat and Error Management, which has been instrumental in the development of Evidence Based Training (EBT) as a pilot training concept. EBT pilot competences address both technical and non-technical skills and are used as countermeasures to threat and errors.

The Agency considers that the Commander competence is essential and has already taken measures to develop their knowledge and non-technical skills.

Status: Closed – **Category**: Agreement

Registration	Aircraft Type	Location	Date of event	Event Type
1) G-COBS 2) G-FCSL	1) DIAMOND DA42 2) PIPER PA31	5 NM east of Ireland West Airport (EIKN), Knock, Co. Mayo	22/04/2013	Serious incident

Synopsis of the event:

While in the process of conducting separate flights for the calibration of navigation aids at EIKN, the lateral separation between two calibrating aircraft reduced to 0.42 nautical miles (NM) with no vertical separation. One aircraft initiated avoiding action following a Traffic Advisory System (TAS) warning and subsequently declared an AIRPROX. Both aircraft landed without further incident. There were no injuries. A total of five Safety Recommendations have been made as a result of this Investigation.

Safety Recommendation IRLD-2014-017 (AAIU)

The European Aviation Safety Agency (EASA) should consider a requirement for calibration aircraft operating in Europe to be fitted with TCAS.

Reply No. 2 sent on 31/08/2017:

EASA Rulemaking Task RMT.0376 'Carriage of ACAS II equipment on aircraft other than aeroplanes in excess of 5700 kg or 19 Pax' is included in the Rulemaking programme 2017-2021 to ensure alignment with other on-going developments within the Agency, namely the efforts to find a solution for cost-effective collision avoidance equipment for General Aviation aircraft.

This task will also include a thorough impact assessment aimed at evaluating the cost-benefit of ACAS II equipment anti-collision systems carriage.

The publication of the associated terms of reference (ToR) for the rulemaking task RMT.0376, is planned to be published in the second quarter of 2018.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
G-SKYE	CESSNA 206	Abbeyshrule	21/06/2014	Accident

Synopsis of the event:

The aircraft, a Cessna TU206G, was being used for parachuting/skydiving activities at Abbeyshrule (EIAB) on the day of the accident. Shortly after take-off, the Pilot felt what was described as a "knock" following which the engine lost power. This resulted in the Pilot making a forced landing in a nearby field. There were five people on board the aircraft - the Pilot and four skydivers. The skydivers comprised of two tandem pairs, with each pair being made up of a qualified skydiver and a person skydiving for charity secured to him. Following the forced landing, all occupants successfully evacuated the aircraft, which sustained substantial damage.

The Pilot and qualified skydivers reported no injuries at the scene. The two charity skydivers attended a local hospital, but were released a short time later. The Investigation found that the cause of the engine power loss was a failure of the crankshaft.

Five Safety Recommendations are issued as a result of this investigation.

Safety Recommendation IRLD-2015-001 (AAIU)

The European Aviation Safety Agency should consider issuing a Safety Information Bulletin highlighting the importance of using the correct sealant/process on the crankcase parting surfaces of engines manufactured by Teledyne Continental Motors.

Reply No. 2 sent on 23/08/2017:

The Federal Aviation Administration, as primary certification authority for this engine type, issued Special Airworthiness Information Bulletin (SAIB) No NE-16-13 on 08 March 2016.

EASA has adopted this SAIB for the existing European fleet by publishing it, on 09 March 2016, under the list of mandatory continuing airworthiness information on the EASA web site.

The bulletin alerts the affected registered owners, operators and maintenance personnel of the available service instructions for proper installation procedures and approved materials for joining engine case halves and installing cylinders.

Status: Closed – **Category**: Agreement

Italy

Registration	Aircraft Type	Location	Date of event	Event Type
HA-YDJ	TECHNOAVIA SMG92	Casale Monferrato	29/08/2015	Accident

Synopsis of the event:

L'incidente è occorso in data 29 agosto 2015, alle ore 12.00 UTC (14.00 ora locale), nelle immediate vicinanze dell'aeroporto di Casale Monferrato, all'aeromobile di tipo SMG-92 Turbo

Finist marche di identificazione HA-YDJ, con 11 persone a bordo (1 pilota e 10 paracadutisti). Il velivolo, subito dopo il decollo, nella fase di salita iniziale, ancora all'interno del perimetro

dell'aeroporto e su prua pista, perdeva quota e precipitava in un fossato appena fuori della recinzione aeroportuale. Gli occupanti riportavano lesioni gravi.

Safety Recommendation ITAL-2016-001 (ANSV)

ANSV recommends EASA to extend the applicability of AD No. 2015-0014 also to other S/N of the M601 engine, potentially re-evaluating the criteria for identifying the parameters used in the risk assessment process which led to the identification of the list of the S/Ns affected by the aforementioned AD. [ANSV-1/2354-15/1/A/16]

Reply No. 2 sent on 28/09/2017:

The referenced AD 2015-0014 has been issued for a different failure mode, which is cracking of the quill shaft. The related risk assessment is based on this failure mechanism. Therefore extending the AD to other criteria would not be effective.

EASA issued AD 2017-0151 to address the different Failure modes and criteria related to failure of the power turbine or quill shaft splines by mandating a modification of the affected engines and to prohibit installation of pre-mod parts. The modification incorporates improved containment in case of an overspeed event and will reduce the wear and related failure of the power turbine/quill shaft joint. AD 2017-0151 has been published on 18 August, 2017 and is effective from 1 September 2017.

Status: Closed – **Category**: Partial agreement

Registration	Aircraft Type	Location	Date of event	Event Type
G-EZTC	AIRBUS A320	MXP - Milan Malpensa Airport	12/08/2013	Serious incident

Synopsis of the event:

L'incidente è occorso il 12 agosto 2013, alle ore 16.16' UTC (18.16 ora locale), in località aeroporto Milano Malpensa (LIMC), ed ha interessato l'aeromobile tipo Airbus A320-214 marche di identificazione G-EZTC.

Durante la corsa di decollo per pista 35R si verificava il distacco di parti della cappottatura del fan del motore sinistro. L'equipaggio del G-EZTC veniva allertato via radio dal pilota di un aeromobile al suolo che aveva assistito all'evento. Il comandante veniva informato dell'accaduto anche dalle assistenti di volo, le quali, a loro volta, erano state informate dai passeggeri seduti in prossimità del motore sinistro, che avevano osservato il distacco della cappottatura. L'equipaggio di condotta dichiarava l'intenzione di rientrare a Malpensa con priorità all'atterraggio, in condizioni di overweight. L'atterraggio avveniva sulla pista 35L e, durante la corsa al suolo, avveniva il distacco di ulteriori parti della medesima cappottatura. Il velivolo rientrava al parcheggio ed i passeggeri sbarcati con procedura normale.

Safety Recommendation ITAL-2016-013 (ANSV)

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. [ANSV-13/1656-13/1/A/16]

Reply No. 1 sent on 03/03/2017:

Compliance with the rules is a basic principle upon which Commission Regulation (EU) No. 1321/2014 is built. Part-M (Annex I), Part-145 (Annex II) and Part-66 (Annex III) are robust and mature enough to be satisfactory understood by the Maintenance Operators (MOs), the aircraft maintenance license (AML) holders and the European competent authorities (NAAs).

In particular, Part-145 already addresses the need to have the maintenance data used during the performance of maintenance and any Maintenance Organisation Exposition (MOE) to render the use to the maintenance data mandatory through its procedures.

The statement in the certificate of release to service explicitly establishes that the maintenance tasks must be properly carried out in accordance with the maintenance data.

Any Aircraft Maintenance License (AML) holder must not exercise his/her privileges unless he/she remains in compliance with the applicable requirements of Part-M and Part-145.

The NAAs must implement mandatory oversight actions targeting the use of the maintenance documentation, the release to service and a full review of the Maintenance Organisation Exposition (MOE) procedures every 24 months.

In addition, EASA would like to remind that the issuance of Airworthiness Directives No. 2016-0053 and No.2016-0069 should efficiently limit the Human Factor maintenance concern relating to the closing of the A320 fan cowl engine doors through the mandatory modification of the latching systems by 25 March 2019.

However, EASA is fully aware of the lessons learned when maintenance contributes to accidents or serious accidents, deviation to the Standard Operating Procedures, including deviation to the maintenance data and the MOE procedures, is often cited. In particular, it is well known that operational aspects, time pressure, and inadequate safety or organisational culture, may lead the AML holders to deviate from the basic principle of compliance or systematically to record their maintenance actions and not to comply with the maintenance data.

For this reason the Agency will consider to approach this issue through safety promotion activities, highlighting the need to strictly adhere to the maintenance data and the risks induced by such deviations.

Status: Open – **Category**:

Safety Recommendation ITAL-2016-014 (ANSV)

The lack of a specific procedure in the FCOM, in the QRH and in the FCTM addressing the situation of an engine fan cowling opening or detachment in flight leave ample margins of discretion to the crew regarding precautions and proper actions to apply.

ANSV recommends EASA to propose Airbus to evaluate the development and addition of a specific procedure, in the applicable flight operating manual, addressing the specific situation of an engine fan cowling opening or detachment in flight.

Reply No. 2 sent on 02/06/2017:

The European Aviation Safety Agency has requested Airbus to review, within the operational documentation, the existing procedures and to evaluate the need to develop specific ones addressing the scenario of in-flight opening or detachment of engine fan cowlings.

The review concluded that relevant applicable generic procedures are already included in the Flight Crew Techniques Manual (FCTM) and the Flight Crew Operational Manual (FCOM) and there is no need to add a specific procedure for subject scenario.

These generic procedures are inclusive of damages resulting from a fan cowling detachment which may have various effects and consequences along the airframe and/or to the aircraft systems. They are also associated with potential Electronic Centralised Aircraft Monitor (ECAM) messages which will efficiently guide crew actions to mitigate the effect of system failures that result from loss of an engine fan cowling(s) in-flight.

EASA considers that the existing procedures, while not specific to the engine fan cowling opening or detaching in flight, are adequate to address the subject scenario.

Status: Closed – **Category**: Agreement

Registration	Aircraft Type	Location	Date of event	Event Type
I-UASC	RUAS SD-150 HERO	Aeroporto Siena Ampugnano	12/04/2016	Accident

Synopsis of the event:

Durante un volo sperimentale volto alla verifica delle caratteristiche di controllabilità dell’elicottero, avveniva un calo di giri del motore a partire dalla condizione di hovering.

L’aeromobile, che si trovava inizialmente ad una quota di circa 35 m AGL, perdeva quindi quota velocemente fino ad impattare contro il terreno. L’intero volo è durato circa 10’.

Safety Recommendation ITAL-2017-001 (ANSV)

In case of engine failure on a manned helicopter, the pilot would start an autorotation maneuver in order to decrease the vertical velocity. The unmanned helicopter under investigation was not equipped with an automatic system able to reduce the vertical velocity, lessening the effect of the ground impact. In this framework, it is important to highlight that the EASA document “Policy Statement, Airworthiness Certification of Unmanned Aircraft

Systems (UAS) - E.Y013-01", paragraph 7.1 "Emergency Recovery Capability", states: «no mandatory airworthiness requirement to fit or configure systems to provide an emergency recovery capability».

Therefore, it is recommended to take into consideration the possibility that unmanned helicopters will have, as mandotory requirement, automatic emergency recovery capabilities able to reduce the vertical velocity acquired following an engine failure. This would consequently lessen the effect of the ground impact.

Reply No. 1 sent on 28/04/2017:

A new regulatory framework is currently being developed by the European Commission and EASA to accommodate the operation of all Unmanned Aircraft (UA) in the EU.

The Agency published a Technical Opinion (Opinion of a technical nature) in December 2015 which proposed a regulatory concept which is operation centric, proportionate, risk- and performance-based. It includes the establishment of three categories of UA operation (Open, Specific, Certified) which are based on the risk posed by the operation.

EASA Rulemaking task RMT.0230 started in 2016, and a 'Prototype' regulation for the 'Open' and 'Specific' categories was published in the summer; this will be followed by a concrete proposal in an NPA to be published 02Q2017.

More information is available on the EASA Website: https://www.easa.europa.eu/easa-and-you/civil-drones-rpas

The 'Certified' category will be the subject of other NPAs to be published from end of 2017.

The safety risk associated with a UA falling onto third parties or properties is taken into account in the development of the regulations. The magnitude of the risk depends both on the type of operation performed and on the characteristics of the UA. Different means can be used to mitigate this risk, at operational and design levels, and for an unmanned helicopter an autorotation function is one of them.

Based on the principles explained above, EASA does not intend to mandate a prescriptive solution, rather it intends to require that operational risk assessments are conducted, and that adequate and proportionate protection means are put in place to control these risks.

Status: Closed – **Category**: Partial agreement

Registration	Aircraft Type	Location	Date of event	Event Type
I-CTAC	TECNAM P2002	Aeroporto Catania Fontanarossa	06/02/2016	Accident

Synopsis of the event:

Durante un volo scuola condotto secondo le regole VFR, dopo l'atterraggio avvenuto per RWY 08, in fase di decelerazione per uscire al raccordo "C" come istruito dalla TWR, il velivolo imbardava violentemente verso destra. La semiala sinistra toccava il suolo ed il carrello anteriore collassava. Il velivolo continuava la sua corsa strisciando al suolo, fermandosi con una posizione di circa 90° rispetto all'asse pista.

Safety Recommendation ITAL-2017-002 (ANSV)

[Italian] - Durante il sopralluogo operativo si è riscontrato empiricamente che la forza opposta dalla leva di azionamento freno parcheggio risultava molto blanda, al punto da consentire un azionamento involontario della stessa. Nel contempo si è verificato che nel Tecnam P2002-JF Aircraft Maintenance Manual non viene fornita una indicazione quantitativa su come regolare tale leva, lasciando alla sensibilità del singolo manutentore la decisione di una eventuale regolazione o sostituzione di parti usurate.

Inoltre, nell'ambito dell'inchiesta di sicurezza si è potuta verificare la discrepanza sulla regolazione del valore di pressione degli pneumatici esistente tra il predetto Aircraft Maintenance Manual e l'Aircraft Flight Manual.

L'ANSV raccomanda di:

- *fornire ai manutentori del tipo di aeromobile in questione informazioni quantitative per la regolazione della leva del freno parcheggio, sufficienti ad impedire un suo azionamento involontario, stante l'attuale mancanza di indicazione di resistenza minima che tale comando debba opporre alla sua attivazione;*
- *rendere uniformi i valori di pressione di gonfiaggio degli pneumatici contenuti nell'Aircraft Flight Manual e nell'Aircraft Maintenance Manual, eliminando le discrepanze attualmente esistenti. [ANSV-4/169-16/1/A/17]*

Reply No. 1 sent on 23/08/2017:

The Agency, together with the Type Certificate holder (TCH), has reviewed the design of the parking brake. Such design does not include a means to regulate the resistance of the handle, thus it is not foreseen that the handle is adjusted to a specific setting by the maintenance operator. Based also on the service history of the aircraft type (this is the first occurrence), and the severity of the related occurrence in case of inadvertent activation, the Agency has found that no further action is necessary.

Regarding the pressure of the tyre, both values are suitable for the type of tyres installed. Nevertheless, for coherence purposes, the TCH has corrected the Aircraft Flight Manual so that it now refers to the value specified in the Aircraft Maintenance Manual. This modification has been approved as a minor change (approval reference MOD2002/197.170728).

Status: Closed – **Category**: Partial agreement

Netherlands

Registration	Aircraft Type	Location	Date of event	Event Type
STUDY ILS GS			#Missing#	

Synopsis of the event:

In 2014 the Dutch Safety Board published the study “Pitch-up upsets due to ILS false glide slope”. The Dutch Safety Board launched this investigation based on the investigation to an incident at Eindhoven Airport.

During the approach to Eindhoven Airport (The Netherlands) on 31 May 2013, a Boeing 737-800 was radar vectored towards runway 21 for a landing with the aid of the Instrument Landing System (ILS). The aircraft was flying under Instrument Meteorological Conditions (IMC). During the latter stage of the approach, the aircraft was above the intended 3 degree Gilde Path. After the Localizer was captured, a Glide Slope intercept from above was executed. The Autopilot Flight Director System (AFDS) and the Auto Throttle (AT) were engaged. The Approach mode was armed and the aircraft was configured for landing.

At short final, approximately 0.85 NM from the threshold at 1060 feet altitude, the Glide Slope was captured. Upon Glide Slope capture, a pitch increase of 24.5 degrees aircraft nose up (ANU) occurred in about 8 seconds. The crew pressed the ‘take-off/go-around’ (TOGA) button for a go-around, almost simultaneously followed by the activation of the stick shaker warning. During the following approach to stall recovery manoeuvre there was a second stick shaker activation. The crew made a successful go around and landed at Eindhoven Airport.

The activation of the aircraft’s stick shaker during an autopilot coupled ILS approach in close proximity to the runway was a factor of interest that prompted the Dutch Safety Board to start an investigation. The occurrence (henceforth: the Eindhoven incident) has been categorized by the Safety Board as a serious incident.

It became clear during the investigation that the Eindhoven incident was not unique. Four other occurrences with autopilot commanded pitch-up upset during ILS approach from above the 3 degree Glide Slope were identified. These incidents took place with different types of aircraft, operated by different airlines, on approach to different airports.

These findings led the Dutch Safety Board to conclude that little known ILS signal characteristics pose a significant threat to aviation safety, as they may result in unexpected aircraft behaviour and my thus endanger the safety of passengers and flight crews. Because identified occurrences, combined with the potential severity of this hazard, the Dutch Safety Board decided to asdress this issue separately.

This report (study) represents the investigation into the ILS signal characteristics and the SMS framework. The other findings from the Eindhoven incident are presented in a separate report, issued contemporaneously.

Safety Recommendation NETH-2014-005 (DSB)

To the regulators involved with the manufacturing of transport category aircraft; European Aviation Safety Agency (Europe), Federal Aviation Administration (USA), Agência Nacional de Aviação Civil (Brasil), Civil Aviation Administration of China, Federal Air Transport Agency (Russian Federation), Japan Civil Aviation Bureau, and Transport Canada.

5. Training regulations

Review the applicable regulations on initial and recurrent flight crew training to assess whether they adequately address the potential degradation of situational awareness (basic pilot skills) and flight path management due to increased reliance on aircraft automation by flight crews.

Reply No. 3 sent on 23/08/2017:

Mitigating Loss of Control In-flight (LOC-I) is one of the European Aviation Safety Agency's (EASA's) highest priorities, and the Agency has published provisions on flight crew Upset Prevention and Recovery Training (UPRT) with the specific objective to ensure that flight crew acquire the necessary competencies to prevent and recover from developing or developed upsets.

The degradation of situational awareness and flight path management are human performance issues that can be mitigated by teaching the flight crew about the risks associated with dispersion and/or channelized attention during realistic training scenarios that contains surprise and startle effects conducive to high workload in a short time frame. Effective monitoring of the primary flight parameters is a major criteria to prevent Loss of Control In-flight (LOC-I), and the Agency has published provisions on flight crew Upset Prevention and Recovery Training (UPRT) with the specific objective to ensure that flight crew acquire the necessary competencies to prevent and recover from developing or developed upsets.

The Agency published, on 16 October 2015, Safety Information Bulletin SIB 2015-17R1 'Unreliable Airspeed Indication at High Altitude/ Manual Handling at High Altitude' to raise awareness on the risks associated with manual flying at high altitude and to encourage operators to specifically address these risks in their safety management systems.

ED Decision 2015/012/R published on the EASA website entered into force on 04 May 2016. It defines Applicable Means of Compliance (AMC) and Guidance Materials (GM) for recurrent training programme of Commission Regulation (EU) No 965/2012 (ORO.FC.230) and conversion training (ORO.FC.220) pertaining to Commercial Air Transport (CAT) operators using 'complex motor-powered aeroplanes'.

The material takes into account the International Civil Aviation Organization (ICAO) Annex 6 amendment 38, ICAO Doc 9868 'Procedures for Air Navigation Services - Training' (PANS-TRG) amendment 3 relating to UPRT, and ICAO Doc 10011 'Manual on Aeroplane UPRT'. Reference is also made to the Original Equipment Manufacturers' (OEMs') Aeroplane Upset Recovery Training Aid (AURTA).

Upset prevention training list the upset prevention elements to cover in AMC1 ORO.FC.220&230 and include manual handling skills and flight path management.

In addition, the Agency published Opinion No 06/2017 on "loss of control prevention and recovery training" in the wake of rulemaking task RMT.0581 on 29 June 2017.

This Opinion proposes to introduce mandatory UPRT, testing and checking at various stages for pilots who intend to pursue a pilot career with a commercial airline:

- advanced UPRT course (new FCL.745.A) as a prerequisite for training courses for single-pilot aeroplanes operated in multi-pilot operation, single-pilot high-performance complex aeroplanes and multi-pilot aeroplanes (amendments to FCL.720.A);
- Inclusion of UPRT elements considering the specificities of the particular class or type during the relevant class or type rating training course (amendments to FCL.725.A);
- Amendments to Appendix 9, paragraphs 5 and 6 in Annex I (Part-FCL) of Commission Regulation (EU) No 1178/2011 for including upset prevention and recovery exercises into training courses, skill test and proficiency checks related to single-pilot aeroplanes operated in multi-pilot operations, single-pilot high-performance complex aeroplanes and multi-pilot type rating training courses;

The newly developed advanced UPRT course, which is to be mandated as an addendum to ATP and MPL training courses and also to serve as a prerequisite prior to commencing the first type rating course in multi-pilot operations, is an important step towards enhancing a commercial pilot's resilience to the psychological and physiological aspects often associated with upset conditions. It develops the ability of the pilot to cope with unforeseen events.

In support of the new standards, appendix 9 — Training, skill test and proficiency checks for MPL, ATPL, type and class ratings, and proficiency checks for IRs is amended to include UPRT. It emphasizes regular training on manual flying manoeuvres and procedures with or without flight directors and at different speeds and altitudes (7.1).

In line with ICAO, the opinion and the decision mentioned above propose UPRT to proficiency during initial and recurrent training. The amended skill test and proficiency checks supported by operators'UPRT recurrent training and conversion course reinforce pilot competence through regular training.

Status: Closed – **Category**: Agreement

Registration	Aircraft Type	Location	Date of event	Event Type
PH-SPZ	AVIONS ROBIN DR400	Rotterdam The Hague Airport	08/07/2013	Accident

Registration	Aircraft Type	Location	Date of event	Event Type
PH-HLR	AVIONS ROBIN DR400	Rotterdam The Hague Airport	04/07/2014	Accident

Synopsis of the event:

On 8 July 2013 and 4 July 2014, respectively, two aeroplanes of the make and model Apex DR400/140B were seriously damaged by fire. In both cases, the fire started during taxi after landing, on the left-hand side of the aeroplanes, destroying the left-hand wing. Since the two fires seemed of a similar nature and both aeroplanes were operated by the same flying club, Dutch Safety Board decided to combine the two investigations into the cause of these fires.

Safety Recommendation NETH-2017-001 (DSB)

Advise the manufacture of the Apex DR400 to improve the aeroplane's brake unit, as to prevent overheating of the brake disk as a result of friction between the brake disk and brake pads.

Reply No. 1 sent on 07/07/2017:

The Agency agrees with the aim of the Safety Recommendation and will discuss with the Type Certificate Holder (TCH) the required activities and possible modifications in the frame of the Continued Airworthiness Review process.

Status: Open – **Category**:

Norway

Registration	Aircraft Type	Location	Date of event	Event Type
STUDY.WIN.OP		various	various	various

Synopsis of the event:

Winter operations, friction measurements and conditions for friction predictions

Over a 10-year period, the Accident Investigation Board Norway (AIBN) has received 30 reports of accidents and incidents related to operations on contaminated and slippery runways. Nine of these concerned accidents and serious incidents. In the same period AIBN has published 12 investigation reports and issued 36 safety recommendations.

Although the majority of the incidents were less serious in which the pilots regained control of a sliding aircraft, or the aircraft left the runway or taxiway at a low speed causing limited damage to personnel and aircraft, the accident at Stord Airport in 2006 shows the potential for a fatal accident following a runway excursion. Internationally, runway excursions are considered as being one of the high risk areas.

In 2006, the AIBN decided to perform a theme investigation into the theme ‘winter operations and friction measurements and conditions for friction predictions’ to supplement the individual safety investigations. The individual safety investigations focused on the operators and their possible safety actions. The theme investigation focuses on the general framework for operations on contaminated and slippery runways and the potential for safety improvements in general. The AIBN has accumulated and analysed a large volume of documentation, reports, test and research data from various national and international sources in addition to consulting expertise in the field of micrometeorology.

Safety Recommendation NORW-2011-011 (AIBN)

The AIBN recommends that FAA, EASA and CAA Norway evaluate the airlines’ crosswind limits in relation to friction values and consider whether they should be subject to separate approval by the authorities.

Reply No. 5 sent on 23/08/2017:

Since May 2011, when the study report on ‘winter operations, friction measurements and conditions for friction predictions’ was issued by the accident investigation board Norway, a new European Union regulatory framework has been established for civil air operations, applicable for commercial air transport since 28 October 2014.

Commission Regulation (EU) No 965/2012 on air operations and Commission Implementing Regulation (EU) No 628/2013 on standardisation inspections include the concept of safety management systems and associated risk assessment and mitigation models. The regulations provide a foundation for safety through provisions on operator responsibilities, oversight by civil aviation authorities and standardisation inspections by EASA.

Operational crosswind limits are either based on manufacturer’s approved data or on manufacturer’s advisory data. Therefore, an additional approval by the competent authority is considered not to be necessary.

Furthermore, guidance is provided in Safety Information Bulletin (SIB) No 2014-20 on 'aeroplane operations in crosswind conditions', which was published by the Agency on 23 June 2014. The overall objective of the SIB was to raise awareness of the risks associated with operations in strong and/or gusty crosswind conditions. This includes factors which aircraft manufacturers, operators and approved training organisations should take into account when developing or revising approved aircraft flight manuals (AFMs), flight crew operating or training manuals, operational procedures and limitations, and initial and recurrent flight crew training programmes. Notably, the SIB recommends that operators and training organisations consider publishing operational crosswind limitations which take into account their operational experience and the operating environment (e.g. runway width and state, prevailing weather conditions, etc.). These limits should be based on the AFM maximum demonstrated crosswind value, when more limiting values are not published in the limitation section of the AFM. The Agency considers that the safety issue is adequately addressed through this SIB.

Any future action, if deemed necessary, will be taken through systematic implementation of the Agency's Safety Risk Management process and the associated rulemaking and safety promotion programmes and the European plans for aviation safety.

Status: Closed – **Category**: Partial agreement

Romania

Registration	Aircraft Type	Location	Date of event	Event Type
YR-BNP	BRITTEN NORMAN BN2A	In the vicinity of Horea village, Alba County	20/01/2014	Accident

Synopsis of the event:

On 20.01.2014, the Civil Aviation Safety Investigation and Analysis Center (CIAS) was notified indirectly by phone about the accident. Subsequently CIAS received an „Air Safety Report" (ASR), from the operator representing the written communication of the accident in which it was involved a BN-2A-27 aircraft, registered YR-BNP.

BN-2A-27 aicraft, radio call indicative "RFT 111", performed a flight from Bucharest – Băneasa Airport to Oradea Airport, having on board a crew of two pilots and 5 passengers. The flight was performed based on an IFR flight plan, the aircraft took off at 13.38 LT. The last radio communication between the aircraft and the air traffic agencies was made at 15.34.51 LT, at the distance of approximately 52 NM from the point ROŞIA (air radio reporting point). At 15.47 LT a passenger of the aircraft informed by phone that the aircraft crashed, but without being able to communicate their exact location. The wreckage of the aircraft was located after almost 5 hours from receiving the information, in the vicinity of Horea commune, Petreasa village, Alba County.

As a consequence of the accident, the aircraft was destroyed, five of the persons on board were injured and two died.

The cause of the accident occurrence consisted in the engine shutdown due to the severe icing of carburettors based on the following favouring causes:

- incorrect assessment of risk factors specific to the development of this flight due to long interruption from flight and to the crew's lack of experience on BN-2A-27 aircraft, included in MEP class;
- incorrect decision of the aircraft Captain to fly for a long period of time in icing conditions;
- incorrect decision of the aircraft Captain to take off with a weight over the maximum admitted limit and with gravity center position outside the limits calculated and imposed by the manufacturer;
- incorrect decision of the aircraft Captain to continue the mission in IMC flight conditions on IFR flight rules below AMA;
- long-time flight interruption and lack of experience of the crew on this MEP class aircraft.

Safety Recommendation ROMN-2015-053 (CIAS)

EASA should consider to establish some requirements for the air traffic service providers on the management of unintentional situations, such as possible infringements of the routes provided in the flight plan, of the minimum flight levels, of the minimum navigation requirements, and so on, determined by problems such as weather conditions, technical ones, determined by the aircraft performances and/or by other factors through which the air traffic controllers would require these crews confirmation on the flight rules they followed.

Reply No. 3 sent on 23/08/2017:

Commission Implementing Regulation (EU) No 923/2012 [Standardised European Rules of the Air (SERA)] contains the requirements for the flight crews with regard to adherence to the flight plan (SERA.8020). In addition, it implicitly requires the flight crews to advise the Air Traffic Services (ATS) in case of failure, or degradation, of navigation, communications, altimetry, flight control or other systems, or if the aircraft performance is degraded below the level required for the airspace in which it is operating.

With regard to the requirements for the ATS providers and Air Traffic Controllers, the Agency has included the transposition of the provisions in ICAO PANS-ATM 8.7.1 regarding ATS surveillance services in the Notice of Proposed Amendment (NPA) for PART-ATS (RMT.0464). More specifically, the provisions will:

- address providing ATS surveillance in order to enhance safety,
- provide vectoring to assist pilots in their navigation,
- maintain flight path monitoring of air traffic,
- receive information regarding any significant deviations by aircraft from the terms of their respective ATC clearances, including their cleared routes as well as levels, when appropriate.

The consultation period of the NPA closed on 28th February 2017 and EASA is currently reviewing the comments received.

The next deliverable for the rulemaking task RMT.464, an EASA Opinion is planned to be published in the last quarter of 2017.

It should be noted that the SERA.5015(c)(3) includes the following provision (Change from Instrument Flight Rules (IFR) flight to Visual Flight Rules (VFR) flight): "No invitation to change from IFR flight to VFR flight shall be made by ATS either directly or by inference."

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
		Romania	20/11/2016	

Synopsis of the event:

Language for the Passenger Briefing on Domestic Flights.

Safety Recommendation ROMN-2017-002 (CIAS)

It is recommended for EASA to take all the necessary actions to ensure that all operators performing domestic flights are providing the safety briefing for the emergency cases stipulated by CAT.OP.MPA.170 PASSENGER BRIEFING of Regulation (EU) No 965/2012 also in the official language of the state on which's territory the flight is being carried on.

Reply No. 1 sent on 31/03/2017:

There are many factors that can influence aircraft incident and accident survivability and subsequent emergency evacuations. The physical factors include; adopting the correct brace position for impact, the correct use of seatbelts, the location and operation of all emergency exits and the configuration of the cabin including aisles and galleys, seating arrangements and the positioning of cabin crew assigned stations.

Survivability in emergency evacuations is also affected by information factors such as passenger safety information cards, videos, signs, placards, emergency lighting and marking systems, and verbal briefings by the cabin crew.

Initial cabin crew training programmes are required to include training on methods to motivate passengers and the crowd control necessary to expedite an emergency evacuation (see Appendix 1 to Part-CC (Cabin Crew) of Commission Regulation (EU) No 1178/2011 on aircrew). Thereafter, cabin crew shall undergo training from the operator which should also cover passenger handling in emergency situations, tailored to suit the aircraft type and the characteristics of the routes operated (see AMC1 ORO.CC.125(d) of Commission Regulation (EU) No 965/2012 on air operations).

Operators are required to ensure that passenger safety briefings and demonstrations are delivered in a form that facilitates the application of the procedures applicable in the event of an emergency (see sub-paragraph (a) of CAT.OP.MPA.170 of the air operations regulation). In addition, passengers shall be provided with a safety briefing card on which picture-type instructions indicate the operation of emergency equipment and exits likely to be used by passengers (see sub-paragraph (b) of CAT.OP.MPA.170 of the air operations regulation).

How the operator should achieve compliance with the above-mentioned provisions is not prescribed. This supports the performance-based approach to rulemaking which, together with implementation of effective safety management systems (see ORO.GEN.200 of the air operations regulation), is intended to make aviation safer, more efficient and suitably flexible.

There are multiple ways that the operator can meet the safety objective set out under sub-paragraph (a) of CAT.OP.MPA.170. It can be by delivering briefings/demonstrations in language(s) that are most likely to match the native language(s) of most of the passengers on any particular flight, supplemented with non-verbal techniques such as pictorial information for those whose native language is not used in the briefing/demonstration. In fact, assuming the language knowledge of all passengers on any particular flight can be misleading, as even domestic flights may have passengers from different nationalities on board. There is, therefore, no specific language requirement for cabin crew regarding the language to be used when communicating with passengers.

Through their oversight, certification and enforcement responsibilities under ARO.GEN.300 of the air operations regulation, the competent authority is required to verify that the operator to whom the Air Operator Certificate (AOC) shall be/has been issued complies with the applicable requirements.

Therefore, the operator should demonstrate to the competent authority how the passenger briefing/demonstration will satisfy the requirement to give it 'in a form that facilitates the application of the procedures applicable in the event of an emergency'.

Status: Closed – **Category**: Partial agreement

Russian Federation

Registration	Aircraft Type	Location	Date of event	Event Type
VP-BYZ	ATR ATR72	Roschino (Tyumen) airport	02/04/2012	Accident

Synopsis of the event:

On 02.04.2012, at 01:35 UTC (07:35 local time), at day time, under VMC after the take-off from the Roschino (Tyumen) airport RWY 21, the ATR72-201 VP-BYZ aircraft, operated by JSC "UTAir Aviation" (further referred to as "UTAir") crashed while performing the scheduled passenger flight UTA120 from Tyumen to Surgut.

According to the load sheet the A/C TOW and centre of gravity were 18730 kg and 30.72 % MAC correspondingly and that was within the aircraft operation limits. Onboard there were 4 crew members (PIC, F/O and two flight attendants) and 39 passengers, all RF citizens.

After the landing gear and the flaps retraction the aircraft started descending with a significant left bank and then collided with terrain. The ground collision first led to the structural damage of left wing followed by the fuel spillage and fire, and further to the complete destruction of aircraft with the right wing, cockpit and rear section with empennage separation.

Out of the 43 persons on board, 4 crew members and 29 passengers were killed. Others received serious injuries.

Safety Recommendation RUSF-2013-002 (AIB)

Interstate Aviation Committee (MAK) recommends EASA and other simulator certification authorities to consider the possibility to add into the simulator data-package the capability to simulate an unexpected or sudden aircraft stall at any stage of flight.

Reply No. 6 sent on 23/08/2017:

Mitigating Loss of Control In-flight (LOC-I) is one of the European Aviation Safety Agency's (EASA's) highest priorities, and the Agency has published provisions on flight crew Upset Prevention and Recovery Training (UPRT) with the specific objective to ensure that flight crew acquire the necessary competencies to prevent and recover from developing or developed upsets.

ED Decision 2015/012/R published on the EASA website entered into force on 04 May 2016. It defines Applicable Means of Compliance (AMC) and Guidance Materials (GM) for recurrent training programme of Commission Regulation (EU) No 965/2012 (ORO.FC.230) and conversion training (ORO.FC.220) pertaining to Commercial Air Transport (CAT) operators using 'complex motor-powered aeroplanes'.

The material takes into account the International Civil Aviation Organization (ICAO) Annex 6 amendment 38, ICAO Doc 9868 'Procedures for Air Navigation Services - Training' (PANS-TRG) amendment 3 relating to UPRT, and ICAO Doc 10011 'Manual on Aeroplane UPRT'. Reference is also made to the Original Equipment Manufacturers' (OEMs') Aeroplane Upset Recovery Training Aid (AURTA).

In addition, the Agency published Opinion No 06/2017 on "loss of control prevention and recovery training" in the wake of rulemaking task RMT.0581 on 29 June 2017.

This Opinion proposes to introduce mandatory UPRT, testing and checking at various stages for pilots who intend to pursue a pilot career with a commercial airline:

- advanced UPRT course (new FCL.745.A) as a prerequisite for training courses for single-pilot aeroplanes operated in multi-pilot operation, single-pilot high-performance complex aeroplanes and multi-pilot aeroplanes (amendments to FCL.720.A);
- Inclusion of UPRT elements considering the specificities of the particular class or type during the relevant class or type rating training course (amendments to FCL.725.A);
- Amendments to Appendix 9, paragraphs 5 and 6 in Annex I (Part-FCL) of Commission Regulation (EU) No 1178/2011 for including upset prevention and recovery exercises into training courses, skill test and proficiency checks related to single-pilot aeroplanes operated in multi-pilot operations, single-pilot high-performance complex aeroplanes and multi-pilot type rating training courses;

The newly developed advanced UPRT course, which is to be mandated as an addendum to ATP and MPL training courses and also to serve as a prerequisite prior to commencing the first type rating course in multi-pilot operations, is an important step towards enhancing a commercial pilot's resilience to the psychological and physiological aspects often associated with upset conditions.

In support of the new standards, the proposals place greater emphasis on the training of instructors involved in the flight and synthetic training who are foreseen to deliver the various UPRT elements. In line with the recommendation, the rulemaking group considered the option to require post-stall training. Due to the risk of negative transfer of training, the final opinion proposes training up to the stall but does not propose post-stall training to be required in a full flight simulator (FFS), and reiterates that existing flight simulator training devices (FSTDs) may be used to facilitate UPRT. EASA and the rulemaking group concluded that requiring a full stall simulation during the take-off phase cannot be realistically accomplished without the risk of negative transfer of training.

Rulemaking Task RMT.0196 'Update of flight simulation training devices requirement was launched on July 2016 with the publication of its terms of reference, with the objective to adapt the requirements for Flight Simulator Training Devices (CS-FSTD) to the training need, and especially to the latest UPRT amendments. Because UPRT training requirements do not require post-stalls exercises in FSTD in situations exceeding the flight envelope limits due to the risk of negative transfer of training, no further mandatory specifications for FSTD full-stall simulation is considered in that domain.

Status: Closed – **Category**: Partial agreement

Registration	Aircraft Type	Location	Date of event	Event Type
F-GLSA	DASSAULT FALCON50	Moscow - Vnukovo, Russia	20/10/2014	Accident

Synopsis of the event:

On 20.10.2014, at 19:58 UTC (23:58 local time), at night, during takeoff at Moscow (Vnukovo) A/D a Falcon 50EX F-GLSA aircraft operated by Unijet crashed while conducting charter flight LEA074P from Moscow (Vnukovo) to Paris (Le Bourget).

Safety Recommendation RUSF-2016-006 (AIB)

It is recommended that EASA, IAC Aviation Register, Rosaviatsiya and other certification authorities: Consider the practicability to make mandatory for newly certified airplane (as per CS-25, AR-25 or equivalent) the installation of a nose wheel steering accessible by each flight crew member at their duty position.

Reply No. 2 sent on 02/06/2017:

EASA has evaluated the recommended safety action and reached the following conclusion:

The aircraft lateral control during take-off and landing is already provided and accomplished through the main controls on both sides of the flight deck and the nose wheel steering function for taxiing purposes is provided through the tiller located on one side only. The steering through the tiller is not intended to provide lateral control during any other phase of the flight but taxiing and it should not be used during take-off and landing.

Thus, the Agency considers that the relevant certification specifications regarding this issue are adequate and no further action is necessary.

Status: Closed – **Category**: Disagreement

Registration	Aircraft Type	Location	Date of event	Event Type
TC-MCL	BOEING 747	Bishkek-Manas International Airport (UCFM), Kyrgyzstan	16/01/2017	Accident

Synopsis of the event:

On January 2017 the crew of a cargo Boeing 747-412F a/c registration TC-MCL operated by ACT Airlines including Captain, FO, loadmaster and a/c technician were performing Flight TK6491 transporting cargo from Chek Lap Kok Airport (VHHH, Hong Kong) via Manas Airport (UCFM, Bishkek) to Ataturk Airport (LTBA, Istanbul). Manas Airport was planned as a transit airport for refuelling and crew change. The approach was conducted to RWY 26. The a/c overflown the entire length of the runway and impacted the ground near RWY 08 LMM. The a/c was totally destroyed in the accident. The 4 persons on board were killed. 35 local residents of Dacha-SU settlement were killed by the crash a/c and ground fire, 37 local residents got injuries of varying severity.

Safety Recommendation RUSF-2017-001 (AIB)

It is recommended that the FAA in cooperation with the Boeing Company consider the practicability of changing the A/P logic to prevent occurrences of following inertial glideslope descent (in LAND 3 or LAND 2 mode) in cases when approach path does not allow landing in the appropriate area on the runway. It is recommended that other certification authorities and aircraft manufacturers consider the applicability of this recommendation taking into account actual A/P algorithms.

Reply No. 1 sent on 30/06/2017:

The Agency is at the stage of verifying the need to consider the applicability of this recommendation to EASA certified products. Additionally, the Agency is in contact with the FAA regarding their analysis of the B747 case.

Status: Open – **Category**:

Spain

Registration	Aircraft Type	Location	Date of event	Event Type
G-BYAG	BOEING 757	Girona Airport, Spain	14/09/1999	Accident

Synopsis of the event:

The aircraft made an approach and landing at Girona Airport, Spain, at night through heavy thunderstorms with rain. At a late stage of the approach the airfield lighting failed for a few seconds. The aircraft touched down hard simultaneously on the nose and main wheels and bounced. A second harder touchdown on the nosewheel displaced the nose landing gear and its support stucture. Resultant aircraft systems damage caused the loss of virtually all electrical power, interference with controls and uncommanded forward thrust increase.

The aircraft ran off the side at high speed around 1,000 metres after the second touchdown. After crossing a number of obstacles it landed heavily in a field outside the airfield boundary and come to rest after having travelled almost 1,900 metres from the second touchdown. The fuselage had been fractured in two places and there was considerable disruption to the cabin. There was no fire. Evacuation of all the occupants, initiated by the cabin crew, was completed rapidly. Emergency services had difficulty in locating the aircraft in the adverse conditions and arrived on the scene after evacuation had been completed.

Safety Recommendation SPAN-2004-030 (CIAIAC)

It is recommended to EASA that they evaluate the possibility of making mandatory requirements to train flight crew in go-around manoeuvres even from below the decision height, with the aim of reducing the response time when faced with unforeseen events.

Reply No. 3 sent on 31/08/2017:

Mitigating Loss of Control In-flight (LOC-I) is one of the European Aviation Safety Agency's (EASA's) highest priorities, and the Agency has published provisions on flight crew Upset Prevention and Recovery Training (UPRT) with the specific objective to ensure that flight crew acquire the necessary competencies to prevent and recover from developing or developed upsets.

The Agency published Opinion No 06/2017 on "loss of control prevention and recovery training" in the wake of rulemaking task RMT.0581 on 29 June 2017. This Opinion proposes to introduce mandatory UPRT, testing and checking at various stages for pilots who intend to pursue a pilot career with a commercial airline.

The newly developed advanced UPRT course, which is to be mandated as an addendum to ATP and MPL training courses and also to serve as a prerequisite prior to commencing the first type rating course in multi-pilot operations, is an important step towards enhancing a commercial pilot's resilience to the psychological and physiological aspects often associated with upset conditions. It develops the ability of the pilot to cope with unforeseen events.

In support of the new standards, appendix 9 — Training, skill test and proficiency checks for MPL, ATPL, type and class ratings, and proficiency checks for IRs is amended to include UPRT. It now includes go-arounds with all engines operating from various stages during instrument approach (4.2) and rejected landing with all engines operating from various heights below DH/MDH and after touchdown (4.5).

In line with ICAO, the opinion and the decision mentioned above propose UPRT to proficiency during initial and recurrent training.

Status: Closed – **Category**: Agreement

Registration	Aircraft Type	Location	Date of event	Event Type
EC-HFP	DOUGLAS DC9	Madrid-Barajas Airport, Spain	20/08/2008	Accident

Synopsis of the event:

On 20 August 2008 at 14:24 local time, a McDonnell Douglas DC-9-82 (MD-82) aircraft, registration EC-HFP, operated by Spanair, suffered an accident immediately after takeoff from Madrid-Barajas Airport, Madrid (Spain). The aircraft was destroyed as a result of impact with the ground and the subsequent fire. Of the aircraft's occupants, 154 were killed, including all six crew members, and 18 were seriously injured.

The investigation has determined that the accident occurred because:

The crew lost control of the airplane as a consequence of entering a stall immediately after takeoff due to an improper airplane configuration involving the non-deployment of the slats/flaps following a series of mistakes and omissions, along with the absence of the improper takeoff configuration warning.

The crew did not identified the stall warnings and did not correct said situation after takeoff. They momentarily retarded the engine throttles, increased the pitch angle and did correct the bank angle, leading to a deterioration of stall condition.

The crew did not detect the configuration error because they did not properly use the checklists, which contain items to select and verify the position of the slats/flaps when preparing the flight.

Specifically:

- They did not carry out the action to select the flaps/slats with the associated control lever (in the "After Start" checklist);
- They did not cross check the position of the lever or the status of the flaps and slats indicating lights when executing the "After Start" checklist;
- They omitted the check of the flaps/ slats when doing the "Takeoff Briefing" in the "Taxi" checklist;
- During the visual check performed as part of the "Final Items" in the "Takeoff Imminent" checklist, the actual position of the flaps/slats as shown on the cockpit instruments was not verified.

The CIAIAC has determined that the following factors contributed to the accident occurrence:

- The absence of takeoff configuration warning resulting from the failure of the TOWS to operate, which thus did not warn the crew that the airplane's takeofff configuration was not appropriate. The reason for the failure of the TOWS to function could not be reliably established.
- Improper crew resource management (CRM), which did not prevent deviation from procedures in the presence of unscheduled interruptions to flight preparations.

Safety Recommendation SPAN-2009-008 (CIAIAC)

It is recommended that the European Aviation Safety Agency and the Federal Aviation Administration (FAA) of the United States require the Boeing Company to evaluate the operating conditions, in-service life, reliability and failure modes of relays in position R2-5 of the ground sensing system in the DC-9, MD-80, MD-90 and B-717 series of airplanes and that it specify a maintenance program for this component based on the results of said evaluation. [REC 08/09]

Reply No. 3 sent on 28/04/2017:

The Agency has further reviewed the content of this safety recommendation in the light of the additional information provided by the CIAIAC.

However, it is confirmed that the fleet wide in-service history for this relay does not indicate that any reliability issues exist. Collectively, the Twinjet fleet has accumulated over 120,000,000 flight hours, without any reports of significant issues with the relay in the R2-5 position, or for this relay part number in general.

Furthermore, EASA considers the flight crew action to verify the function of the Take Off Warning System (TOWS) before every flight as sufficient monitoring of the safety related function in which the R2.5 relay is involved.

For the abovementioned reasons, EASA does not see justification for imposing further monitoring on the subject relay.

Status: Closed – **Category**: Partial agreement

Safety Recommendation SPAN-2009-009 (CIAIAC)

It is recommended to the European Aviation Safety Agency and to the Federal Aviation Administration (FAA) of the United States that the design of Takeoff Warning Systems (TOWS) be reviewed in transport airplanes whose certification standards did not require the installation of such systems or which, if they did require it, did not apply to them the guidelines and interpretation provided by AMC 25.703 in the case of the EASA, or circular AC 25.703 in the case of the FAA. The goal of this review should be to require that the TOWS comply with the applicable requirements for critical systems classified as essential in CS 25.1309 and FAR 25.1309. [REC09/09]

Reply No. 3 sent on 28/04/2017:

The Agency has further reviewed the content of this safety recommendation in the light of the additional information provided by the CIAIAC.

However, it is considered that the accident rate since 1962 remains a valid evidence to support the conclusion that no unsafe condition exists.

In fact, the CIAIAC accident report itself mentions “the absence of an improper take-off configuration warning resulting from the failure of the TOWS to operate” only as a contributing factor to numerous causes for the subject accident.” Furthermore, the same accident report states that “the reason for the failure of the TOWS to function could not be reliably established”.

Status: Closed – **Category**: Partial agreement

Safety Recommendation SPAN-2011-018 (CIAIAC)

It is recommended that the United States Federal Aviation Administration (FAA) and European Aviation Safety Agency (EASA) require takeoff stall recovery as part of initial and recurring training programs of airline transport pilots. [REC 18/11]

Reply No. 5 sent on 31/08/2017:

Mitigating Loss of Control In-flight (LOC-I) is one of the European Aviation Safety Agency’s (EASA’s) highest priorities, and the Agency has published provisions on flight crew Upset Prevention and Recovery Training (UPRT) with the specific objective to ensure that flight crew acquire the necessary competencies to prevent and recover from developing or developed upsets.

ED Decision 2015/012/R published on the EASA website entered into force on 04 May 2016. It defines Applicable Means of Compliance (AMC) and Guidance Material (GM) for recurrent training programme (ORO.FC.230) and operator conversion training (ORO.FC.220) pertaining to Commercial Air Transport (CAT) operators using ‘complex motor-powered aeroplanes’.

In addition, the Agency published Opinion No 06/2017 on “loss of control prevention and recovery training” in the wake of rulemaking task RMT.0581 on 29 June 2017. This Opinion proposes to introduce mandatory UPRT, testing and checking at various stages for pilots who intend to pursue a pilot career with a commercial airline.

The newly developed advanced UPRT course, which is to be mandated as an addendum to ATP and MPL training courses and also to serve as a prerequisite prior to commencing the first type rating course in multi-pilot operations, is an important step towards enhancing a commercial pilot's resilience to the psychological and physiological aspects often associated with upset conditions.

It should be noted that the exercise to be conducted includes recovery from a stall event in the take-off configuration at a safe altitude. EASA and the rulemaking group concluded that requiring a stall event recovery during the take-off phase cannot be realistically accomplished without the risk of negative transfer of training.

In support of the new standards, the proposals place greater emphasis on the training of instructors involved in the flight and synthetic training who are foreseen to deliver the various UPRT elements. EASA proposes training up to the stall but does not propose post-stall training to be required in a full flight simulator (FFS), due to the risk of negative transfer of training, and reiterates that existing flight simulator training devices (FSTDs) may be used to facilitate UPRT.

In line with ICAO, the opinion and the decision mentioned above propose UPRT to proficiency during initial and recurrent training.

Status: Closed – **Category**: Partial agreement

Safety Recommendation SPAN-2011-019 (CIAIAC)

It is recommended that the United States Federal Aviation Administration (FAA) and European Aviation Safety Agency (EASA) study and assess the stall recovery procedure in the flight manuals of large transport airplanes to include a check of the flap/slat lever and its adjustment, if required. [REC 19/11]

Reply No. 3 sent on 14/03/2017:

The Agency has further reviewed the content of this safety recommendation in the light of the additional information provided by the CIAIAC.

However, stall recovery procedures are not included in the Aircraft Flight Manual (AFM), as this is not required according to Certification Specifications for large aeroplanes (CS-25). The check of the flap/slat lever should be included in other original equipment manufacturer (OEM) manuals, such as the Aircraft Operating Manuals/Flight Crew Operating Manuals (AOM/FCOM), if required. Such procedures are not part of the certification process, therefore enabling provision of procedures which are tailored according to the individual characteristics of each individual aircraft, including also any possible configuration changes.

Therefore, EASA opted to issue a Safety Information Bulletin (SIB) to encourage any manufacturer to study and recommend that manufacturers assess whether their documented stall recovery procedure properly addresses a check of the flap/slat lever and its possible adjustment. The intent of the SIB would be to highlight the importance of establishing the correct configuration during a stall event.

SIB 2013-02, whilst drawing attention to the stall recovery procedures, states that specific items, such as configuration changes (i.e., flaps extension), that could be required at a specific point during the stall recovery, will be included in a specific procedure for a particular aeroplane.

Status: Closed – **Category**: Agreement

Safety Recommendation SPAN-2011-020 (CIAIAC)

It is recommended that the European Aviation Safety Agency (EASA) establish requirements for flight simulators so as to allow simulator training to cover sustained takeoff stalls that reproduce situations that could exceed the flight envelope limits. [REC 20/11]

Reply No. 5 sent on 31/08/2017:

Mitigating Loss of Control In-flight (LOC-I) is one of the European Aviation Safety Agency's (EASA's) highest priorities, and the Agency has published provisions on flight crew Upset Prevention and Recovery Training (UPRT) with the specific objective to ensure that flight crew acquire the necessary competencies to prevent and recover from developing or developed upsets.

The Agency published Opinion No 06/2017 on "loss of control prevention and recovery training" in the wake of rulemaking task RMT.0581 on 29 June 2017. This Opinion proposes to introduce mandatory UPRT, testing and checking at various stages for pilots who intend to pursue a pilot career with a commercial airline.

The proposal places greater emphasis on the training of instructors involved in the flight and synthetic training who are foreseen to deliver the various UPRT elements. EASA proposed training up to the stall but does not propose post-stall training to be required in a full flight simulator (FFS), due to the risk of negative transfer of training, and reiterates that existing flight simulator training devices (FSTDs) may be used to facilitate UPRT. EASA and the rulemaking group concluded that requiring a full stall simulation during the take-off phase cannot be realistically accomplished without the risk of negative transfer of training.

Rulemaking Task RMT.0196 'Update of flight simulation training devices requirement was launched on July 2016 with the objective to adapt the requirements for Flight Simulator Training Devices (CS-FSTD) to the training need, and especially to the latest UPRT amendments. Because UPRT requirements do not require post-stall exercises in FSTD in situations exceeding the flight envelope limits due to the risk of negative transfer of training, no further mandatory specifications for FSTD full-stall simulation is considered in that domain.

Status: Closed – **Category**: Disagreement

Safety Recommendation SPAN-2011-030 (CIAIAC)

It is recommended that the European Aviation Safety Agency (EASA) undertake regulatory initiatives intended to require commercial air transport operators to implement a program of line operations safety audits, as part of their accident prevention and flight safety programs. [REC 30/11]

Reply No. 4 sent on 31/03/2017:

The accident prevention and flight safety programme as prescribed under Commission Regulation (EC) No 859/2008 (also known as EU-OPS 1 and now repealed), has been enhanced and integrated into provisions on operator's Management Systems in a new regulatory framework for civil aviation, applicable since 28 October 2014 (see ORO.GEN.200 of Commission Regulation (EU) No 965/2012 on air operations).

The operator is required to establish, implement and maintain a management system that includes the identification of aviation safety hazards entailed by the activities of the operator, their evaluation and the management of associated risks, including taking actions to mitigate the risk and verify their effectiveness (see sub-paragraph (a)(3) of ORO.GEN.200).

Safety performance monitoring and assessment should include safety audits by the operator focussing on the integrity of the operator's management system, and periodically assessing the status of safety risk controls [see sub-paragraph (d)(2)(iv) of AMC1 ORO.GEN.200(a)(3)]. This replicates the principles behind the line operations safety audits referred to in the safety recommendation through conducting a programme of in-flight observations during normal operations.

Under an established process of continuous improvement the operator should conduct proactive and reactive evaluations of procedures through safety audits and surveys; proactive evaluation of individuals' performance to verify the fulfilment of their safety responsibilities, and reactive evaluations in order to verify the effectiveness of the system for control and mitigation of risk [see sub-paragraph (f) of AMC1 ORO.GEN.200(a)(3)].

Furthermore, operators should operate an internal occurrence reporting scheme to identify those instances where routine procedures have failed, and to take appropriate safety action (see Regulation (EU) No 376/2014, applicable since 15 November 2015). This proactive, evidence-based approach is an essential part of the overall monitoring function and is complementary to the normal day-to-day procedures and 'control' systems [see GM1 ORO.GEN.200(a)(3)].

In summary, through its management system, the operator should conduct safety audits to assess the effectiveness of mitigation implemented (such as crew resource management training, threat and error management training, standard operating procedures) against risks identified. Through this process, the operator should proactively promote best practices and enhance the organisation's underlying safety culture.

Status: Closed – **Category**: Partial agreement

Safety Recommendation SPAN-2011-031 (CIAIAC)

It is recommended that the United States Federal Aviation Administration (FAA) and the European Aviation Safety Agency (EASA) clarify the definition of an inoperative element that is contained in the preamble to all Master Minimum Equipment Lists (MMEL), so as to avoid interpretation errors in its application. [REC 31/11]

Reply No. 3 sent on 14/03/2017:

EASA discussed, in cooperation with the Federal Aviation Administration (FAA), the definition of "inoperative" included in the Master Minimum Equipment List (MMEL) at the Rulemaking task group meeting for Certification Specifications CS-MMEL. The definition was found, during the Rulemaking task group discussion and subsequently, as the best possible one and it is consistently used during the daily application of MMEL items through the appropriate MEL.

Additionally, the FAA issued, on May 11, 2015, Policy Letter (PL) 25, Revision 21 GC (Global Change), which contains the definition of "inoperative", providing harmonization with respect to the EASA definition.

Based on the above, EASA considers that the current definition of "inoperative" included in the sample preamble to MMEL in the CS-MMEL is the clearest possible and provides harmonization with the FAA. Any change to the wording of the definition would potentially render it more ambiguous and prone to erroneous interpretations in its application.

Status: Closed – **Category**: Disagreement

Safety Recommendation SPAN-2011-033 (CIAIAC)

It is recommended that the European Aviation Safety Agency (EASA) issue an interpretation regarding the need to identify the source of a malfunction prior to using the MEL, and that it assures that national authorities accept and apply the same standards with regard to their procedures for overseeing operators in their respective States. [REC 33/11]

Reply No. 4 sent on 14/03/2017:

The Agency has taken an action to address this safety recommendation through publication of Executive Director (ED) Decision 2014/017/R on 24 April 20014 which contains amendments to Acceptable Means of Compliance (AMC)/Guidance Material (GM) to Commission Regulation (EU) No 965/2012 on air operations.

The operator is required to ensure that the Minimum Equipment List (MEL) contains a preamble, including guidance and definitions for flight crews and maintenance personnel using the MEL [see ORO.MLR.105 (d)(1)].

The MEL preamble should provide guidance on how to identify the origin of a failure or malfunction to the extent necessary for appropriate application of the MEL [see new sub-paragraph (d) of the associated AMC1 ORO.MLR.105(d)(1) introduced through ED Decision 2014/017/R].

This should ensure that the source of a malfunction is identified prior to use of the MEL, and the competent authority should verify this preamble during the MEL approval process [see ORO.MLR.105 (b)].

In addition, the competent authority is required to verify compliance with all of the MEL requirements before issuing an approval, and to verify continued compliance by the operator [see ARO.GEN.300 (a)(1) and (2)].

Status: Closed – **Category**: Agreement

Safety Recommendation SPAN-2011-042 (CIAIAC)

It is recommended that the European Aviation Safety Agency (EASA) draft guidelines and instructions so that national authorities are better able to assess the general situation of commercial air transport operators that undergo notable changes, such as rapid expansions, a significant growth in their resources, or the opposite situation, a reduction in their activity or resources, such as through personnel layoffs, the purpose being for authorities to constantly adapt their monitoring plans to consider their evaluation of these changes so as to proactively detect and assess risk factors that point to a possible degradation in safety level. [REC 42/11]

Reply No. 3 sent on 14/03/2017:

Change management principles are embedded in the management system provisions under Commission Regulation (EU) No 965/2012 on air operations, and the associated Acceptable Means of Compliance (AMC) and Guidance Material (GM), which has been applicable for Commercial Air Transport operations since 28 October 2014.

The operator is required to establish, implement and maintain a management system that includes the identification of aviation safety hazards entailed by the activities of the operator, their evaluation and the management of associated risks, including taking actions to mitigate the risk and verify their effectiveness (see sub-paragraph (a)(3) of ORO.GEN.200).

The operator should have sufficient qualified personnel for the planned tasks and activities to be performed in accordance with the applicable requirements (see sub-paragraph (c) of ORO.GEN.210).

The operator should manage safety risks related to a change. Complex operators may establish a safety action group to assist or act on behalf of the safety review board which is described under AMC1 ORO.GEN.200(a). The group should assess the impact of operational changes on safety [see sub-paragraph (d)(3) of GM1 ORO.GEN.200(a)(1)].

Any change affecting the scope of the air operator certificate or the operations specifications or any of the risk management elements of the operator's management system requires prior approval by the competent authority (see ORO.GEN.130). Typical examples of such changes are related to a change of legal entity, the operator's scope of activities, additional locations of the operator, or changes to the facilities [see sub-paragraph (a) of GM1 ORO.GEN.130(a)].

Changes not requiring prior approval shall be managed as defined in the procedure approved by the competent authority (see sub-paragraph (c) of ORO.GEN.130). The competent authority shall assess the change information provided by the organisation, to verify compliance with the applicable requirements (see sub-paragraph (c) of ARO.GEN.330).

As part of initial certification and continuing oversight of an operator, the competent authority should evaluate the operator's safety risk assessment processes related to hazards identified by the operator [see AMC2 ARO.GEN.300(a);(b);(c)].

As part of its continuing oversight, the competent authority should continue to assess the organisation's compliance with the applicable requirements, including the effectiveness of the management system [see GM1 ARO.GEN.300(a); (b);(c)].

When determining the oversight programme for an organisation, the competent authority should consider the scope of changes not requiring prior approval [see sub-paragraph (a)(2) of AMC1 ARO.GEN.305(b);(d);(d1)]. If the organisation has continuously demonstrated that it has full control over all changes, the oversight planning cycle may be adjusted accordingly by the competent authority (see sub-paragraph (c)(2) of ARO.GEN.305).

Effective implementation of the above-mentioned provisions should ensure that the risks associated with changes in the organisation are suitably mitigated by the operator, and that the effectiveness of the mitigation is continuously monitored by the operator and the competent authority.

Status: Closed – **Category**: Agreement

Registration	Aircraft Type	Location	Date of event	Event Type
EC-HPX	SUKHOI SU29	Ocana Airport, Toledo	05/03/2001	Serious incident

Synopsis of the event:

On 5 March 2001, a Sukhoi aircraft on a local flight over the Ocana Aerodrome (Toledo) suffered a jammed rudder, which forced the pilot to land using the other control surfaces.

The aircraft had taken off a few minutes earlier from runway 11 at the aerodrome to conduct tests as part of the approval process for certifying the aircraft in Spain.

Over the course of the flight and after some manoeuvres, the pilot noticed that the rudder control was jammed to the right. He reported this on the radio, and it was suggested to him that he parachute from the aircraft. The pilot was able to compensate for the lack of rudder by banking to the left. He made an approach to runway 11 and managed to land. During the landing run, without steering control, the aircraft departed the runway and came to a stop in a grassy area next to the runway.

Once the aircraft stopped, the rudder was unjammed and, there being no apparent damage, the aircraft was taxied to the stand without external assistance. The pilot was unharmed.

Safety Recommendation SPAN-2015-006 (CIAIAC)

It is recommended that EASA ensure that the flight control systems on Sukhoi 29 be designed such that neither the occupants nor objects in the cockpit can cause jamming, chafing or interference in said systems, or if they do, that the pertinent corrective actions be established. [REC 08/12]

Reply No. 2 sent on 02/06/2017:

The Su-29 is a Russian type and has been granted a Type Certificate ("CT 60-29" dated 5th May 1994) by IAC AR (Russian Aviation Authority) against the Russian AR-23 (similar to the FAR-23). The Russian Federation is the "State of Design". Sukhoi is the Type Certificate Holder (TCH). The Su-29 is not type certificated in an EASA Member State.

A limited number of Su-29 (less than 15) are flying in EASA Member States under Specific Airworthiness Specifications (SAS) EASA.SAS.A.093 or Permit to Fly (with EASA approved Flight Conditions). These are the only SU-29 aircraft for which EASA is responsible.

Since it is primarily the responsibility of Russian Aviation Authority to address the issue behind the safety recommendation, EASA has informed Russian Aviation Authority and the TCH of the issue and has asked for their position.

To date, EASA is still awaiting feedback from Russian Aviation Authority and the TCH.

In addition, in order to discharge their responsibility with respect to the aeroplanes registered in Europe, EASA has investigated with the European aeroplane owners their service experience, through a survey with the known Su-29 owners (through the applicable Member States' national aviation authorities). The Su-29 owners have confirmed that no similar cases were encountered and no issues were found on the design of the control systems of the Su-29.

Based on the above and considering that no other similar cases have been reported in the last 15 years, EASA finds that no other actions are necessary, apart from the standard continued airworthiness monitoring process.

Status: Closed – **Category**: Disagreement

Registration	Aircraft Type	Location	Date of event	Event Type
SP-SUC	PZL SWIDNIK W3	VILLA DE MAZO - SANTA CRUZ DE TENERIFE	10/08/2016	Accident

Synopsis of the event:

On Wednesday, 10 August 2016, at approximately 16:50 local time, a PZL-Swidnik W-3AS Sokol aircraft, registration SP-SUC, was involved in an accident while taking part in firefighting activities.

The aircraft, which was at the Forest Firefighting Support Squad (BRIF) base in the town of Puntagorda, on the island of La Palma, was mobilized at around 15:00 to take part in firefighting efforts in the town of Villa de Mazo.

After making 12 drops in the area, the forward command post instructed its crew to proceed to a different point from the last one but where they had already made a drop. While executing the approach maneuverer to make a drop at that point, the helicopter started to yaw left at an increasing rate, eventually becoming uncontrollable.

The aircraft crashed into the mountainside and was significantly damaged. The two occupants were taken to a hospital for observation.

The investigation has concluded that this accident was likely caused by a loss of tail rotor effectiveness (LTE), which the pilot was late in identifying, resulting in a loss of control of the helicopter, which ended up impacting the terrain.

Contributing to the accident is the fact that the water was not dropped and the bucket was not released.

Safety Recommendation SPAN-2017-010 (CIAIAC)

It is recommended that the EASA standardize the theoretical and practical training on the LTE phenomenon among the various helicopter training programs for obtaining the LAPL(H), PPL(H), CPL(H), ATPL(H) and FI(H) licenses. This training should benefit the level of complexity and responsibility associated with each license. [REC 27/17]

Reply No. 1 sent on 17/11/2017:

Loss of tail rotor effectiveness is in the tail-rotor aerodynamics learning objectives (LO) 082 06 01 02 (ref. AMC1 FCL.310; FCL.515 (b); FCL.615 (b)) in support of the detailed theoretical knowledge syllabus and LOs for airline transport pilot licence (ATPL), commercial pilot licence (CPL) and instrument rating (IR). It is also part of the flight instructor for helicopters FI(H) training course so that the instructor is competent to teach such exercise.

The theoretical knowledge for Light aircraft pilot license helicopters LAPL(H) and private pilot licence for helicopters PPL(H) is simplified (ref. FCL.110.H and FCL.210.H). The associated AMC for flight instruction describes the flight instruction syllabus and specifically mentions loss of tail rotor effectiveness to be trained.

For commercial licences, an ATO might develop a training for an ATP integrated, ATP modular, CPL/IR integrated, CPL integrated, or CPL modular course for helicopters. This is reflected in Part-FCL Appendix 3 and the breakdown of training exercise is given in AMC1 to Appendix 3 - Training courses for the issue of a CPL and an ATPL.

This breakdown of flight exercises for a professional licence, as presented in Part-FCL, is less descriptive than for private pilots. The ATO is responsible for developing a training programme for each type of course offered (ORA.ATO.125 Training programme). It will depend on initial pilot qualification at entry and the training tools (FSTD, helicopter complexity...). For instance, a PPL(H) is a prerequisite for a modular course.

To ensure that the organisation is capable to carry this level of responsibility, Annex VII (Part-ORA) to Commission Regulation (EU) 1178/2011, Subpart ATO – Approved Training Organisation contains in Section II, additional requirements for ATOs providing training for CPL, MPL and ATPL and the associated ratings and certificates. The ATO should demonstrate to the competent authority that an adequate number of qualified and competent staff is employed with minimum qualification level for the Head of Training and Chief Flight Instructor. It should also describe the briefings and air exercise that have to be followed in the training manual and operations manual (AMC1 ORA.ATO.230(a)).

There is an optimum balance between personnel competence and heavier organisation approval process versus the privilege to manage the complexity of training programmes for commercial licences, taking into account the various type ratings and associated flight Crew Operational Suitability Data. The Agency does not regulate into the details such training programme, but the approval process is there to guarantee continued quality standards in training delivery. ORA.GEN.200 Management system also ensure that compliance monitoring function and a safety management system are in place.

As a support, the Agency, published documentation such as the "EHEST Helicopter Flight Instructor Manual" or the "EHEST Leaflet HE 5 Risk Management in Training". Both cover the LTE in detail.

Following this Safety Recommendation, the Agency did a safety review of LTE occurrences. This review did not reveal any obvious weakness in the commercial training programme compared to private pilots. LTE phenomena involving private pilots are often associated with low experience pilots flying on low performance helicopters. LTE phenomena involving commercial pilots are often associated with the risk management of complex operations or manoeuvers such as sling release, high altitude operations or highly specific photography shooting.

As a follow-up, the Agency intends to review this topic with Competent Authorities of EASA Member States and establish whether some concerns exist in the development of training programme by ATO especially using the very specific example of LTE.

Following this review, the Agency will provide feedback.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
EC-LXF	HUGHES 369	In the ocean 3 NM east of Pinedo (Valencia)	19/05/2015	Accident

Synopsis of the event:

On Tuesday, 19 May 2015 at 14:00, helicopter EC-LXF took off from the temporary heliport in Huércal-Overa (Almería) on a positioning flight to La Seu d'Urgell (Lleida). Onboard the aircraft were the pilot and another occupant who was also a helicopter pilot but who had no flight duties in the cockpit.

Upon reaching the Valencia TMA, the pilot requested to proceed from Cullera to Sagunto along the coastline at 1000 ft or below, which Valencia Approach Control authorized.

While flying over the sea, they heard a loud noise in the helicopter, which started rotating violently left while banking right.

The pilot ditched the aircraft and issued a MAYDAY on the radio at 15:18. The helicopter fell into the sea and sank. The occupants managed to exit the aircraft under their own power.

An aircraft flying in the area received the MAYDAY call and notified Valencia approach control. Upon verifying that they had lost the radar signal from the aircraft, they activated the search and rescue services.

The two occupants were rescued alive by a SASEMAR vessel.

The helicopter wreckage could not be found despite a months" long search under water.

Based on the statements of the helicopter's occupants, the most probable cause of the accident seems to have been the interruption of power transmitted from the engine to the main transmission through the shaft joining them.

Safety Recommendation SPAN-2017-017 (CIAIAC)

It is recommended that the European Aviation Safety Agency (EASA) considers the suitability of ruling the need to conduct water survival training for flights over water in specialized air operations, as they are defined in Regulation (EU) 965/2012, part SPO. [REC 17/17]

Reply No. 1 sent on 17/08/2017:

This safety issue is addressed under Part-SPO (specialised operations), Part-ORO (organisation requirements for air operations) and Part-NCO (non-commercial operations with other-than complex motor-powered aircraft) of Commission Regulation (EU) No 965/2012 (applicable for SPO since 21 April 2017 at the latest), with the applicability depending on the nature of the specialised operation ie commercial or non-commercial, and depending on the complexity of the aircraft ie complex motor-powered or not, as defined in Regulation (EC) No 216/2008. It should be noted that the operation (SPO with other-than complex motor-powered helicopters) involved in the accident on 19 May 2015, which is related to this safety recommendation, was governed by national legislation. The relevant provisions under Commission Regulation (EU) No 965/2012 are as follows:

- The operator is required to conduct a risk assessment of their operation/s and to establish suitable mitigating measures through implementation of either standard operating procedures for non-commercial SPO with complex motor-powered aircraft and for all commercial SPO (SPO.OP.230; AMC1 SPO.OP.230; SPO.SPEC.HESLO/HEC.100), or checklists for NCO (NCO.SPEC.105; GM1 NCO.SPEC.105; NCO.SPEC.HESLO/HEC.100), including, where appropriate and/or applicable, carriage of specific equipment for over water flights and/or provision of water survival training for flight crew. The mitigation should be tailored according to the level of exposure to the safety risk eg survivability in the event of a survivable accident over water taking account of whether the operations are frequently or only occasionally conducted over water.
- Moreover, helicopter operators are required to carry additional equipment for flights over water, such as life jackets, survival suits, life rafts, and/or survival emergency locator transmitters, depending on the nature of the operation and depending on the complexity of the helicopter (SPO.IDE.H.195/7/8/9 or NCO.IDE.H.175).
- In addition, complex motor-powered helicopters operated on flights over water in a hostile environment at a distance from land corresponding to more than 10 minutes' flying time at normal cruising speed, and other-than complex motor-powered helicopters flying over water in a hostile environment beyond a distance of 50 NM from land shall be fitted with emergency flotation equipment (SPO.IDE.H.203 (c) or NCO.IDE.H.185, and see subparagraph 69 of Annex I of Commission Regulation (EU) No 965/2012 for definition of hostile environment).
- Also, operators conducting non-commercial SPO with complex motor-powered aircraft or conducting commercial SPO shall ensure that their aircraft are equipped and its crews are qualified as required for the area and type of operation (ORO.GEN.110 (d)).

In addition, the safety issue has recently been evaluated by EASA through rulemaking task RMT.0409 on helicopter offshore operations (HOFO), which concluded with the publication of additional legislative mitigation (Commission Regulation (EU) 2016/1199 of 22 July 2016 amending Regulation (EU) No 965/2012, and the associated Executive Director Decision 2016/022/R) for operations with the highest exposure to the safety risk ie commercial HOFO and non-commercial HOFO with complex motor-powered helicopters (applicable from 01 July 2018), as follows:

- Provisions on Specific Approvals (SPA) under SPA.HOFO, including, for example:
- additional procedures and equipment for operations in a hostile environment, for example, life jackets, survival suits, emergency breathing systems, life rafts (SPA.HOFO.165);
- water entry and sea survival training for flight crew (SPA.HOFO.170 (a)(3));
- implementation of operating procedures (SPA.HOFO.110).

The above-mentioned provisions are expected to achieve an acceptable level of safety with regard to water survival in the event of a survivable accident over water, taking into account the level of exposure to the risk.

Lastly, EASA has in place a Safety Risk Management process, which, through routine monitoring based on data analysis, aims to identify any weaknesses in the regulatory framework in order to take appropriate action to close any safety gaps.

Status: Closed – **Category**: Partial agreement

Registration	Aircraft Type	Location	Date of event	Event Type
EC-YDQ	RANS S6	San Javier-Murcia	15/07/2016	Accident

Synopsis of the event:

The pilot was flying a second traffic circuit of the "Los Garranchos" airfield, in the municipality of San Javier (Murcia). Based on information provided by eyewitnesses, during the final phase of the circuit the engine misfired and seemed to stop. The aircraft pitched up and veered to its right, vertically impacting the terrain. The pilot was killed as a result of the impact. The aircraft was outfitted with a ballistic parachute. While this parachute was being deactivated by specialized personnel, a fire broke out that affected the aircraft.

The investigation concluded that the accident occurred due to a loss of control of the aircraft after the downwind leg of the airfield circuit. No signs were found that the aircraft and/or its components malfunctioned, although it could not be rule out that a drop in power at the most critical point in the circuit surprised the pilot, who did not have experience on the aircraft.

The following factors contributed to the accident:

- the wind conditions that day at the airfield, with moderate wings and strong gusts that could have affected the aircraft's behavior at the most critical point in the circuit if the engine failed,
- the pilot's lack of experience on this aircraft type, which was less powerful and had an opposite direction of propeller rotation than his usual aircraft and

- the fact that the pilot had been tuning up the engine before making the first flight with the aircraft, which might have contributed to a possible engine failure.

The investigation also conducted an analysis on the use of ballistic parachutes on aircraft and the lack of knowledge that emergency personnel (firefighting, rescue, etc.) have regarding this system.

Several safety recommendations are issued in this regard on the need to warn, inform and train said personnel in order to avoid an inadvertent ignition of the system, which could compromise the physical integrity of nearby individuals in the event of an aircraft accident or incident in which the parachute does not deploy.

Safety Recommendation SPAN-2017-038 (CIAIAC)

It is recommended that the European Aviation Safety Agency (EASA) lay out the measures required so that aircraft equipped with a ballistic parachute reflect this in the flight plan as part of point SERA.4005, Contents of a flight plan, "Emergency and survival equipment". [REC 38/17]

Reply No. 1 sent on 15/12/2017:

EASA agrees with the proposed intent of the Safety Recommendation.

With Rulemaking Task RMT 0.476, EASA intends to ensure the maintenance of Commission Implementing Regulation (EU) No 923/2012 concerning the common rules of the air (SERA), as well as of the related Acceptable Means of Compliance (AMC) and Guidance Material (GM) included in the Executive Director (ED) Decision 2013/013/R. In this context, by first quarter of 2018 EASA will issue an Opinion and a related draft Decision in accordance with Art. 15 (Direct publication) of Management Board Decision No 18-2015 on the Agency's Rulemaking Procedure, to introduce necessary amendments to the existing Implementing Regulation (IR), AMC and GM.

Status: Open – **Category**:

Safety Recommendation SPAN-2017-040 (CIAIAC)

It is recommended that the European Aviation Safety Agency (EASA) lay out the measures required to initiate, at the European level, an awareness, information and training campaign directed at general aviation users and emergency services personnel on the existence, identification, location and deactivation of ballistic parachutes in the event of an accident or incident. [REC 40/17]

Reply No. 1 sent on 15/12/2017:

EASA will examine how awareness of ballistic parachute recovery systems (BPRS) to emergency services personnel can be improved further. At this stage, the subject of BPRS and the associated risk is currently undergoing initial analysis in the EASA Safety Risk Management (SRM) process, which will enable the systemic identification of both strategic actions for inclusion in the European Plan for Aviation Safety (EPAS) and any more immediate actions that may be considered appropriate.

Status: Open – **Category**:

Safety Recommendation SPAN-2017-042 (CIAIAC)

It is recommended that the European Aviation Safety Agency (EASA) should liaise with International Civil Aviation Organization (ICAO) to include standards for the design (conspicuity, coloration, visibility, and content) in the installation of ballistic parachute systems. This should include, as compulsory for pyrotechnical systems, specifications of the routing of the components of the system and a thermal exposure indicator to enable emergency responders to quickly and safely disable the system, and fully alert persons to the hazards and the danger areas on the aircraft. [REC 42/17]

Reply No. 1 sent on 15/12/2017:

EASA is analysing this safety recommendation and will provide an updated reply during first quarter 2018.

Status: Open – **Category**:

Sweden

Registration	Aircraft Type	Location	Date of event	Event Type
LN-KKD	BOEING 737	Arlanda airport, Stockholm County	20/12/2009	Incident

Synopsis of the event:

The flight was a regular flight with passengers from Stockholm/Arlanda airport to Nice in France. The airplane was equipped with 148 seats and had 145 passengers on board.

During the preparations for engine start on the apron the electrical power from the airplane's APU-generator ceased, and resulted in that the main lighting in the cabin extinguished and the cabin internal communication- and advertisement system stopped to function.

The pilots continued with the preparations for flight and during start of the right engine short fire flames from engine's exhaust appeared. A small pool of fuel on the ground behind the engine also caught fire, but soon extinct spontaneously.

Some of the passengers observed the fire flames and called "it is on fire". This led to that a number of passengers left their seats and moved forward toward the exits. The cabin crew in the forward part of the cabin could not properly assess the situation, since the passengers prevented both view and passage backward, but concluded that there was a safety risk. An emergency evacuation was therefore initiated by the cabin crew in the forward part of the cabin.

The cabin crew member in the rear part of the cabin observed that both the flames from the engine and the fire on the ground soon ceased, considered that there was no further risk for fire. Because of the electrical power loss, there was however no possibility by normal procedures to communicate with the other crew members.

The airplane was evacuated through the front doors. No person was injured in the emergency evacuation.

The serious incident to personal injury at the unexpected evacuation of the aircraft was caused by that the cabin attendants were unable to control or prevent the course of events in the cabin, when spontaneous calls about "fire" had started a reaction among the passengers.

Safety Recommendation SWED-2011-011 (SHK)

The European Aviation Safety Agency is recommended to consider the need for expanded information and checking of understanding emergency evacuation procedures, of passengers who are expected to act in emergency evacuation of aircraft. [RL 2010:10 R2]

Reply No. 5 sent on 28/04/2017:

The Agency evaluated this safety issue within the framework of rulemaking tasks RMT.0516 and RMT.0517 'Updating Air OPS Regulation (EU) No 965/2012 Implementing Rules and related Acceptable Means of Compliance (AMC) & Guidance Material (GM)'.

The outcome of the evaluation is contained in EASA Executive Director (ED) Decision 2017/008/R, which was published on the Agency's web site on 30 March 2017.

The ED Decision introduces a new point (a)(3) in AMC1 CAT.OP.MPA.170 on passenger briefings before take-off, which states that passengers occupying seats with direct access to emergency exits not staffed by cabin crew members should receive an additional briefing on the operation and use of the exit.

The Decision also introduces new GM1 CAT.OP.MPA.170(a) on the briefing of passengers occupying seats with direct access to emergency exits not staffed by cabin crew members. Point (a) of this GM states that the emergency exit briefing should contain instructions on the operation of the exit, assessment of surrounding conditions for the safe use of the exit, and recognition of emergency commands given by the crew. Point (b) of the same GM states that cabin crew should verify that the passenger(s) is (are) able and willing to assist the crew in case of an emergency and that the passenger(s) has (have) understood the instructions.

Status: Closed – **Category**: Partial agreement

Registration	Aircraft Type	Location	Date of event	Event Type
SE-MAP	BAE ATP	Helsinki Vantaa airport	11/01/2010	Serious incident

Synopsis of the event:

A cargo aircraft of type BAe ATP was to fly from Helsinki to Copenhagen. Owing to the prevailing weather conditions, the aircraft had undergone a twostep deicing prior to departure. In the two-step deicing procedure, hot water is mixed with glycol (Type I fluid) to remove ice, frost and snow from critical surfaces on the aircraft; after this, a fluid containing thickening agent (Type II/IV) is applied, to prevent ice from reforming. At takeoff, the control column could not be pulled back when the rotation speed was reached, and the pilot felt that the elevator movement was restricted. Takeoff was aborted and the aircraft taxied back to the apron.

Once SHK's investigation had started, it was discovered that several similar incidents involving the same type of aircraft and similar conditions had occurred. Following an initial technical inspection, it could be noted that the individual craft which had experienced these incidents shared certain common denominators: deicing with Type II/IV, combined with too narrow a gap between the stabiliser and elevator, were determining factors in the incidents.

In collaboration with one of the operators, SHK has carried out a series of tests to recreate and document the phenomenon. The test results verified the connection between too small an elevator hinge gap and elevator restrictions, in situations where deicing had been carried out using fluids containing thickening agents.

The investigations also showed that the process for drawing up specifications and requirements for deicing fluids is, to a certain extent, controlled by trade organisations. The investigation found, too, that at present no monitoring or specific inspection activities relating to these fluids are carried out by any pan-European aviation safety body. Neither is there any authorisation process, or any set certification rules, with regard to the types of aircraft which can/may use different types of deicing fluids.

The incidents involving elevator restrictions were caused by a phenomenon which, for unknown reasons, occurs following the use of anti-icing fluids containing thickening agents, on individual aircraft where the stabiliser and elevator are too close together. One contributory factor was the fact that there were shortcomings in that part of the aircraft's type certification exercises that concerned anti-icing.

Safety Recommendation SWED-2011-016 (SHK)

It is recommended that EASA should investigate the possibility of tightening requirements on aircraft design organizations in terms of demonstrating that the aircraft has full manoeuvrability during all phases of the takeoff procedure after the application of de- and anti-icing fluids. [RL 2011: 16e R2]

Reply No. 4 sent on 02/06/2017:

This safety recommendation is being taken into account in rulemaking task RMT.0118 entitled 'Analysis of on-ground wing contamination effect on take-off performance degradation' which started with the publication of its terms of reference on 21/03/2017:

https://www.easa.europa.eu/document-library/terms-of-reference-and-group-compositions/tor-rmt0118

The specific objective of this task is to mitigate the risk of loss of control of an aeroplane (in particular during, but not limited to, the take-off phase), and the risk of runway excursion after an aborted take-off at high speed, caused by an aerodynamic performance or controllability degradation, as a result of aerodynamic surfaces contamination by ice or de/anti-icing fluids.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
EP-IBB	AIRBUS A300	Stockholm/Arlanda Airport	16/01/2010	Incident

Synopsis of the event:

Operational

The incident occurred in connection with a commercial air transport with the airline Iran Air. The aircraft in question, an Airbus A300-600 with the registration EP-IBB, was to commence a flight from Stockholm/Arlanda Airport to Tehran in Iran. Following normal preparations, the aircraft was taxied out to runway 19R for take-off.

The runway conditions were reported as good, with some patches of ice along the runway. The investigation has however revealed that the runway was contaminated and likely had coefficients of friction which fell short of the reported values.

After taxiing out, the crew began routine take-off procedures by increasing engine thrust during acceleration on the runway. After just over 10 seconds, one or more of the edges in a repaired section of the engine – the diffuser aft air seal – separated, thereby triggering a sequence which led to a sudden engine failure.

No warning messages were announced in the cockpit at the time of the failure; the pilots only noticed the engine failure through a muffled bang at the same time as the aircraft began to veer to the left. The initial veer, immediately after the engine seizure, was a result of the nose wheel being unable to gain sufficient force against the contaminated surface to counteract the moment which arose when the right engine – for a duration of approximately 1.5 seconds – supplied full thrust at the same time as the left engine rapidly lost thrust. The highest speed registered during the sequence was 59 knots (110 km/h).

Despite the co-pilot's reactions – retarding the thrust levers after just over a second, at the same time as steering and opposite rudder were applied – the veer could not be corrected and the aircraft ran off the runway, mainly caused by the forces from the moment in combination with the slippery surface. The chances of stopping the continued veer were probably reduced by the fact that the pilots did not apply any differential braking in the opposite direction.

The investigation also showed that the pilots' braking was unintentionally asymmetrical, with a higher brake pressure on the "wrong side", i.e., in the direction in which the aircraft ran off the runway. Even if this fact may have affected the aircraft's movement pattern, such an impact has, however, not been possible to determine with any reasonable degree of certainty. It is, nevertheless, noteworthy that analyzed data from the FDR show that the recorded brake angles (asymmetric braking) were not accompanied or followed by any corresponding change in the rate of heading change.

There are no specific certification requirements for aircraft design organization to show that the aircraft is manoeuvrable in the event of a sudden loss of engine thrust during the initial stage of the take-off sequence. There are also no mandatory requirements for training regarding how to handle sudden losses of engine thrust during the initial stage of the take-off sequence for pilots in training or recurrent training for this class of aircraft.

Technical

Following the event, the engine was sent for examination to Lufthansa Technik (LHT) in Hamburg on behalf of SHK. Following a completed damage analysis, LHT provided a report on the examination. In addition to an analysis of the sequence and the damage, the report also contained an opinion on the probable cause of the engine failure.

According to LHT, it is likely that the diffuser aft air seal had come loose due to micro cracks in the nine attachment lugs that hold the seal against the diffuser.

Neither General Electric Aircraft Engines (GE) nor SHK were in agreement with the LHT's assessment of the recovered hardware for which reason the decision was made for further analysis of the recovered parts of the failed engine at the Volvo Aero Corporation metallurgical labs.

The analysis carried out by Volvo Aero Corporation indicated that the engine failure that occurred – and which was the primary reason for the incident – had probably been caused by fatigue damage in a different part of the diffuser aft air seal.

The engine failure started once the aft air seal separated from the diffuser assembly. Seal fragments began increasing the amount of debris when seal material fractured a six bolt section of the stage 1 HPT1 blade retainer, liberating pieces of bolt threads, nuts and retainer material. This debris quickly got into the engine gaspath resulting in downstream damage from the HPT Rotor aft causing an engine stall.

The engine stall is clearly visible in the films taken by onlookers from the station building. As the liberated debris travelled aft down the engine's gaspath, low pressure turbine blades were being broken / separated. With the amount of LPT blade damage, fan speed (N1) began to decrease since the LPT didn't have enough blade airfoils to drive the fan.

The overall assessment of the investigation results suggests that the fatigue had started in the repaired seam at the diffuser aft air seal teeth. All documented cases of CF6-80C2 diffuser aft air seal failures have been seals that had been previously repaired.

The incident that occurred was caused by the following factors:

Operational

- Deficiencies in the certification process for large aircraft with wing-mounted engines with regard to requirements for yaw stability in the event of sudden loss of engine power in the speed range below V_{MCG}.
- Deficiencies in pilot training with regard to training for sudden losses of engine thrust in the speed range below V_{MCG}.

Technical

- Deficiencies in the approval and follow-up of the Dabbler TIG Weld repair on the engine's diffuser aft air seal.

Safety Recommendation SWED-2012-006 (SHK)

EASA is recommended to ensure that initial and recurrent pilot training includes mandatory rejected takeoff exercises that cover events of a sudden loss of engine thrust below VMCG. [RL 2012: 21 R6]

Reply No. 4 sent on 31/08/2017:

EASA Rulemaking Task RMT.0188 reviewed this recommendation and delivered Opinion No 05/2017 amending Commission Regulation (EU) No 1178/2011 related to flight crew licensing (FCL) on 29 June 2017. The opinion coordinates Part–FCL safety and regulatory issues and takes benefit from ED Decision 2016/008/R of 2 May 2016 that addresses performance-based navigation (PBN) operations with new Applicable Means of Compliance (AMC) and Guidance Materials (GM). This decision introduces new learning objectives (LOs) for ATPL, MPL, CPL and IR for aeroplanes and helicopters. LO 081 08 02 10 requires to describe how velocity, minimum control (ground) (VMCG) is determined and to explain the influence of the centre of gravity location. LO 081 08 02 11 requires to describe the influence of density and to explain why velocity, minimum control (air) (VMCA), velocity, minimum control (landing) (VMCL) and VMCG reduce with an increase in altitude and temperature.

In support of the new standards, appendix 9 — Training, skill test and proficiency checks for MPL, ATPL, type and class ratings, and proficiency checks for IRs is amended but no change to the rejected take off manoeuvre was deemed necessary.

Status: Closed – **Category**: Partial agreement

Registration	Aircraft Type	Location	Date of event	Event Type
SE-DUX	BOMBARDIER CL600 2B19	Oajevágge, Norrbotten County, Sweden	07/01/2016	Accident

Synopsis of the event:

The accident occurred on 8 January 2016 during a commercial cargo flight from Oslo/Gardermoen Airport (ENGM) to Tromsø/Langnes Airport (ENTC) and involved an aeroplane of the model CL-600-2B19, manufactured by Bombardier Inc. The aeroplane was operated by West Atlantic Sweden AB and had the registration SE-DUX.

The flight was uneventful until the start of the event, which occurred during the approach briefing in level flight at FL 330. The event started at 00:19:20 hrs during darkness without moonlight, clouds or turbulence. The lack of external visual references meant that the pilots were totally dependent on their instruments which, inter alia consisted of three independent attitude indicators.

According to recorded data and simulations a very fast increase in pitch was displayed on the left attitude indicator. The pilot in command, who was the pilot flying and seated in the left seat exclaimed a strong expression. The displayed pitch change meant that the pilot in command was subjected to a surprise effect and a degradation of spatial orientation The autopilot was, most probably, disconnected automatically, a “cavalry charge” aural warning and a single chime was heard, the latter most likely as a result of miscompare between the left and right pilots’ flying displays (PFD).

Both elevators moved towards nose down and nose down stabilizer trim was gradually activated from the left control wheel trim switch. The aeroplane started to descend, the angle of attack and G-loads became negative. Both pilots exclaimed strong expressions and the co-pilot said “come up”.

About 13 seconds after the start of the event the crew were presented with two contradictory attitude indicators with red chevrons pointing in opposite directions. At the same time none of the instruments displayed any comparator caution due to the PFDs declutter function in unusual attitude. Bank angle warnings were heard and the maximum operating speed and Mach number were exceeded 17 seconds after the start of the event, which activated the overspeed warning. The speed continued to increase, a distress call was transmitted and acknowledged by the air traffic control and the engine thrust was reduced to flight idle.

The crew was active during the entire event. The dialogue between the pilots consisted mainly of different perceptions regarding turn directions. They also expressed the need to climb. At this stage, the pilots were probably subjected to spatial disorientation. The aircraft collided with the ground one minute and twenty seconds after the initial height loss. The two pilots were fatally injured and the aeroplane was destroyed.

SHK has investigated the alerting and rescue services that were performed. There is a potential for improvement of procedures, training and exercises that could shorten the alerting time, improve the situational awareness of relevant rescue authorities and increase the ability to carry out a rescue operation in the mountains.

The accident site and the wreckage did not show any evidence of an inflight break-up.

The flight recorders were recovered and readout. Calculations and simulations were performed to reconstruct the event and showed that the aeroplane’s flight control system operated normally.

The erroneous attitude indication on PFD 1 was caused by a malfunction of the Inertial Reference Unit (IRU 1). The pitch and roll comparator indications of the PFDs were removed when the attitude indicators displayed unusual attitudes. In the simulator, in which the crew had trained, the corresponding indications were not removed. During the event the pilots initially became communicatively isolated from each other.

The current flight operational system lacked essential elements which are necessary. In this occurrence a system for efficient communication was not in place. SHK considers that a general system of initial standard calls for the handling of abnormal and emergency procedures and also for unusual and unexpected situations should be incorporated in commercial aviation.

The accident was caused by insufficient operational prerequisites for the management of a failure in a redundant system.

Contributing factors were:

- The absence of an effective system for communication in abnormal and emergency situations.
- The flight instrument system provided insufficient guidance about malfunctions that occurred.
- The initial manoeuver that resulted in negative G-loads probably affected the pilots’ ability to manage the situation in a rational manner.

Safety Recommendation SWED-2016-001 (SHK)

EASA is recommended to ensure that a general system of initial standard calls for the handling of abnormal and emergency procedures and also for unusual and unexpected situations is implemented throughout the commercial air transport industry. [RL 2016:11 R2]

Reply No. 1 sent on 20/01/2017:

Part-FCL (Annex 1) of Commission Regulation (EU) No 1178/2011 on Aircrew includes specific multi-crew cooperation (MCC) training (FCL.735.A). The MCC course includes training to achieve competencies in communication, problem-solving, decision-making, monitoring and cross-checking. It includes making and responding to standard callouts (see AMC1 FCL.735.A).

The operator shall also define the crew composition (ORO.FC.100) and provide Crew Resource Management (CRM) training appropriate to the flight crew member's role, as specified in the operations manual (ORO.FC.115 (a) of Commission Regulation (EU) No 965/2012). Elements of CRM training are required to be included in the aircraft type training and recurrent training as well as in the command course (ORO.FC.115 (b)).

CRM is a major contributing factor to many occurrences, therefore the Agency significantly extended and modernised the existing CRM training scheme with ED Decision 2015/022/R, which entered into force on 01 October 2016. In particular, AMC1 ORO.FC.115 refers to the integration of CRM principles into flight crew training and operations including abnormal and emergency procedures. It identifies as training elements the operation monitoring and intervention as specified in the operations manual and puts a special emphasis on crew resilience, surprise and startle effect.

The regulatory framework already provides requirements for monitoring and intervention on abnormal and emergency procedures with a special emphasis on unexpected situations. The Agency intends to support air operators in its implementation.

For this purpose, the Agency held a workshop on "CRM in practice" on 8 November 2016, and plans to launch a safety promotion action to take stock of and disseminate the best practices discussed during the workshop.

Status: Open – **Category**:

Safety Recommendation SWED-2016-005 (SHK)

Ensure that the design criteria of PFD units are improved in such a way that pertinent cautions are not removed during unusual attitude or declutter modes. [RL 2016:11 R3]

Reply No. 1 sent on 03/03/2017:

Pitch miscompare flags are implemented in Primary Flight Displays (PFD) to mitigate the effect of misleading attitude indication. The intent of the certification requirements for PFD is that miscompare flags are not removed in unusual attitudes or declutter modes.

EASA is in contact with TCCA, primary certification authority for the CL600-2B19, to analyse the reasons why the pitch miscompare flag is removed in this design in unusual attitudes. In parallel, EASA is investigating if any other EASA certified design has similar design features.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
SE-MDB	ATR ATR72	during approach to Visby Airport	30/11/2014	Serious incident

Synopsis of the event:

The incident occurred during a scheduled flight from Bromma to Visby. The commander has stated that small vibrations were felt during descent, at around 7,000 feet. The indicated speed was 250 kts and the power levers were set to idle.

The vibrations increased in intensity and the commander reduced the rate of descent to 2,500 feet per minute. The vibrations became so severe that the cabin crew had difficulties moving in the cabin and that there were difficulties reading the instruments in cockpit.

Information from the flight recorders shows that the left propeller was first feathered momentarily. The right propeller was feathered thereafter, after which the right engine was shut off. The flight continued with the left engine in operation. The information also reveals that the communication between the pilots did not include confirmation of which engine's power levers were manoeuvred. A number of warning signals were activated during the sequence of events. The signals were not reset during the acute phase of the event.

When the commander moved the right propeller control to feather position, he was unable to push it all the way to fuel shut-off position. The control was therefore returned to the "auto" position and then pushed back via the feather position to fuel shut-off, whereby the vibrations subsided.

The co-pilot explained the situation to the air traffic controller in the Visby tower and declared an emergency situation. The air traffic controller triggered the alert signal.

The approach and landing were executed without problems.

The investigation revealed following damages:

- The eccentric trunnion pin on blade no. 2 was ruptured.
- The front propeller pitch change actuator plate was severely bent on all six positions.
- The engine mounts had received damage from contact with metal.
- The engine's compressor housing was cracked along half of its circumference.
- The shaft of the AC generator was ruptured.

SHK has been unable to establish the cause of the serious incident.

Safety Recommendation SWED-2016-002 (SHK)

EASA is recommended to:

Consider introducing temporary limitations in the manoeuvring envelope, or limitations of the power ranges within the latter, until the problem is resolved and rectified. [RL 2016:07 R1]

Reply No. 1 sent on 17/01/2017:

On 19 January 2016, EASA issued Safety Information Bulletin (SIB) 2015-03R1. Since then, there were no further events on record where propeller vibration caused damage to the hardware.

Operators flying aeroplanes as defined in the Applicability of this SIB should follow as much as possible the aeroplane manufacturer recommendation for a standard descent speed at maximum 240 knots (refer to ATR Fight Crew Operating Manual – Section 3.07). If, for any reason, during descent the speed becomes close to VMO and the power levers have to be reduced to 'flight idle' position, a smooth and progressive reduction of the power levers should be accomplished.

Additionally, the UTAS company issued in August 2015 (SB568F-61-69) "Propeller - Variable Pitch Aircraft - Introduction Of New Ball Separator", addressing reduction of internal friction loads which are suspected to contribute to the observed vibrations.

Testing coordinated between the Aircraft- and Propeller Type Certificate holder is still ongoing. These tests are necessary to confirm the possible causes of severe vibrations.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
SE-LVR	DIAMOND DA42	Ängsö, Västmanland County	22/01/2016	Accident

Synopsis of the event:

A training flight in an aeroplane of the model Diamond DA42 was to be undertaken at Västerås Airport. On board were an instructor and a student in the front seats, with one further student in the back seat. During the training exercise – the plan for which included approaches and flying on one engine – the instructor should demonstrate a manoeuvre called "deep stall". It was dark during the flight, which was undertaken partly under instrument meteorological conditions, with overcast clouds with base of 300–400 feet and tops of approx. 2,000 feet, with icing conditions forecasted in clouds.

According to the instructor, the exercise was conducted in the following manner: The aeroplane was brought into a steep climb with an attitude of approx. 25–30º at the same time as an approx. 30º bank to the right was set. During the deceleration, both engines were set to full power and when the aeroplane was approaching stall speed, the stick was pulled fully back. However, the students gave evidence when interviewed that the pitch attitude during the climb was at least 50º (nose up). This information also supports the analyses conducted by the Swedish Accident Investigation Authority (SHK) on data recorded by units in the aeroplane.

At the top of this manoeuvre, the aeroplane rolled over to the left and entered a spin from an altitude of approx. 4,500 feet. The instructor attempted – e.g. by varying the engine power – to exit the spin. However, the aeroplane continued to spin and, following a sequence of events lasting just over 30 seconds, crashed into woodland close to Ängsjö Church. According to the data registered on units on board and the radar data that have been obtained, the rate of descent in the initial phase is determined to have been approx. 52 m/s (approx. 10 200 ft/min), which then gradually decreased to approx. 19 m/s (approx. 3 700 ft/min) prior to impact.

During the impact phase into the woods, a tree trunk entered the fuselage, causing the student in the back seat to be thrown out of the aeroplane. With the rate of descent and the rotation decreasing and with parts of the aeroplane remaining in the surrounding trees, the wrecked aeroplane finally impacted in the woodland and was totally destroyed. The two people in the front seats survived, but were seriously injured. The student in the back seat, who also suffered serious injuries, came to his senses standing in front of the aeroplane wreckage.

Both SHK and the type certificate holder, Diamond, have made the assessment that the manoeuvre performed can be classified as a type of aerobatic flying that is not permitted in accordance with the aeroplane's approved flight manual.

According to the applicable regulations, the flight training organization shall have a well-thought-out and functional quality and safety system for the identification and minimisation of potential hazards in its operations. This system is scrutinised during the Swedish Transport Agency's initial inspection and oversight inspections.

However, these inspections do not encompass any detailed inspection of practical realisation – or levels of risk – with respect to the aspects of practical flight training that may be associated with increased levels of risk. The applicable regulations also contain no guidance pertaining to the practical execution of such exercises.

All in all, SHK is of the opinion that it must be possible to guarantee students at flying schools the same level of flight safety as afforded to passengers on commercial flights. This accident shows that both regulations and supervision are deficient with respect to the identification of areas of risk and hazardous circumstances in conjunction with flight training.

The accident was caused by the following factors:

- The high risk factor of the exercise.
- Deficient planning of the training exercise with respect to the options for managing hazardous situations.
- Lack of guidance from the authorities concerned regarding practical implementation of certain exercises within flight training.

Safety Recommendation SWED-2017-001 (SHK)

Identify exercises in flight training that might entail an increased risk factor and to issue guidance material (GM) for the practical execution of these. [RL 2017:04 R1]

Reply No. 1 sent on 02/06/2017:

EASA made a comprehensive review of all accidents and serious incidents since the year 2000 related to flight instruction or examination on aircrafts with a maximum take-off weight below 5.7t. This review highlighted the higher risk related to stall and upset training exercises as well as the in-flight simulation of an engine-out situation.

EASA used the opportunity of the aircrew standardisation meeting with the competent authorities that took place on 12.10.2016 to present a similar accident investigation as a case study. The EASA review was shared with competent authorities of EASA Member States to support them in the frame of their oversight responsibilities.

However, the Agency believes that there is not a one-size-fits-all guidance material because the risk areas vary depending on the type of activity. The risk has to be permanently evaluated and monitored in line with latest information. Each organisation has to define their own procedures tailored to mitigate the risks associated with their specific fleet and operations. The Agency does not offer the proper level of granularity and cannot substitute for the requirement for an Approved Training organisation (ATO) to implement a hazard identification and risk mitigation process (ORA.GEN.200 Management System of Commission Regulation (EU) No. 1178/2011).

Therefore, whilst it is acknowledged that prescriptive limitations without safety assurance have limited effect, awareness and safety promotion are key vectors to help ATOs in their Safety Risk Management.

The Swedish Safety Investigation Authority has already issued a similar recommendation and expressed a doubt on the effectiveness of individual flight schools' safety management systems (SMS). Because SMS is an essential component of organisations approval and is under the scrutiny of the oversight function, EASA will send a new information to all Member States to carefully take into consideration the increased risk of such exercise in the frame of their oversight function and clarify the status of Upset Prevention and Recovery Training.

In addition, the Agency will contact the Swedish Transport Agency and work in cooperation with it with the objective that individual flight schools properly follow SMS principles and demonstrate it to their Competent Authority.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
YR-FZA	FOKKER F28	Gällivare Airport	06/04/2016	Serious incident

Synopsis of the event:

The serious incident occurred during a scheduled flight from Arvidsjaur to Gällivare airport and involved an aeroplane of the type Fokker 100 with registration marks YR-FZA. The aircraft was operated by the Romanian operator Carpatair on behalf of the Swedish airline Nextjet.

During the instrument approach to runway 30 at Gällivare airport, which was performed in darkness with snow and rain, the runway threshold was crossed at approximately 50 feet with a recorded speed of 134 knots. After a hard landing in the touchdown zone with unchanged speed the aeroplane bounced and was displaced in yaw. Reported friction coefficients were 0.36, 0.34 and 0.35.

After the landing, which was performed with full flaps and air brake, the lift dumpers on the wing's upper surface extended. According to interviews, maximum reverse was activated and the brakes were applied immediately after the displacement in yaw. Data from the recordings indicate that reverse rpm increased from low idle only 20 seconds after touchdown at a speed of about 50 knots. Engine reverse rpm then only reached 75% and 65%, while the maximum speed limitation is 95.5%.

The aeroplane overran the end of the runway and came to a full stop on the runway strip. There were no injuries and the damage to the aeroplane was limited.

The investigation revealed that the serious incident was caused by the gradual decrease of the conditions for a safe landing, which was not perceived in due time.

Contributing factors:

- The airspeed did not decrease from 50 feet's height to touchdown.
- The reported friction coefficients were probably unreliable.

- The wheel brakes were probably not fully applied due to the initial yaw disturbance.
- The reverse rpm increased only 20 seconds after touchdown.

Safety Recommendation SWED-2017-003 (SHK)

EASA is recommended to work for the introduction of a generic Safe Landing concept including the flight phase from the runway threshold until full stop. [RL 2017:03 R2]

Reply No. 1 sent on 02/06/2017:

The European Plan for Aviation Safety (EPAS) is fed from the European Safety Risk Management process. At the heart of the EPAS are the domain Safety Risk Portfolios, which identify the Key Risk Areas (Accident Outcomes) to be prevented and the associated Safety Issues. The assessment of identified Safety Issues results in the identification of EPAS action proposals. A Safety Issue has been added to the CAT Aeroplanes Safety Risk Portfolio for “Approach Path Management”. This will be subject to a full Safety Issue Assessment that will fully evaluate the Safe Landing Concept as part of the action proposals.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
SE-LLO	BAE ATP	Vilhelmina Airport, Västerbotten County	06/04/2016	Serious incident

Synopsis of the event:

The occurrence consists of two separate incidents, with the second having been a consequence of the first. The occurrence has therefore been described as *the first incident* and *the second incident*, respectively.

The first incident

The aeroplane, a BAe ATP from NextJet AB with the registration SE-LLO, took off from Hemavan Tärnaby Airport on a scheduled flight to Vilhelmina. There were 19 passengers and four crew members on board.

The plan was for the flight to continue on to Stockholm Arlanda Airport after a short stay on the ground in Vilhelmina. Due to the prevailing weather, the pilots were informed via radio from the airport in Vilhelmina that snow clearance of the runway had commenced.

The pilots commenced an ILS6 approach to runway 28 in Vilhelmina. The visibility at the time was approximately 1,400 metres in snow with reported friction coefficients of 0.43, 0.45 and 0.42 and 0.5 cm (5 mm) of slush on the runway. Performance calculations were made using the lowest friction value of 0.42, but without corrections for contamination on the runway. According to the commander, the approach was normal and without deviations or problems. The approach was perceived early on to be stabilised and no major adjustments to attitude or engine power needed to be made. This is supported by recordings from the aeroplane’s flight data recorder.

According to the commander, no deviations were perceived in the final phase of the approach in terms of flight controls, engine thrust or changes in the aeroplane’s trim position. According to the commander, touchdown was at a normal speed on the centre line in the touchdown zone of the runway. Immediately after touchdown, the aeroplane drifted over to the right side of the runway and after a certain amount of ground roll outside the runway edge, was steered back towards the runway centre line again.

Measurements have shown that the aircraft's right pair of wheels left the asphalted section of the runway around 400 metres after the estimated touchdown point and rolled outside of the runway for a distance of 155 metres before it could be steered back onto the runway again. The wheels were at most 2.5 metres outside of the edge of the asphalt. Roughly 500 metres from the touchdown zone, the aeroplane's wheels hit one of the runway edge lights, which came loose from its fitting and was thrown to the side.

Data from the aeroplane's flight data recorder (FDR) revealed that the thrust during reversal of the engines after touchdown was not symmetrical. The thrust of the right engine was notably higher than that of the left engine. This caused a yawing moment to the right which could not be corrected by the crew. The incident was caused by the following factors:

- Asymmetrical reverse thrust.
- The braking action was probably worse than what was indicated by the friction coefficients.

The second incident

When the aircraft taxied back after landing, the crew checked the wheel tracks and informed air traffic control that they had run off the runway and also damaged a runway edge light. Following the incident, the commander attempted to make contact with the company's technician, only to find that he had left the airport. The commander thus performed an inspection of the aircraft himself and detected no damage.

During their stay on the ground, the commander had a dialogue with one of the ramp service persons regarding the occurrence. At this time, the crew's perception of the incident changed and they did not believe they had run off the runway. This perception is however not consistent with the radio com-munications with the tower, the information provided by the ramp service person and the images taken directly after the incident.

The commander contacted the company's Head of Flight Operations to inform them about the occurrence. At this time, however, it was not reported that the aircraft had left the runway – only that it had "drifted far out towards the runway edge". The Head of Flight Operations thus had no objections to the flight continuing on to Stockholm Arlanda, according to plan.

However, it was established during an inspection the day after the occurrence that the aeroplane had suffered structural damage to the right wing flap, likely caused by the runway light being thrown up towards the underside of the wing when it was run over. SHK has established that the damaged wing flap – which had to be replaced – had cracks and other damage which likely affected the structural integrity of the unit. The aeroplane was thus not airworthy for the flights which were carried out following the landing in Vilhelmina. The incident was caused by the following factors:

- Continued flight was prioritised in the crew's assessment of the incident during landing.
- Shortcomings in the company's systematic safety management with regard to maintenance checks and inspections.

Safety Recommendation SWED-2017-005 (SHK)

The EASA is recommended to:

Introduce generic performance corrections for aeroplane operations on surfaces contaminated with slush or water. [RL 2017:0e R1]

Reply No. 1 sent on 02/06/2017:

The current regulatory framework addresses the risks associated with aeroplanes landing on contaminated runways, such as:

Commission Regulation (EU) No 965/2012 on air operations:

- For wet and contaminated runways, performance data determined in accordance with applicable standards on certification of large aeroplanes or equivalent shall be used, and shall be specified in the operations manual (sub-paragraphs (b) and (c) of CAT.POL.A.200).
- If the performance data has been determined on the basis of a measured runway friction coefficient, the operator should use a procedure correlating the measured runway friction coefficient and the effective braking coefficient of friction of the aeroplane type over the required speed range for the existing runway conditions (AMC1 CAT.POL.A.200).
- Contaminated runway means a runway of which more than 25 % of the runway surface area within the required length and width being used is covered by: surface water more than 3 mm (0,125 in) deep, or by slush, or loose snow, equivalent to more than 3 mm (0,125 in) of water; snow which has been compressed into a solid mass which resists further compression and will hold together or break into lumps if picked up (compacted snow); ice, including wet ice (sub-paragraph (25) of Annex I 'Definitions).
- Before commencing an approach to land, the commander shall be satisfied that, according to the information available to him/her, the weather at the aerodrome and the condition of the runway or final approach and take-off area intended to be used should not prevent a safe approach, landing or missed approach, having regard to the performance information contained in the operations manual (see CAT.OP.MPA.300).
- Provisions under CAT.POL.A.235 and CAT.POL.A.335 for aeroplanes landing on wet and contaminated runways.

Certification Specifications (CS) and Acceptable Means of Compliance (AMC) for large aeroplanes:

- CS 25.1591 requires performance information to be contained in the Aircraft Flight Manual or a statement to prohibit operations on contaminated runways. The derivation and methodology of such performance information is described in AMC 25.1591.

The above-mentioned provisions, together with effective implementation of the air operations provisions on safety management systems (ORO.GEN.200) and oversight by the competent authority (ARO.GEN.300), are expected to provide an acceptable level of safety.

Nevertheless, rulemaking task RMT.0296 'Review of aeroplane performance requirements for CAT operations' was launched by EASA on 9 June 2015 with the publication of the terms of reference. The associated notice of proposed amendment NPA 2016-11 was published on 30 September 2016. It includes proposals on standards for runway surface condition reporting, airworthiness standards for landing performance computation at time of arrival and an in-flight assessment of landing performance at time of arrival. The NPA takes into account the following recommendations made in the 2013 European Action Plan for the Prevention of Runway Excursions (EAPPRE):

- Establish and implement one consistent method of contaminated runway surface condition assessment and reporting by the aerodrome operator for use by aircraft operators. Ensure the relation of this report to aircraft performance as published by aircraft manufacturers.
- It is recommended that aircraft operators always conduct an in-flight assessment of the landing performance prior to landing. Note: Apply an appropriate margin to these results.

The next deliverable for RMT.0296, an EASA Opinion, is planned to be published in the third quarter of 2017.

Status: Open – **Category**:

Safety Recommendation SWED-2017-006 (SHK)

The EASA is recommended to:

Review the feasibility of changing the method of reporting from airports in terms of friction coefficients, so that measured values are reported as unreliable under certain conditions. [RL 2017:05e R1]

Reply No. 1 sent on 02/06/2017:

Commission Regulation (EU) No 139/2014 requires the aerodrome operator to provide data relevant to the aerodrome and available services to the users and the relevant air traffic services and aeronautical information services [ADR.OPS.A.005 (b)].

AMC1 ADR.OPS.A.005 further specifies that the aerodrome operator should provide information concerning the condition of the movement area, whereas GM1 ADR.OPS.A.005 states that 'for contaminants such as slush, wet snow and wet ice, contaminant drag on the equipment's measuring wheel, amongst other factors, may cause readings obtained in these conditions to be unreliable'.

ICAO, with Amendment 13 to Annex 14 and Amendment 1 to PANS-Aerodromes, introduced provisions regarding the use of a global reporting format for assessing and reporting runway surface conditions, with the objective to link better assessed runway surface conditions with aircraft performance. These provisions are required to be implemented by November 2020.

The Agency has introduced rulemaking task RMT.0704 "Runway Surface Condition Assessment and Reporting" in the European Plan for Aviation Safety (EPAS) 2017-2021, and is currently preparing the Terms of reference for the RMT, which are planned to be published by second quarter of 2017. This rulemaking task is planned to finish by second quarter of 2020.

The safety recommendation will be considered within the context of this RMT.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
SE-DSP	BAE AVRO146RJ	Malmö Airport	29/09/2016	Serious incident

Synopsis of the event:

The incident occurred during a regular flight from Malmö Airport to Bromma Airport. At pre-flight inspection a damage was detected on the left hand airflow sensor. The sensor was replaced before the flight.

The take-off was normal until lift off, when the stick shaker was activated. However, the flight crew quickly identified the warning as false.

A warning was indicated on the instrument panel, (IDNT 1). The commander pressed the IDNT/INHIB 1 button and the INHIB part of the button lit up, but felt that nothing happened.

Later during the climb, when they got into clouds at 660 feet above the ground the stick push was activated, which means that the control column is pushed forward.

By following the emergency checklists, the systems could be shut down which solved the problems. Thereafter a normal landing was performed.

An examination of the left hand airflow sensor showed that the unit was incorrectly assembled and that it was 45–50 degrees out of the specification for all angle readings.

To get a stick shake it is sufficient for one sensor to indicate a high angle of attack. In order for the stick push to be activated, one sensor must have a high angle of attack and the other must have a high angle or a high rate of change.

The most likely explanation for stick push activation is that the turbulence caused the change rate of the serviceable airflow sensor to become large enough.

In the absence of tampering or warranty seals, it is impossible to determine if the device has been delivered incorrectly or if someone has manipulated it at a later stage.

The airflow sensor consists of two parts, the vane and the electronic unit. The vane can be replaced separately, but in this case the complete unit was replaced.

After the replacement of the airflow sensor a simple test intended for vane replacement was performed, which meant that the fault on the sensor was not detected.

The serious incident was caused by the mix up of test instructions for installation of “Vane assembly” and “Airflow sensor” which led to a prescribed functional test was not performed and the fault in the airflow sensor was not detected.

Contributing factors:

- The different component names Vane assembly and Airflow sensor enhance the risk of confusion between tasks.
- The interruptions during the change of the airflow sensor were a stress factor which increased the risk of mistakes.
- Re-inspection after replacement of airflow sensor was not performed.

Safety Recommendation SWED-2017-008 (SHK)

EASA is recommended to encourage that components that require specially approved maintenance facilities are sealed to detect unauthorized manipulation. [RL 2017:08 R2]

Reply No. 1 sent on 24/11/2017:

EASA is aware that it is common practice for many products, parts and appliances to seal units or specific items after certain maintenance or production steps (e.g. after closure, installation, tightening, torqueing, calibration, adjustment). This applies to actions starting with production, including maintenance or repair of the components including those requiring special approved maintenance facilities.

The assessment of the criticality of items for interfering with however requires detailed knowledge of the specific product and component, so it can only be performed by the Type Certificate (TC) holder, European Technical Standard Order or equivalent holder, and/or vendor who designed the item, and/or who decided to install the item to their product. It requires detailed knowledge about the susceptibility of the component to interference, and of the criticality of the function it performs. This includes assessing whether sealing components may hinder necessary inspections or checks required to be performed.

EASA therefore agrees that "encouraging" is an appropriate level of action, and intends to publish safety promotion material aiming at the responsible authors of instructions for continued airworthiness for products, parts and components, highlighting the importance of identifying actions which require special skill, equipment or facilities, and related items or components which should be sealed to protect against unauthorized interference and to include the associated procedures (e.g. applying torque seal, applying a sticker) in the relevant manuals and instructions for continued airworthiness (e.g. Component Maintenance Manual, Aircraft Maintenance Manual, Overhaul Manual, Installation Manual). This should especially include mentioning the seals in the installation manuals/procedures of the affected components to make sure that only items with undamaged seals are installed.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
SE-ZOU	LINDSTRAND model LBL 120A	Nynäs Fallet, Örebro County	10/05/2016	Accident

Synopsis of the event:

The intention of the flight was a hot air balloon flight experience with two passengers. The weather forecasts showed that the wind strength would increase during the evening because a sharp cold front was moving south over Svealand 5 during the afternoon and evening.

The hot air balloon lifted off just after eight o'clock in the evening in favourable weather conditions. The flight time was calculated to be one hour. After about 40 minutes flight, a significant weather change in the form of fog was observed. The pilot decided to immediately abort the flight and commence descent.

Before the landing could be commenced, the wind changed direction and strength, which made a landing at the first designated site impossible, upon which the pilot selected a new landing site.

The first touchdown was very hard. Both the rate of descent and the speed were high. All those on board lost their balance and fell over. In connection with this, the pilot happened to inadvertently put the burners on full power. This contributed to the balloon climbing to an altitude of 30-50 metres. Shortly thereafter, the pilot succeeded in shutting down the burners.

A second hard touchdown was made after about 1 000 metres. The balloon basket was then pulled along the ground and was at times in the air a little above the ground. The system for a rapid deflation of the balloon's hot air was not activated in connection with this touchdown.

About 400 metres after the second touchdown, the pilot fell out of the balloon basket. The balloon then climbed with only the two passengers on board. The passengers, however, operated the top vent so that the balloon again descended towards the ground. They subsequently decided to leave the balloon. In conjunction with this, the first passenger became caught for a short while between the basket and the ground. The second passenger's foot became tangled in an operating line. Held fast by the line, the passenger was dragged behind the balloon for several hundred metres before the balloon drifted into a power line and stopped.

The pilot and one of the passengers were seriously injured, while the other passenger received minor injuries.

In light of the weather information that was available, it is SHK's view that the margin appears too small between the time of planned completion of the flight and the time at which there was reason to assume that the weather could deteriorate drastically. However, there are no rules regarding time margins between planned flight and forecasted significant aviation weather. In SHK's view, the introduction of such rules could reduce the risk of accidents of this type.

When the hard landing occurred, the pilot was not wearing the safety harness that was in the basket. However, there are no explicit rules regarding the conditions in which the pilot is to put on the safety harness. National rules will soon be replaced by common European rules. According to the proposals for new rules, the actual type of balloon will no longer be subject to any safety harness requirements. As the event shows that there is a risk that the pilot will fall out of the basket even in the actual type of balloon, SHK believes that EASA should consider introducing safety harness requirements for all types of balloons in commercial air transport and to clarify when it will be used.

The accident was caused by the following factors:

- The flight was planned with a too small, albeit permitted, time margin to forecasted significant weather conditions that could impair a safe flight.
- A high speed and rate of descent during the landing caused the touchdowns to be very hard. In addition, after a hard ground contact, the pilot fell out of the basket and thereby lost the ability to control the balloon.
- The system for a rapid deflation of the balloon's hot air was not activated in connection with the second touchdown.

Safety Recommendation SWED-2017-011 (SHK)

EASA is recommended to:

Consider introducing time margins between planned landing time and significant weather conditions. [RL 2017:06 R1]

Reply No. 1 sent on 17/08/2017:

EASA Opinion No 01/2016 'Revision of the European operational rules for balloons' (hereinafter referred to as the 'Balloon' Opinion), stemming from EASA Rulemaking Task RMT.0674, was published on 7 January 2016. The specific objective is to establish a simpler, 'lighter' and proportionate air operations regulatory framework for balloon operations. The final deliverable, a 'Balloon Regulation', is anticipated to be published in the first quarter of 2018 (applicable from 8 April 2019). National legislation applies in the meantime.

The 'Balloon' Opinion includes a proposal to ensure that the latest available meteorological information indicates that the weather conditions along the route and at the intended destination at the estimated time of use will be at or above the applicable Visual Flight Rules operating minima, and within the meteorological limitations specified in the Aircraft Flight Manual (BOP.BAS.145). Before commencing the flight, the pilot-in-command will be required to be familiar with available meteorological and aeronautical information appropriate to the intended flight, and to study the available current weather reports and forecasts, and to plan for an alternative course of action in case the flight cannot be completed as initially planned (BOP.BAS.130).

In addition, for commercial operations, the operator will be required to identify and evaluate safety hazards entailed by their activities and manage the associated risks, and take actions to mitigate the risk and verify their effectiveness [BOP.ADD.030 (a)(3)]. The operator will be required to establish procedures and instructions for the safe operation of each balloon type, containing crew member duties and responsibilities [BOP.ADD.005 (e)]. This should include details of the pilot-in-command's responsibility to obtain and assess weather forecasts, and to take into account the predicted weather at the planned time and place of landing with suitable margins to address possible changes.

Furthermore, the competent authority will be required to verify continued compliance with the applicable requirements of organisations from whom it has received a declaration (ARO.GEN.300 (a) of Commission Regulation (EU) No 965/2012, applicable for commercial balloon operations from 8 April 2019).

Effective implementation of the above-mentioned provisions is expected to provide the foundation for safe balloon operations. The Agency considers that the risk of operating outside meteorological limitations is suitably addressed, and that more detailed rules concerning the assessment of weather conditions would not support the objective of the 'Balloon' Opinion, which is to provide a simpler, 'lighter' and proportionate regulatory framework for balloon operations.

Lastly, the Agency has in place a Safety Risk Management process, which, through routine monitoring based on data analysis, aims to identify any weaknesses in the regulatory framework, in order to take appropriate action to close any safety gaps. This will include the balloon air operations regulation once it becomes applicable.

Status: Closed – **Category**: Partial agreement

Safety Recommendation SWED-2017-012 (SHK)

EASA is recommended to:

- Consider introducing requirements for safety harness or other restraint systems for all types of balloons in commercial passenger operations and clarifying the conditions in which the system is to be used. [RL 2017:06 R2]

Reply No. 1 sent on 17/08/2017:

According to the rationale provided in the accident investigation report, the scope of the Safety Recommendation is oriented towards pilot's restraint systems.

EASA Opinion No 01/2016 'Revision of the European operational rules for balloons' (hereinafter referred to as the 'Balloon' Opinion), stemming from EASA Rulemaking Task RMT.0674, was published on 7 January 2016. The specific objective is to establish a simpler, 'lighter' and proportionate air operations regulatory framework for balloon operations. The final deliverable, a 'Balloon Regulation', is anticipated to be published in the first quarter of 2018 (applicable from 8 April 2019). National legislation applies in the meantime.

According to the 'Balloon' Opinion, for commercial operations, the operator will be required to identify and evaluate safety hazards entailed by their activities and manage the associated risks, and take actions to mitigate the risk and verify their effectiveness [BOP.ADD.030 (a)(3)]. The operator will be required to establish procedures and instructions for the safe operation of each balloon type, containing crew member duties and responsibilities [BOP.ADD.005 (e)]. This should include the provision and use of pilot's safety harnesses or restraints.

In addition, the competent authority will be required to verify continued compliance with the applicable requirements of organisations from whom it has received a declaration (ARO.GEN.300 (a) of Commission Regulation (EU) No 965/2012, applicable for commercial balloon operations from 8 April 2019).

Furthermore, according to CAT.IDE.B.120 of the current air operations regulation (Commission Regulation (EU) No 965/2012), for commercial air transport operations, balloons with a separate compartment for the commander shall be equipped with a restraint system for the commander. The 'Balloon' Opinion prescribes, in more detail, the conditions under which the restraint system is required and when it is to be used, as follows:

- The balloon shall be equipped with a restraint system for the pilot-in-command when (as in the current rule) equipped with a separate compartment for the pilot-in-command, or (according to the Balloon Opinion) when the balloon is equipped with turning vent(s) (BOP.BAS.320). Guidance Material (GM1 BOP.BAS.320) is planned to be published in the associated Executive Director's Decision, as follows: A pilot restraint harness mounted to the basket is considered to meet the requirements of CS 31HB/CS 31GB for a restraint system.
- When a restraint system is required in accordance with BOP.BAS.320, the pilot-in-command shall wear the system at least during landing (BOP.BAS.175).

In addition, according to CS 31HB/CS 31GB.63 under Part 21 of Commission Regulation (EU) No 748/2012 (the Initial Airworthiness Regulation):

(a) There must be a restraining means for all occupants, which can take the form of hand holds [See CS 31HB/CS 31GB.59 (h)].

(b) For baskets having a separate pilot compartment, there must be a suitable restraint for the pilot which must meet the strength requirements of CS 31HB/CS 31GB.30. Additionally, the restraint must be designed so that:

(1) The pilot can reach all the necessary controls when the restraint is correctly worn and adjusted;

(2) There is a method of quick release that is simple and obvious; and

(3) The possibility of inadvertent release is minimised.

Effective implementation of the above-mentioned provisions is expected to provide the foundation for safe balloon operations. The Agency considers that the provision and use of pilot's safety harnesses or restraints is suitably addressed and that more detailed rules would not support the objective of the 'Balloon' Opinion, which is to provide a simpler, 'lighter' and proportionate regulatory framework for balloon operations.

Furthermore, EASA believes that extending the requirements further on pilot's restraint systems could create additional risks, such as occupant entanglement or tripping, or restricting necessary movements by the pilot. For single compartment balloon baskets, the restraint systems required for all occupants by the Airworthiness Requirements (e.g. hand holds) provide means of restraint for all occupants, including the pilot.

Lastly, the Agency has in place a Safety Risk Management process, which, through routine monitoring based on data analysis, aims to identify any weaknesses in the regulatory framework, in order to take appropriate action to close any safety gaps. This will include the balloon air operations regulation once it becomes applicable.

Status: Closed – **Category**: Partial agreement

Switzerland

Registration	Aircraft Type	Location	Date of event	Event Type
CN-MBR	EMBRAER EMB 505	St. Gallen-Altenrhein (LSZR)	06/08/2012	Accident

Synopsis of the event:

On 6 August 2012 the Embraer EMB-505 Phenom 300 aircraft, registration CN-MBR, took off at 12:59 UTC from Geneva (LSGG) on a commercial flight to St. Gallen-Altenrhein (LSZR). After the initial call to the aerodrome control centre St. Gallen tower, the crew quickly decided, after an enquiry from the air traffic controller, on a direct approach on the runway 10 in-strument landing system (ILS). Shortly thereafter, the landing gear and flaps were extended. The flaps jammed at approximately 10 degrees and the FLAP FAIL warning message was displayed. The crew carried out a go-around shortly before landing. The landing gear subsequently remained extended. The flaps remained jammed for the remainder of the flight.

The crew decided immediately on a second ILS approach with jammed flaps, which accord-ing to the manufacturer's information required an increased approach speed. During the ap-proach, the crew had difficulty in reducing the airspeed to this increased approach speed. At 13:40 UTC, the aircraft subsequently touched down on the wet runway at an indicated air speed of 136 kt, approximately 290 m after the runway threshold, and could not be brought to a standstill on the remaining length of runway. The aircraft then rolled over the end of run-way 10, broke through the aerodrome perimeter fence and overrun the road named Rhein-holzweg running perpendicular to the runway centreline, on which a public transport bus was travelling. The aircraft rolled very close behind the bus and came to a standstill in a maize field, approximately 30 m from the end of the runway.

The female passenger and the two pilots were not injured in the accident. The aircraft was badly damaged.

There was crop damage and damage to the aerodrome perimeter fence.

Causes

The accident is attributable to the fact that the aircraft touched down late and at an excessively high speed on the wet runway after an unstabilised final approach and consequently rolled over the end of the runway.

The following factors contributed to the accident:

- The insufficient teamwork and deficient situation analysis by the crew.
- The flaps remained jammed at approximately 10 degrees, a position that is almost consistent with the flaps 1 position.
- Late initiation of full brake application after landing.

Safety Recommendation SWTZ-2014-482 (AAIB)

Together with the aircraft manufacturer, the European aviation safety agency (EASA) should examine how the manuals can be amended so as to provide optimal assistance to pilots in abnormal situations.

Reply No. 2 sent on 28/09/2017:

EASA together with the primary certification authority ANAC (Agência Nacional de Aviação Civil, Brazil) and the type certificate holder Embraer, has investigated on the issue. The aeroplane flight manual and the Quick Reference Handbook of the aeroplane have been modified by Embraer and the procedure for flap failure has been revised to include the action to inhibit the aural “TOO LOW FLAPS” in the FLAP FAILURE procedure.

This has been found adequate by ANAC and EASA and no further actions are envisaged.

Such manual changes have been submitted to EASA for review through Embraer document “revprop 543”. This has been found acceptable by EASA and the corresponding revision of the EASA AFM 2666 will be approved by ANAC in accordance with the Technical Implementation Procedures of the Bilateral air Safety Agreement concluded between EU and Brazil.

Status: Closed – **Category**: Agreement

Registration	Aircraft Type	Location	Date of event	Event Type
1) HB-3373 2) HB-DFP	1) SCHEMPP HIRTH VENTUS2B 2) MOONEY M20J	Approx. 8 km WSW of Airfield Birrfeld (LSZF)	06/06/2013	Accident

Synopsis of the event:

Flugverlauf

Der Pilot der HB-3373 startete um 11:55 Uhr im Birrfeld und beabsichtigte, einen Segelflug entlang des Juras in Richtung Neuenburger See auszuführen. Beim Flug der HB-DFP von Lommis nach Ecuvillens handelte es sich um einen Einführungsflug zwecks Kennenlernen der verschiedenen Systeme und des Autopiloten. Im Raum Villigen leitete die Besatzung der HB-DFP um 12:16 Uhr einen Steigflug mit eingeschaltetem Autopiloten ein. In der Region Linn steuerte die Besatzung der HB-DFP in Richtung Süden, mit der Absicht, den Regionalflugplatz Birrfeld zu umfliegen.Nachdem der Pilot mit der HB-3373 über dem Chestenberg eine Höhe von etwa 1450 m/M erreicht hatte, folgte er um 12:17 Uhr zwei anderen Segelflugzeugen in westlicher Richtung zur Gisliflue.

Ab diesem Zeitpunkt befanden sich beide Flugzeuge auf einem Kollisionskurs und die HB-3373 war für die Besatzung der HB-DFP bis mindestens 5 Sekunden vor der Kollision durch die Cockpitverstrebung respektive den Magnetkompass verdeckt. Nachdem die HB-3373 die Aare überflogen hatte, blickte der Pilot in Richtung Norden, um das Wetter im Schwarzwald zu beurteilen. Ungefähr eine Minute später nahm der Pilot der HB-3373 im rechten Bereich seines Sichtfeldes ein Flugzeug wahr, das von rechts her kommend auf ihn zuflog.

Um 12:18:52 Uhr kollidierten die beiden Flugzeuge über dem Raum Auenstein auf einer Höhe von 1285 m/M (4216 ft AMSL). Die HB-3373 wurde derart beschädigt, dass sie unkontrollierbar wurde. Der Pilot konnte sich mit dem Fallschirm retten. Die Besatzung der schwer beschädigten HB-DFP konnte die Flugverkehrsleitung alarmieren und flog anschliessend zum Startort zurück. Der Pilot der HB-3373 verletzte sich bei der Landung mit dem Fallschirm leicht, während das Segelflugzeug beim Aufprall zerstört wurde.

Ursachen

Der Unfall ist auf eine Kollision zwischen einem Segel- und einem Motorflugzeug zurückzuführen, weil die beiden Besatzungen den Luftraum zu wenig aktiv überwachten. In der Folge wurde das Segelflugzeug unkontrollierbar und stürzte ab.

Als systemische Ursachen wurden folgende ermittelt:

- Das Motorflugzeug war nicht mit einem Kollisionswarnsystem ausgerüstet.
- Die Transpondersignale des Motorflugzeuges konnten durch das Kollisionswarnsystem des Segelflugzeuges nicht empfangen werden.

Safety Recommendation SWTZ-2016-002 (AAIB)

[German] - Das Bundesamt für Zivilluftfahrt (BAZL) sollte in Zusammenarbeit mit den Anspruchsgruppen und der Europäischen Agentur für Flugsicherheit (EASA) ein Konzept für die Einführung von kompatiblen, auf Standards der Internationalen Zivilluftfahrt basierenden Kollisionswarnsystemen für die allgemeine Luftfahrterarbeiten und einen Aktionsplan für die kurz-, mittel- und langfristige Umsetzung erstellen und umsetzen. [Sicherheitsempfehlung Nr. 499]

Reply No. 2 sent on 28/04/2017:

The European Aviation Safety Plan 2011-2014 already contained first actions on Mid-air collision/Near mid-air collision (MAC/NMAC) by improving the “see and avoid” for general aviation. Among the actions already taken, EASA is facilitating the voluntary installation of electronic conspicuity devices via Standard Changes, as defined in 21.A.90B of Commission Regulation (EU) 748/2012 (refer to CS-SC002a, CS-SC051a in CS-STAN Issue 1 dated 8 July 2015, CS-SC058a in CS-STAN Issue 2 dated 30 March 2017) and installation approvals of this type of devices.

In addition, EASA is in the process of publishing a CS-ETSO for Traffic Awareness Beacon System (TABS). There are currently several technical solutions for general aviation for electronic conspicuity devices with varied strengths and weaknesses. The main issue is the interoperability between all of these solutions.

According to the EASA Annual Safety Review 2016, MACs contributed to 6% of the fatalities in the 2006-2015 period in Non-Commercial operations with aeroplanes. The related fatalities mainly involved loss of control (47%) or controlled flight into terrain (15%). The Agency recognises that the safety barriers of the Visual Flight Rules (VFR), which rely on the "see and avoid" principles, should be reinforced. Cost-efficient electronic conspicuity devices can be one contributor.

The European Plan for Aviation Safety (EPAS) 2016-2020 already addressed the issue under the umbrella of the safety topic "general aviation safety". The current version of the plan, (EPAS 2017-2021) includes further actions for MAC/NMAC in general aviation, under the strategic safety area "General Aviation - Preventing mid-air collisions".

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
HB-ZRS	AGUSTA A109	Rega-Center, Zurich Airport (LSZH)	06/06/2013	Serious incident

Synopsis of the event:

At 15:03 on 6 June 2013 the pilot took off in the HB-ZRS helicopter on a technical flight. On board was a hoist operator and on the ground was a mechanic with the prepared load. The mechanic's task was to attach the load to the hoist hook.

After the helicopter took off and climbed to an estimated height of 7 m above ground level, the hoist operator received clearance from the pilot to extend the hoist cable while the helicopter was hovering. The hoist operator extended the cable to approximately 7.5 m. The mechanic on the ground had difficulty attaching the load to the hoist hook, whereupon the hoist operator extended the cable further.

After the load had been attached to the hoist hook, the hoist cable was touching the ground. The hoist operator gave the pilot the command to position the helicopter approximately one metre further forward. At the same time, the hoist operator slowly began to retract the hoist cable. When the helicopter was directly above the load, the hoist operator continued to retract the hoist cable and told the pilot that the cable was under tension and that the load could be lifted. According to the statement of the hoist operator, his focus at this time was on what was happening below him and how the cable was being guided on the rescue hoist was outside his field of vision. When lifting the load, the pilot noticed a sudden change in the helicopter's attitude to the left and heard a bang. The hoist operator then informed the pilot that the hoist cable had broken. Up until the cable broke, neither the pilot nor the hoist operator had noticed anything unusual.

After the cable broke, the helicopter pilot hovered in place until he had gained an overview of the situation on the ground. He then landed on the apron at the Rega-Center.

The hoist operator wore gloves and a helmet with a radio while on duty. He was in constant radio contact with the pilot and the mechanic on the ground.

Causes

The serious incident is attributable to the fact that the rescue hoist cable became snagged behind the handle assembly nut and broke when the test load was lifted.

The design of the rescue hoist attachment assembly was identified as a causal factor.

The restricted visibility from the hoist operator's working position was identified as a contributing factor.

Safety Recommendation SWTZ-2016-528 (AAIB)

The European Aviation Safety Agency (EASA) in cooperation with the helicopter manufacturer, should introduce technical measures to ensure that the hoist cable is prevented from snagging on the rescue hoist attachment assembly. [Safety recommendation No. 528]

Reply No. 1 sent on 14/03/2017:

EASA agrees with the need to address the risk of snagging on the rescue hoist attachment assembly. EASA issued Airworthiness Directive 2017-0025 on 14 February 2017 to mandate specific inspections and a modification of the attaching means of the rescue hoist handle on the rescue hoist support. The manufacturer is currently considering also the introduction of a protective cover as a design improvement. EASA will consider making this change mandatory.

Status: Closed – **Category**: Agreement

Registration	Aircraft Type	Location	Date of event	Event Type
STUDY			various	

Synopsis of the event:

"Studie Nr. 3 der Schweizerischen Sicherheitsuntersuchungsstelle SUST über die Organisation und die Wirksamkeit des Such- und Rettungsdienstes der zivilen Luftfahrt (search and rescue – SAR) in der Schweiz"

In den vergangenen Jahren haben sich wiederholt Unfälle mit Luftfahrzeugen der allgemeinen Luftfahrt ereignet, bei denen Besatzung und Luftfahrzeug nur mit erheblicher Verzögerung gefunden und geborgen werden konnten. Im Rahmen der Sicherheitsuntersuchung dieser Unfälle wurde verschiedentlich festgestellt, dass die am Such- und Rettungsdienst (search and rescue – SAR) beteiligten Organisationen nicht in der Lage waren, eine rasche Suche und Rettung sicherzustellen.

Es zeigte sich auch, dass selbst viele Fachleute und Nutzer der Zivilluftfahrt nur unzureichende Kenntnisse des SAR und seiner Eigenheiten aufwiesen.

Deshalb entschloss sich die Schweizerische Sicherheitsuntersuchungsstelle (SUST), in Zusammenarbeit mit den beteiligten Verkehrskreisen eine umfassende Studie zu diesem Thema durchzuführen.

Safety Recommendation SWTZ-2017-515 (AAIB)

[German] - Das Bundesamt für Zivilluftfahrt (BAZL) sollte zusammen mit der Europäischen Agentur für Flugsicherheit (European Aviation Safety Agency – EASA) Anstrengungen unternehmen, ELT konstruktiv und einbautechnisch

so zu verbessern, dass ihr korrektes Funktionieren möglichst in allen Fällen gewährleistet ist. [Sicherheitsempfehlung Nr. 515]

Reply No. 1 sent on 22/08/2017:

EASA has already taken some actions to improve the availability of the alerting signal transmitted by ELTs (Emergency Locator Transmitter):

- European Technical Standard Order - ETSO-C126b ('406 and 121.5 MHz Emergency Locator Transmitter') was issued by EASA in August 2016. In this ETSO, hook and loop fasteners are excluded from the acceptable means to attach the ELT in the aircraft, because it is a known weak point of the ELT installation. The ETSO can be found here:

https://www.easa.europa.eu/easa-and-you/aircraft-products/etso-authorisations/list-of-current-etso

- EASA published Certification Memorandum (CM) on 'Installation of ELTs' (EASA CM–AS-008 Issue 01) in December 2016. This CM provides guidance for the installation of ELTs and recommendations for the maintenance procedures that might improve the reliability of ELTs:

  https://www.easa.europa.eu/document-library/public-consultations/certification-memoranda

- EASA is participating in a joint RTCA Special Committee 229/EUROCAE Working Group 98 in charge of preparing an update of the ELT minimum operational performance specifications DO-204A/ED-62A whose Terms of Reference include the following items:
  - Antenna and cabling specifications,
  - Crash safety specifications,
  - So called 'second generation ELT' which use the Medium Earth Orbit Search And Rescue constellation (MEOSAR) providing instantaneous detection and location of the beacon.

The group is also working in improving the installation section of the standard.

Once this standard is updated, ETSO-C126b will be revised to refer to the latest standard, and CM–AS-008 will be updated to reflect these changes.

Additionally, in order to promote the installation of ELT within the General Aviation community, EASA allows the installation of ELTs in aircraft through a simplified process by means of a dedicated Standard Change. Refer to CS-SC101b in CS-STAN Issue 2:

https://www.easa.europa.eu/document-library/certification-specifications/cs-stan-issue-2

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
HB-ZRV	AGUSTA A109	Rega-Basis Erstfeld	26/02/2015	Accident

Synopsis of the event:

Um 14:15 Uhr startete der Rettungshelikopter AgustaWestland AW109SP, eingetragen als HB-ZRV, vom Dach des Kantonsspitals Altdorf zum Überflug zur Einsatzbasis der Schweizerischen

Rettungsflugwacht (Rega) in Erstfeld. Während des Anfluges zur Basis reduzierte der Pilot die Vorwärtsgeschwindigkeit des Helikopters bei gleichbleibender Sinkgeschwindigkeit.

Der Pilot erhöhte den kollektiven Blattverstellhebel (collective) kontinuierlich, um die Sinkgeschwindigkeit zu reduzieren. Diese verminderte sich jedoch nicht. In der Phase des Übergangs vom Vorwärts- zum Schwebeflug (transition) erhöhte sich der Leistungsbedarf des Helikopters.

Bei einer Vorwärtsgeschwindigkeit von weniger als 20 kt vergrösserte sich die Sinkgeschwindigkeit in den letzten Sekunden vor dem Aufprall von 1100 ft/min auf über 1300 ft/min und liess sich nicht mehr kontrollieren. Um 14:18 Uhr schlug der Helikopter rund 30 m südlich des Landeplatzes der Einsatzbasis der Rega auf einer Wiese auf. Drei der vier Insassen wurden verletzt und mussten in Spitalpflege gebracht werden.

Ursachen

Der Unfall ist darauf zurückzuführen, dass der Helikopter während eines steilen Landeanfluges mit grosser Vertikal- und minimaler Vorwärtsgeschwindigkeit in geringer Höhe über Grund in den Bereich des Wirbelringzustands geriet, der Pilot die Kontrolle über die Sinkgeschwindigkeit verlor und der Helikopter schliesslich auf dem Boden aufschlug.

Die folgenden Faktoren wurden als kausal für den Unfall ermittelt:

- Der Pilot nahm die zu hohe Sinkgeschwindigkeit bei zu geringer Vorwärtsgeschwindigkeit während des Endanfluges nicht wahr.
- Der Pilot erkannte den sich entwickelnden Wirbelringzustand des Helikopters zu spät.

Die folgenden Faktoren haben zum Unfall beigetragen:

- geringe fliegerische Erfahrung des Piloten auf dem Unfallmuster;
- nicht der Windsituation angepasste Anflugtaktik;
- unzureichende Kenntnisse eines wesentlichen Grenzwertes.

Die folgenden Faktoren haben zwar nicht zur Entstehung des Unfalls beigetragen, wurden aber im Laufe der Untersuchung als risikoreich (factors to risk) erkannt:

- Nicht ausreichend realitätsnahes Testverfahren für aufschlaghemmende Sitze;
- Unzureichende Funktionsfähigkeit von Komponenten des verwendeten Notsendermusters.

Safety Recommendation SWTZ-2017-525 (AAIB)

The Federal Office of Civil Aviation (FOCA) and the European Aviation Safety Agency (EASA) should take measures to ensure that crews of helicopters are alerted by an acoustic warning to the danger of an imminent or developing vortex ring condition near the ground. [Safety recommendation No. 525]

Reply No. 1 sent on 22/08/2017:

EASA shares the intent of the safety recommendation and is considering the feasibility of such a device from the technical point of view.

Status: Open – **Category**:

Safety Recommendation SWTZ-2017-530 (AAIB)

The Federal Office of Civil Aviation (FOCA) and the European Aviation Safety Agency (EASA) should check whether the test procedures for impact resistant seats in the AgustaWestland AW109SP helicopter model correspond to the actual conditions that actually occur in the event of a fundamentally survivable collision. Where appropriate, the test and approval conditions should be improved in such a way that the seats provide adequate protection against such accidents. [Safety recommendation No. 530]

Reply No. 1 sent on 22/08/2017:

EASA is the certifying authority for the AgustaWestland AW109SP type design. The AW109SP is compliant with the applicable crashworthiness requirements which are established to provide the occupants with the greatest possible chance to egress a rotorcraft without serious injury after a survivable emergency landing or accident.

In November 2015, the Federal Aviation Administration (FAA) tasked the Aviation Rulemaking Advisory Committee (ARAC) with providing recommendations regarding occupant protection regulations in normal and transport category rotorcraft. An ARAC Working Group, Rotorcraft Occupant Protection Working Group (ROPWG) has been tasked to provide recommendations to the ARAC on occupant protection rulemaking for initial certification and continued airworthiness.

Crashworthiness requirements will be evaluated as part of this task with the objective to improve the survivability of rotorcraft occupants in the event of a crash. EASA participates in the Working Group and will consider the outcome of this activity for application to the existing European fleet in the frame of EASA rulemaking task RMT.0710 on “Improvement in the survivability of rotorcraft occupants in the event of a crash”.

The next deliverable for RMT.710, the terms of references (ToR) is planned to be published in the first quarter of 2018.

Status: Open – **Category**:

Safety Recommendation SWTZ-2017-531 (AAIB)

The Federal Office of Civil Aviation (FOCA) and the European Aviation Safety Agency (EASA), together with the manufacturers of the AgustaWestland AW109SP helicopter type and the ARTEX C406-N HM emergency locator transmitter, should take appropriate measures to ensure the functioning of the aforementioned emergency locator transmitter after an accident. [Safety recommendation No. 531]

Reply No. 1 sent on 22/08/2017:

EASA is assessing the recommendation and what would be the implications and appropriate measures to ensure the operability of the emergency transmitter, ARTEX C406-N HM after an accident.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
D-ANFE	ATR ATR72	Zurich Airport (LSZH)	04/12/2014	Accident

Synopsis of the event:

At 05:33 UTC on 4 December 2014 the ATR 72-202 aircraft, registration D-ANFE, took off from Dresden airport (EDDC) on a scheduled flight to Zurich (LSZH), with two pilots, two flight attendants and 26 passengers on board.

After an uneventful descent and approach, D-ANFE touched down normally at 07:02 UTC on runway 14 at Zurich airport in a light northerly wind. After the nose landing gear wheels had come into contact with the runway approximately 1050 m after the runway threshold, both tyres separated from the wheel rims, whereby the left tyre got blocked between the wheel rims and the right tyre completely detached and was found 2080 m after the runway threshold. The nose landing gear continued to slide only on the wheel rims approximately 1520 m after the runway threshold.

By means of an asymmetrical power setting of the two engines and asymmetrical braking of the main landing gear wheels, the flight crew managed to vacate the runway at the next intersection. The flight crew then requested the fire brigade, as they suspected there was a problem with the landing gear.

All the occupants were uninjured. The passengers left the aircraft using the onboard steps and were taken by bus to the arrival terminal. The runway was closed immediately after this event and re-opened for operation with a reduced rate of arrivals after a runway inspection at 08:07 UTC.

Causes

The accident is attributable to the fact that during landing the nose landing gear was not centred and so the two nose gear wheels could not turn freely. Subsequently it was no longer possible to exercise control via the nose landing gear steering system, as the nose landing gear was substantially damaged.

The interaction of the following factors was determined as the most probable cause of the accident:

- a valve input lever of the differential control selector valve which had been fitted to the nose landing gear in an inverted state (rotated through 180°);
- inadequate maintenance of the nose landing gear.

The fact that the valve input lever can be attached incorrectly, in an inverted state (rotated through 180°) as a result of its structural design was determined to be a contributing factor.

Though the small parts of the aircraft found on the runway during a runway inspection performed hours later did not contribute to the origin and history of the accident, they nevertheless constitute a factor to risk.

Safety Recommendation SWTZ-2017-529 (AAIB)

The European Aviation Safety Agency (EASA), together with the aircraft manufacturer, should ensure that it is no longer possible to attach the valve input lever of the hydraulic differential control selector valve (DCSV) incorrectly. [Safety recommendation No. 529]

Reply No. 1 sent on 22/08/2017:

The European Aviation Safety Agency (EASA) in cooperation with the aircraft manufacturer has assessed the event and the safety issue highlighted by this safety recommendation and concluded that:

The event aircraft operated for a period of several months without reporting steering problems and without maintenance intervention in the area. There was no evidence that the required functional check after replacement of the hydraulic differential control selector valve (DCSV) was performed.

During the Certification of the ATR aeroplanes, the loss of Nose Wheel Steering was classified as "Minor". The contribution of the valve input lever of the hydraulic DCSV to such an event is low. Restrictions in movement of the nose landing gear would only materialize at low speeds and high steering angles which typically occur in the gate area.

Meanwhile, ATR has updated the applicable Component Maintenance Manual (CMM) and Job Instruction Card (JIC) to add a caution when re-installing the steering valve.

Based on the above, the Agency will take no further action on this issue.

Status: Closed – **Category**: Partial agreement

United Arab Emirates

Registration	Aircraft Type	Location	Date of event	Event Type
N571UP	BOEING 747	Dubai Airport UAE	03/09/2010	Accident

Synopsis of the event:

On September 3rd 2010, a Boeing 747-44AF departed Dubai International Airport [DXB] on a scheduled international cargo flight [SCAT-IC] to Cologne [CGN], Germany.

Twenty two minutes into the flight, at approximately 32,000 feet, the crew advised Bahrain Area East Air Traffic Control [BAE-C] that there was an indication of an on-board fire on the Forward Main Deck and declared an emergency. Bahrain Air Traffic Control advised that Doha International Airport [DOH] was 'at your ten o'clock and one hundred miles, is that close enough?', the Captain elected to return to DXB, configured the aircraft for the return to Dubai and obtained clearance for the turn back and descent.

A cargo on the main cargo deck had ignited at some point after departure. Less than three minutes after the first warning to the crew, the fire resulted in severe damage to flight control systems and caused the upper deck and cockpit to fill with continuous smoke.

The crew then advised Bahrain East Area Control [BAE-C] that the cockpit was 'full of smoke' and that they 'could not see the radios', at around the same time the crew experienced pitch control anomalies during the turn back and descent to ten thousand feet.

The smoke did not abate during the emergency impairing the ability of the crew to safely operate the aircraft for the duration of the flight back to DXB.

On the descent to ten thousand feet the captains supplemental oxygen supply abruptly ceased to function without any audible or visual warning to the crew five minutes and thirty seconds after the first audible warning. This resulted in the Captain leaving his position. The Captain left his seat and did not return to his position for the duration of the flight due to incapacitation from toxic gases.

The First Officer [F.O], now the Pilot Flying [PF] could not view outside of the cockpit, the primary flight displays, or the audio control panel to retune to the UAE frequencies.

Due to the consistent and contiguous smoke in the cockpit all communication between the destination [DXB] and the crew was routed through relay aircraft in VHF range of the emergency aircraft and BAE-C. BAE-C then relayed the information to the Emirates Area Control Center (EACC) in the UAE via landline, who then contacted Dubai ATC via landline.

As the aircraft approached the aerodrome in Dubai, it stepped down in altitude, the aircraft approached DXB runway 12 left (RWY 12L), then overflew the northern perimeter of the airport at 4500 ft at around 340 kts. The PF could not view the Primary Flight Displays [PFD] or the view outside the cockpit.

The PF was advised Shajah International Airport [SHJ] was available at 10 nm. This required a left hand turn, the aircraft overflew DXB heading East, reduced speed, entering a shallow descending right-hand turn to the south of the airport before loss of control in flight and an uncontrolled descent into terrain, nine nautical miles south west of Dubai International Airport.

There were no survivors.

Safety Recommendation UNAR-2013-047 (AIB)

FAA and EASA regulatory certification standards to consider the development of a quantitative framework for assessing the degradation of cargo compartment liner polymer matrix or the current industry standard panel material properties and the resulting degradation in the structural integrity of these structures when subjected to extreme heat, vibration and/or thermo-mechanical energy.

Reply No. 2 sent on 17/11/2017:

EASA and FAA requirements related to Cargo fire protection are fully harmonised and the semi-flexible laminate or semi-rigid honeycomb liners are designed to withstand the extreme temperatures that may be generated in a cargo compartment fire. Service experience indicates that compartment liner designs work effectively as long as they are properly maintained. Also, there has not been known instances where cargo material properties have degraded as a result of vibration and/or thermo-mechanical energy.

Therefore, no further action is considered necessary.

Status: Closed – **Category**: Disagreement

Safety Recommendation UNAR-2013-050 (AIB)

The NTSB, FAA and/or EASA fire test divisions to perform a test on lithium batteries to determine the ignition properties for lithium type batteries when subjected to external sources of mechanical energy, including acoustic energy in flight range modes, acoustic harmonic modes and a separate test to determine the susceptibility of lithium batteries to vibration from a mechanical source. The purpose of this testing is to determine the safe limits for the air carriage of lithium type batteries in dynamic aeroelastic, vibrating structures where the battery electrolyte composed of an organic solvent (and dissolved lithium salt) could become unstable when exposed to these forms of mechanical energy.

Reply No. 2 sent on 17/11/2017:

The Agency and the European Commission are involved in a research project: "Safe transport of lithium batteries by Aircraft". One of the firsts steps of this project is to identify the hazards that may be encountered during the air transport of lithium batteries (e.g. battery chemistry, design, size) to further identify mitigating measures that can be used to enhance safety when transporting lithium metal and lithium ion batteries on board an aircraft. The risks and measures will be fed to a risk assessment method to enable operators to establish and evaluate safe conditions for transport.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
A6-EDQ	AIRBUS A380	Dubai International Airport	09/11/2016	Serious incident

Synopsis of the event:

An Airbus A380 operated by Emirates Airline from London Heathrow, the United Kingdom, to Dubai, the United Arab Emirates, experienced a green hydraulic system overheat warning. The crew isolated the green hydraulic system in accordance with the Flight Crew Operations Manual (FCOM) which resulted in a number of flight control limitations and the requirement for the emergency freefall landing gear extension for landing (gravity extension).

When the crew selected the gravity extension, the left wing landing gear remained locked in the Up position, whereas the remaining landing gear locked in the Down position. The Aircraft proceeded with an uneventful landing and came to a stop on the runway.

After the passengers disembarked and the payload was off loaded, the aircraft was towed to a maintenance hangar where troubleshooting was carried out in the presence of Airbus landing gear specialists. It was found that three electrical wires on each of the two independent circuits of the left wing landing gear emergency unlock actuators were broken near the connector plugs.

Safety Recommendation UNAR-2016-073 (AIB)

EASA is recommended to issue a mandatory fleet inspection requirement for all Airbus A380 operators in accordance with Airbus All Operator Transmission (AOT) A32-R009-16-00 instructions, to ensure that all A380 operators perform the inspection, and rectify any damage where required.

Reply No. 1 sent on 14/03/2017:

The A380 fleet inspection has been completed in accordance with Airbus All Operator Transmission (AOT) A32-R009-16-00, and appropriate repairs have been carried out in case of damages being found.

Status: Closed – **Category**: Agreement

Safety Recommendation UNAR-2016-074 (AIB)

Depending on the data collected from all Airbus A380 operators; EASA is recommended to ensure that Airbus determine the probable cause of the flexure endurance fatigue and develop a design improvement for the reduction of possible future wire failure incidents.

Reply No. 2 sent on 28/09/2017:

In order to address this potential unsafe condition, the EASA has issued the airworthiness directive (AD) 2017-0131 on 27 July 2017 mandating the Airbus-issued AOT A32R009-16 Rev. 01 instructions for repetitive inspections and modification 77381. It requires repetitive detailed inspections of wing landing gear (LG) up-lock Emergency Unlock Actuator wiring and functional tests of the wing LG gravity extension system and modification of the electrical harness.

Status: Closed – **Category**: Agreement

Registration	Aircraft Type	Location	Date of event	Event Type
A6-DYR	EUROCOPTER EC130	Dubai	22/01/2014	Accident

Synopsis of the event:

On 22 January 2014, an Airbus Helicopters EC-130B4 Aircraft, registration A6-DYR, operated by Helidubai impacted the heliport during departure to Dubai International Airport (OMDB) from the Atlantis Palm hotel heliport.

The Aircraft had operated six passenger tourist flights over Dubai prior to the positioning flight from the Atlantic Palm heliport to the Dubai Air Wing fixed operating base (FOB) at OMDB. The final flight of each day was a positioning flight from the heliport to the Operator's FOB at OMDB.

The departure was normally a coastal departure along the Palm, inbound to OMDB.

The flight required lifting to a hover position, a pedal turn to a northerly heading, and a standard climbing departure from the heliport. The Aircraft was airborne at 1132:21 UTC for the 15-minute positioning flight.

On lift-off, the Pilot simultaneously pulled power into the climb while applying continuous left pedal, turning the Aircraft counter clockwise (to the left). This turn continued past the optimal northerly heading for departure, with the Aircraft turning rapidly counter clockwise.

The turn rate accelerated, increasing to approximately 180° per second at a height of approximately 22 meters (72 feet) above the heliport. The Aircraft then descended rapidly, pitching forward, while continuing in a counter clockwise turn prior until impact with the heliport. The Aircraft impacted the heliport vertically, with a level attitude, minimal forward speed, with approximately 5° nose down attitude and a rapid rate of descent (ROD), until impact.

The Air Accident Investigation Sector (AAIS) determines that the causes of the Accident were intentional entry into a continuous left hand pedal turn, which rapidly increased the rotation rate of the Aircraft leading to an unstable condition developing outside of the Pilot's ability to respond, resulting in a loss of control in-flight (LOC-I) and impact with the heliport.

The Pilot was in a spatial disorientation resulting from the rapid onset of the yaw/high speed rotation combined with the effects of the rotational inertia forcing the Pilot and HLO forward.

The Pilot was unable to determine the cause of the induced turn rate and apply the corrective actions necessary to return to a stable, steady state condition. The Pilot lowered the collective resulting in an uncontrolled descent onto the heliport.

Safety Recommendation UNAR-2016-085 (AIB)

Provides adequate guidance on the definition of 'Aerobatic Flight'. Specifically, a maneuver limitation in the flight manual which clearly and unambiguously states that yaw rates have to be controlled within defined margins with a clear warning that excessive intentional induced yaw can lead to pilot disorientation and onset of an uncontrollable flight condition.

Reply No. 1 sent on 14/03/2017:

EASA disagrees with the need to specify the yaw rate as a manoeuvre limitation and therefore no precise guidance is provided in the Rotorcraft Flight Manual on the definition of 'Aerobatic Flight'. As stated in the report, this has been done on the AS350-B3 and not the EC-130-B4 only because of the associated structural limitations associated with the conventional tail rotor head of the AS350 versus the "fenestron" design of the EC130. The maximum controllable yaw rate depends on several factors and EASA is of the opinion that knowing that excessive yaw rate can lead to pilot disorientation and onset of uncontrollable flight condition is considered as pilot's basic airmanship.

Status: Closed – **Category**: Disagreement

Safety Recommendation UNAR-2016-086 (AIB)

Considers the option for a mandated locking mechanism for crew harness restraints where the risk during take-off or maneuvering is that the inertia reel 'g' lock limit of 1.5 g will not be exceeded.

Reply No. 2 sent on 17/11/2017:

EASA considered the implications of mandating a manual locking mechanism for crew harness restraints and concluded that a manual locking mechanism or reducing the value of the inertia reel 'g' lock limit may create additional risks in other accident scenario.

In fact, such a mechanism would provide not only a discomfort to the pilots, but it could also reduce their ability to move the upper torso in cases needed for the safe operation of a helicopter.

Therefore, the Agency disagrees with the recommendation.

Status: Closed – **Category**: Disagreement

United Kingdom

Registration	Aircraft Type	Location	Date of event	Event Type
4X-BAU	BOEING 757	London Gatwick Airport, United Kingdom	03/10/2000	Incident

Synopsis of the event:

After an uneventful flight from Ben Gurion Airport, Tel Aviv, the crew made an ILS approach to Runway 26 Left at London Gatwick Airport. The commander was 'pilot not flying' (PNF) in the right seat and another captain was the 'pilot flying' (PF) in the left seat. Prior to commencing their approach, the crew had received ATIS Information 'Delta', timed at 1920 hrs, which broadcast the following information: "Runway in use 26 Left; surface wind 180°/10 kt; visibility 10 km or more; cloud, scattered two thousand feet; temperature +16°, dew point +13°; QNH 1015, QFE 1008." There was no significant change in ATIS Information 'Echo' timed at 1950 hrs. Along with their landing clearance, the crew were advised by ATC that the surface wind was 190°/ 9 kt. The landing was made with Flap 25 and Mode 2 autobrake selected in conditions of slight drizzle. The crew considered that a normal landing had been made, touching down at approximately 135 kt, just beyond the PAPIs and slightly left of the runway centre-line. Shortly after touchdown the commander stated that the autobrake had disconnected. The PF acknowledged and reselected Mode 2 on the autobrake. The PF had selected reverse thrust and both pilots considered that retardation was normal until 100 kt when some vibration was felt. Around this time an engineer working on an aircraft to the north of the runway heard what he described as two separate distinct "bangs", separated by some 5 to10 seconds. The PF continued to slow the aircraft and, on the instructions from ATC, cleared the runway at fast exit 'Golf Romeo'. On initial check-in with the ground controller, the PNF advised that they would be holding position as they suspected a "flat tyre". The crew had also noticed an indicated loss of some hydraulic fluid contents in both Left and Right Systems. The controller cleared the crew to hold at 'Golf 1' and advised them that the AFS were on their way to inspect the aircraft. He also declared an 'Aircraft Ground Incident' and advised the tower controller. As a precaution, the tower controller instructed the next landing aircraft to goaround and then initiated a runway inspection. The inspection revealed tyre debris on the runway and the runway was declared closed at 1955 hrs. By now, the AFS had inspected the aircraft and informed the crew that the two right rear tyres had burst. The passengers deplaned via the normal exits and the aircraft was then towed onto stand. The runway was swept and, following a further inspection, was declared open at 2044 hrs.

Safety Recommendation UNKG-2002-014 (AAIB)

It is recommended that Airworthiness Authorities such as the JAA and FAA consider implementing the measures outlined in AAIB Safety Recommendations 99-11 and 99-12 concerning requirements for tyre pressure monitoring and warning systems.

Reply No. 3 sent on 07/07/2017:

With the amendment 14 of CS-25 (effective on 20 December 2013, applicable to new certification projects of large aeroplanes), the Agency introduced new certification specifications to upgrade the protection against the damaging effects of tyre and wheel failures.

However, the Agency has initiated a new rulemaking task, RMT.0586, to propose a regulatory change to better ensure that the inflation pressures of tyres of large aeroplanes remain within the pressure specifications defined by the aeroplane manufacturer.

The terms of reference and the rulemaking group composition were published on 30 May 2017 on the EASA Website:

https://www.easa.europa.eu/document-library/terms-of-reference-and-group-compositions/tor-rmt0586

Mandating the installation of a tyre pressure monitoring system is one of the elements to be considered among the objectives of RMT.0586.

The next step of RMT.0586 is the publication of a Notice of Proposed Amendment (NPA) which is envisaged during 03Q2018.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
G-UKFI	FOKKER F28	Manchester Airport	01/04/2002	Serious incident

Synopsis of the event:

During taxi for takeoff at Manchester International Airport, the aircraft passenger cabin filled with smoke and an emergency evacuation of the aircraft was carried out. The evacuation was carried out expeditiously, but the cabin crew had difficulty opening the Galley Service Door and some passengers using the overwing escape hatches were unsure of how to descend to the ground. The smoke had originated from a damaged Auxiliary Power Unit (APU), which had allowed oil from the unit to leak into the bleed air system.

Safety Recommendation UNKG-2002-043 (AAIB)

The CAA and JAA should review the requirements for passenger safety cards to ensure that, for aircraft with overwing exits, the safety card is required to clearly depict the emergency escape route(s) from the cabin, via the wing, to the ground.

Reply No. 5 sent on 28/04/2017:

The Agency evaluated this safety issue within the framework of rulemaking tasks RMT.0516 and RMT.0517 'Updating Air OPS Regulation (EU) No 965/2012 Implementing Rules and related Acceptable Means of Compliance (AMC) & Guidance Material (GM)'.

The outcome of the evaluation is contained in EASA Executive Director (ED) Decision 2017/008/R, which was published on the Agency's web site on 30 March 2017.

The ED Decision introduces new GM2 CAT.OP.MPA.170 'Passenger briefing - safety briefing material', which states, under point (f)(6)(iii), that the operator should consider including, in its safety briefing material, information on escape routes and depiction of those escape routes including via the wing to the ground.

Status: Closed – **Category**: Agreement

Registration	Aircraft Type	Location	Date of event	Event Type
N90AG	BOMBARDIER CL600 2B19	Birmingham Airport	04/01/2002	Accident

Synopsis of the event:

Immediately after takeoff from Runway 15 at Birmingham International Airport the aircraft began a rapid left roll, which continued despite the prompt application of full opposite aileron and rudder. The left winglet contacted the runway shoulder, the outboard part of the left wing detached and the aircraft struck the ground inverted, structurally separating the forward fuselage. Fuel released from ruptured tanks ignited and the wreckage slid to a halt on fire; the Airport Fire Service was in attendance less than 1 minute later. The accident was not survivable.

Numerous possible causes for the uncontrolled roll were identified but all except one were eliminated. It was concluded that the roll had resulted from the left wing stalling at an abnormally low angle of attack due to flow disturbance resulting from frost contamination of the wing. A relatively small degree of wing surface roughness had a major adverse effect on the wing stall characteristics and the stall protection system was ineffective in this situation. Possible asymmetric de-icing by the Auxiliary Power Unit (APU) exhaust gas during pre-flight preparations may have worsened the wing-drop tendency.

N90AG's pilots should have been aware of wing frost during pre-flight preparations but the aircraft was not de-iced and the ice detector system would not have alerted them. It was considered that the judgement and concentration of both pilots may have been impaired by the combined effects of a non-prescription drug, jet-lag and fatigue.

Possible contributory factors were; the inadequate warnings on the drug packaging, Federal Aviation Administration (FAA) guidance material suggesting that polished wing frost was acceptable and melting of the frost on the right wing by the APU exhaust gas.

The investigation identified the following causal factors:

1. The crew did not ensure that N90AG's wings were clear of frost prior to takeoff.

2. Reduction of the wing stall angle of attack, due to the surface roughness associated with frost contamination, to below that at which the stall protection system was effective.

3. Possible impairment of crew performance by the combined effects of a non-prescription drug, jet-lag and fatigue.

Seven safety recommendations have been made.

Safety Recommendation UNKG-2003-060 (AAIB)

It is recommended that the FAA and JAA review the current procedural approach to the pre takeoff detection and elimination of airframe ice contamination and consider requiring a system that would directly monitor aircraft aerodynamic surfaces for ice contamination and warn the crew of a potentially hazardous condition.

Responsibility has passed to EASA, recommendation should be addressed to the Agency.

Reply No. 3 sent on 02/06/2017:

Mandating the installation of a system which monitors aircraft aerodynamic surfaces for ice contamination in the frame of on-ground pre-takeoff detection is not envisaged by the Agency. Indeed, available, or under development, sensor technologies are not deemed suitable as they cannot monitor all sensitive aerodynamic surfaces of the aeroplane, and therefore the existing methods of inspection would still be needed. These technologies are rather adapted to monitor a limited area and therefore can be used in-flight to detect icing conditions, or first signs of ice accretion, to support the activation of ice protection systems.

Nevertheless, the accident to N90AG and this safety recommendation are being taken into account in rulemaking task RMT.0118 entitled 'Analysis of on-ground wing contamination effect on take-off performance degradation' which started with the publication of its terms of reference on 21/03/2017:

https://www.easa.europa.eu/document-library/terms-of-reference-and-group-compositions/tor-rmt0118

The specific objective of this task is to mitigate the risk of loss of control of an aeroplane (in particular during, but not limited to, the take-off phase), and the risk of runway excursion after an aborted take-off at high speed, caused by an aerodynamic performance or controllability degradation, as a result of aerodynamic surfaces contamination by ice or de/anti-icing fluids.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
G-BOMG	BRITTEN NORMAN BN2B	7.7 NM NW of Campbeltown Airport, United Kingdom	15/03/2005	Accident

Synopsis of the event:

The Glasgow based Islander aircraft was engaged on an air ambulance task for the Scottish Ambulance Service when the accident occurred. The pilot allocated to the light had not flown for 32 days; he was therefore required to complete a short light at Glasgow to regain currency before landing to collect a paramedic for the light to Campbeltown Airport on the Kintyre Peninsula.

Poor weather at Campbeltown Airport necessitated an instrument approach. There was neither radar nor Air Traffic Control Service at the airport, so the pilot was receiving a Flight Information Service from a Flight Information Service Officer in accordance with authorised procedures. After arriving overhead Campbeltown Airport, the aircraft flew outbound on the approach procedure for Runway 11 and began a descent. The pilot next transmitted that he had completed the 'base turn', indicating that he was inbound to the airport and commencing an approach. Nothing more was seen or heard of the aircraft and further attempts at radio contact were unsuccessful. The emergency services were alerted and an extensive search operation was mounted in an area based on the pilot's last transmission. The aircraft wreckage was subsequently located on the sea bed 7.7 nm west-northwest of the airport; there were no survivors.

The investigation identified the following causal factors:

1. The pilot allowed the aircraft to descend below the minimum altitude for the aircraft's position on the approach procedure, and this descent probably continued unchecked until the aircraft flew into the sea.

2. A combination of fatigue, workload and lack of recent lying practise probably contributed to the pilot's reduced performance.

3. The pilot may have been subject to an undetermined influence such as disorientation, distraction or a subtle incapacitation, which affected his ability to safely control the aircraft's flightpath.

Safety Recommendation UNKG-2006-102 (AAIB)

Considering the circumstances of air ambulance flights, the Civil Aviation Authority in conjunction with the JAA should review the circumstances in which a second pilot is required for public transport flights operating air ambulance services.

Reply No. 3 sent on 14/03/2017:

The Agency conducted a safety review of worldwide single-pilot commercial air transport occurrences during the last 10 years. This includes air ambulance flights.

Instrument Flight Rules (IFR) or night operation are common contributing factors evidenced in the review of occurrences and ORO.FC.200 (c) of Regulation (EU) No 965/2012 issued on 5 October 2012 sets the following specific requirements when operating under such conditions:

- For aeroplanes, the minimum flight crew shall be two pilots for all turbo-propeller aeroplanes with a maximum operational passenger seating configuration (MOPSC) of more than nine and all turbojet aeroplanes.
- For helicopters, the minimum flight crew shall be two pilots for all operations with an MOPSC of more than 19 and for operations under IFR of helicopters with an MOPSC of more than 9.
- When single pilot operation is permitted, additional requirements are added in ORO.FC.202 in terms of training and qualification.

The occurrence review does not show a predominant risk in single-pilot commercial air transport operations, considering that many historical single-pilot occurrence would now require a second crew if those EASA operational rules were applicable.

To be complete, a more specific review of helicopters emergency medical services (HEMS) occurrences was conducted, because it introduces specific risks when selecting the landing site compared to air ambulance flight and the MOPSC is often below 9. This type of operation is covered by a Specific Approval (Part SPA Subpart J) and a minimum crew of 2 pilots at night or one pilot and one HEMS technical crew member under specific conditions is defined (SPA.HEMS.130 (e)). Part-ORO subpart TC defines training requirements for HEMS technical crews.

On this basis, the restrictions and mitigation means applied for single-pilots operations appear coherent with the safety review.

Status: Closed – **Category**: Partial agreement

Registration	Aircraft Type	Location	Date of event	Event Type
G-EUOB	AIRBUS A319	London Heathrow, United Kingdom	22/10/2005	Incident

Synopsis of the event:

The incident occurred at 1926 hrs on 22 October 2005, to an Airbus A319-131 aircraft which was operating a scheduled passenger flight between London Heathrow and Budapest […].

As the aircraft climbed to Flight Level (FL) 200 in night Visual Meteorological Conditions (VMC) with autopilot and autothrust engaged, there was a major electrical failure. This resulted in the loss or degradation of a number of important aircraft systems. The crew reported that both the commander's and co-pilot's Primary Flight Displays (PFD) and Navigation Displays (ND) went blank, as did the upper ECAM1 display. The autopilot and autothrust systems disconnected, the VHF radio and intercom were inoperative and most of the cockpit lighting went off. There were several other more minor concurrent failures.

The commander maintained control of the aircraft, flying by reference to the visible night horizon and the standby instruments, which were difficult to see in the poor light. The co-pilot carried out the abnormal checklist actions which appeared on the lower ECAM display; the only available electronic flight display. Most of the affected systems were restored after approximately 90 seconds, when the co-pilot selected the AC Essential Feed switch to Alternate ('ALTN'). There were no injuries to any of the 76 passengers or 6 crew. After the event, and following discussions between the crew and the operator's Maintenance Control, the aircraft continued to Budapest […].

It was not possible to determine the cause of the incident due to a lack of available evidence, however, nine additional Safety Recommendations are made in this report.

Safety Recommendation UNKG-2007-062 (AAIB)

It is recommended that the European Aviation Safety Agency should, in consultation with other National Airworthiness Authorities outside Europe, consider requiring training for flight by sole reference to standby instruments to pilots during initial and recurrent training courses.

Reply No. 3 sent on 20/01/2017:

Appendix 9 of Annex I (Part FCL) to Commission Regulation (EU) No 1178/2011, for training, skill test and proficiency check for Multi-Crew Pilot Licence (MPL), Airline Transport Pilot Licence (ATPL), type and class ratings, and proficiency check for Instrument Ratings, already covers simulated failure of attitude indicator and abnormal operation of navigation equipment, instruments and flight management system.

In addition, the Agency has published provisions on flight crew Upset Prevention and Recovery Training (UPRT), with the specific objective to ensure that flight crew acquire and maintain the necessary competencies to prevent and recover from developing or developed upsets (see Executive Director (ED) Decision 2015/012/R, published on the Agency's web site on 04 May 2015, amending the Acceptable Means of Compliance (AMC) and Guidance Material (GM) to Commission Regulation (EU) No 965/2012).

AMC1 ORO.FC.220&230 'Operator conversion training and checking & recurrent training and checking' introduces upset prevention elements for the recurrent training programme at least every 12 calendar months, such that all the elements are covered over a period not exceeding 3 years.

This covers, in particular, specific system malfunctions such as instrument failures (as listed in AMC1 ORO.FC.220&230).

Status: Closed – **Category**: Agreement

Registration	Aircraft Type	Location	Date of event	Event Type
G-YMMM	BOEING 777	London Heathrow, United Kingdom	17/01/2008	Accident

Synopsis of the event:

Whilst on approach to London (Heathrow) from Beijing, China, at 720 feet agl, the right engine of G-YMMM ceased responding to autothrottle commands for increased power and instead the power reduced to 1.03 Engine Pressure Ratio (EPR). Seven seconds later the left engine power reduced to 1.02 EPR. This reduction led to a loss of airspeed and the aircraft touching down some 330 m short of the paved surface of Runway 27L at London Heathrow. The investigation identified that the reduction in thrust was due to restricted fuel flow to both engines.

It was determined that this restriction occurred on the right engine at its Fuel Oil Heat Exchanger (FOHE). For the left engine, the investigation concluded that the restriction most likely occurred at its FOHE. However, due to limitations in available recorded data, it was not possible totally to eliminate the possibility of a restriction elsewhere in the fuel system, although the testing and data mining activity carried out for this investigation suggested that this was very unlikely. Further, the likelihood of a separate restriction mechanism occurring within seven seconds of that for the right engine was determined to be very low.

The investigation identified the following probable causal factors that led to the fuel flow restrictions:

1. Accreted ice from within the fuel system released, causing a restriction to the engine fuel flow at the face of the FOHE, on both of the engines.

2. Ice had formed within the fuel system, from water that occurred naturally in the fuel, whilst the aircraft operated with low fuel flows over a long period and the localised fuel temperatures were in an area described as the 'sticky range'.

3. The FOHE, although compliant with the applicable certification requirements, was shown to be susceptible to restriction when presented with soft ice in a high concentration, with a fuel temperature that is below -10°C and a fuel flow above flight idle.

4. Certification requirements, with which the aircraft and engine fuel systems had to comply, did not take account of this phenomenon as the risk was unrecognised at that time.

Eighteen Safety Recommendations have been made.

Safety Recommendation UNKG-2008-049 (AAIB)

It is recommended that the Federal Aviation Administration and the European Aviation Safety Agency review the current certification requirements to ensure that aircraft and engine fuel systems are tolerant to the potential build up and sudden release of ice in the fuel feed system.

Reply No. 3 sent on 07/07/2017:

Since this accident, a generic Special Condition (SC) "Water / Ice in Fuel system" is raised for applicable large aeroplane certification projects. The SC requires the applicant to demonstrate that:

- the free water (or ice) remains evenly dispersed in the fuel under all operating conditions, or
- the amount of ice that could be released as a slug is minimised. The applicant must establish the threat(s) (quantity of ice, temperature) that can be released. The complete fuel system (including the engine) must be shown to be tolerant to such sudden release of ice, without significant adverse effect(s) on the powerplant system.

This action fulfils the intent of the safety recommendation.

Status: Closed – **Category**: Agreement

Registration	Aircraft Type	Location	Date of event	Event Type
G-EENN	SCHEMPP HIRTH NIMBUS3	Portmoak Airfield, Scotlandwell, Kinross	04/09/2012	Accident

Synopsis of the event:

The glider was being winch launched from a grass airfield. At an early stage of the launch the right wing tip contacted the ground, the left wing lifted and the glider cartwheeledto the right before coming to rest, inverted. The pilot was fatally injured.

Safety Recommendation UNKG-2013-008 (AAIB)

It is recommended that the European Aviation Safety Agency amend the certification standard for Sailplanes and Powered Sailplanes (CS 22) to include the requirement that the cable release mechanisms can be operated at any stage of the launch without restricting the range of movement of any flying control.

Reply No. 2 sent on 28/04/2017:

EASA supports the proposal to make a change to Certification Specifications (CS) CS-22 that introduces a specification for the cable release mechanism for sailplanes and powered sailplanes in line with the safety recommendation.

The plan is to develop this change in cooperation with the Organisation Scientifique et Technique du Vol à Voile (OSTIV) Sailplane Development Panel (SDP). Because this existing forum has the support and involvement of a high number of stakeholders, EASA intends to introduce the necessary change to CS-22 through rulemaking task RMT.0037 (22.010) 'Regular update of CS-22' that is already in the current EASA rulemaking programme 2017-2021. A Notices of Proposed Amendment (NPA) is planned to be published in 2nd quarter 2018.

Status: Open – **Category**:

Safety Recommendation UNKG-2013-009 (AAIB)

It is recommended that the European Aviation Safety Agency require that Type Certificate holders of EASA Type Certificated gliders ensure, where practicable, that the cable release control can be operated at any stage of the launch without restricting the range of movement of any flying control.

Reply No. 2 sent on 07/07/2017:

The Agency assessed the issue and had identified the sailplane Types that are potentially affected, with the support of the Type Certificate Holders (TCH).

Following this investigation, the following actions will be pursued:

- EASA will issue within 2017 a Safety Information Bulletin (SIB) to make owners and pilots aware of the possible interference between the flight and the cable release controls. Owners/Pilots who identify their sailplane (specific serial number) being affected will be requested to get in contact with the respective TCH.
- A clearer and more specific wording of the Acceptable Means of Compliance (AMC)to Certification Specifications (CS)22.777 'Cockpit Controls' has been developed and agreed by the external advisory body the International Scientific and Technical Soaring Organisation (OSTIV) and will be included by the next revision of CS-22.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
G-VSXY	AIRBUS A330	Gatwick Airport	16/04/2012	Accident

Synopsis of the event:

The aircraft was operating a flight from London Gatwick Airport to McCoy International Airport in Orlando, USA with three flight crew, 10 cabin crew and 304 passengers on board including three infants. Early in the flight the crew received a series of smoke warnings from the aft cargo hold and the commander elected to return to

London Gatwick. The crew carried out the appropriate emergency drills, including the discharge of the fire extinguishers in the aft cargo hold, but the smoke warnings continued. The aircraft landed safely, the crew brought it to a halt on the runway and endeavoured to establish the extent of any fire. This produced conflicting evidence and, with smoke warnings continuing, the commander ordered an emergency evacuation.

The passengers all left the aircraft within 90 seconds but two injuries, classed as 'Serious', were incurred. Subsequent examination of the aircraft and its systems showed that the smoke warnings had been spurious.

The investigation identified that injuries were sustained during the evacuation of the aircraft. The evacuation was initiated based on the commander's assessment of the available sources of information, including the repetitive and intermittent nature of the aft cargo smoke warnings.

The investigation identified the following causal factor for the intermittent cargo smoke warnings:

1. A latent fault on the T1 thermistor channel of smoke detector 10WH, in combination with a CAN Bus fault and possible high levels of humidity in the cargo compartment due to the carriage of perishable goods, provided circumstances sufficient to generate multiple spurious aft cargo compartment smoke warnings.

The investigation identified the following contributory factors for the intermittent cargo smoke warnings:

1. The thermal channel fault in 10WH was not detected prior to the event by the internal smoke detector temperature monitoring.

2. The proximity of the fire extinguisher nozzles to the smoke detectors.

Safety Recommendation UNKG-2014-005 (AAIB)

It is recommended that the European Aviation Safety Agency amend AMC1 CAT.OP.MPA.170, 'Passenger briefing', to ensure briefings emphasise the importance of leaving hand baggage behind in an evacuation.

Reply No. 4 sent on 28/04/2017:

The Agency evaluated this safety issue within the framework of rulemaking tasks RMT.0516 and RMT.0517 'Updating Air OPS Regulation (EU) No 965/2012 Implementing Rules and related Acceptable Means of Compliance (AMC) & Guidance Material (GM)'.

The outcome of the evaluation is contained in EASA Executive Director (ED) Decision 2017/008/R, which was published on the Agency's web site on 30 March 2017.

The ED Decision introduces new text under AMC1 CAT.OP.MPA.170 on 'passenger briefing' which states that, before take-off/landing, passengers should be briefed on/reminded of the correct stowage of hand baggage and the importance of leaving hand baggage behind in case of evacuation [see (a)(1)(iii) and (c)(1)(iii)].

The ED Decision also introduces guidance under point (f)(5)(vi) of GM2 CAT.OP.MPA.170 'Passenger briefing - safety briefing material', which states that the operator should consider including information on leaving hand baggage behind, in its safety briefing material on emergency exits.

Status: Closed – **Category**: Agreement

Safety Recommendation UNKG-2014-006 (AAIB)

It is recommended that the European Aviation Safety Agency develops recommendations on the content of visual aids such as safety briefing cards or safety videos to include information on how passengers, including those with young children, should use the escape devices.

Reply No. 4 sent on 28/04/2017:

The Agency evaluated this safety issue within the framework of rulemaking tasks RMT.0516 and RMT.0517 'Updating Air OPS Regulation (EU) No 965/2012 Implementing Rules and related Acceptable Means of Compliance (AMC) & Guidance Material (GM)'.

The outcome of the evaluation is contained in EASA Executive Director (ED) Decision 2017/008/R, which was published on the Agency's web site on 30 March 2017.

The ED Decision introduces new guidance material under GM2 CAT.OP.MPA.170 'Passenger briefing - safety briefing material', which addresses both the safety briefing card and the safety video, and provides guidance on the minimum content, as applicable to the type of aircraft and the type of operation. Inclusion of information on how passengers, including those with young children, should use the escape devices, is addressed under point (f)(7)(iv).

Furthermore, EASA Safety Information Bulletin SIB 2013-06, published on 17 May 2013, provides guidance on evacuation with young aircraft occupants.

Status: Closed – **Category**: Agreement

Registration	Aircraft Type	Location	Date of event	Event Type
G-EUOE	AIRBUS A319	London Heathrow Airport	24/05/2013	Accident

Synopsis of the event:

As the aircraft departed Runway 27L at London Heathrow Airport, the fan cowl doors from both engines detached, puncturing a fuel pipe on the right engine and damaging the airframe, and some aircraft systems. The flight crew elected to return to Heathrow. On the approach to land an external fire developed on the right engine. The left engine continued to perform normally throughout the flight. The right engine was shut down and the aircraft landed safely and was brought to a stop on Runway 27R. The emergency services quickly attended and extinguished the fire in the right engine. The passengers and crew evacuated the aircraft via the escape slides, without injury.

Subsequent investigation revealed that the fan cowl doors on both engines were left unlatched during maintenance and this was not identified prior to aircraft departure.

Safety Recommendation UNKG-2015-003 (AAIB)

It is recommended that the European Aviation Safety Agency amends Certification Specification 25.901(c), Acceptable Means of Compliance (AMC) 25.901(c) and AMC 25.1193, to include fan cowl doors in the System Safety Assessment for the engine installation and requires compliance with these amended requirements during the certification of modifications to existing products and the initial certification of new designs.

Reply No. 2 sent on 20/10/2017:

Based on the lessons learnt from in-service events, the Agency introduced, in 2013, a new Certification Review Item (CRI) providing a Special Condition (SC) for the retention of engine cowls.

The SC requires a cowling design that minimises any in-flight opening or loss of cowling. It also provides some requirements for the retention system of each openable or removable cowling:

- Keep the cowling closed and secured under the operational loads and after improper fastening of any single latching, locking, or other retention device, or the failure of single latch or hinge;
- Have readily accessible means of closing and securing the cowling that do not require excessive force or manual dexterity; and
- Have a reliable means for effectively verifying that the cowling is secured prior to each take-off.

This SC has been applied since 2013 on several large aeroplane certification projects where the design of the cowling and its installation have similarities with the aeroplanes subject to the in-service events of engine cowl separation.

Compliance with the new specifications is required for new designs, as well as for changes to existing designs if applicable in accordance with point 21.A.101 of Annex I (Part-21) to Commission Regulation (EU) 748/2012

Building on this SC, the Agency has published Notice of Proposed Amendment (NPA) 2017-12, dated 24 July 2017, related to EASA Rulemaking Task (RMT) 0673, in order to implement the content of this SC in the Certification Specifications for large aeroplanes CS-25. The NPA proposes to amend CS 25.1193 (Cowling and nacelle skin) in a consistent manner with the above SC, and also to create corresponding Acceptable Means of Compliance (new AMC 25.1193(e)(4) and (f)).

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
G-SPAO	EUROCOPTER EC135	Glasgow City Centre, Scotland	29/11/2013	Accident

Synopsis of the event:

The helicopter departed Glasgow City Heliport (GCH) at 2044 hrs on 29 November 2013, in support of Police Scotland operations. On board were the pilot and two Police Observers. After their initial task, south of Glasgow City Centre, they completed four more tasks; one in Dalkeith, Midlothian, and three others to the east of Glasgow, before routing back towards the heliport. When the helicopter was about 2.7 nm from GCH, the right engine flamed out. Shortly afterwards, the left engine also flamed out. An autorotation, flare recovery and landing were not achieved and the helicopter descended at a high rate onto the roof of the Clutha Vaults Bar, which collapsed. The three occupants in the helicopter and seven people in the bar were fatally injured. Eleven others in the bar were seriously injured.

Fuel in the helicopter's main fuel tank is pumped by two transfer pumps into a supply tank, which is divided into two cells. Each cell of the supply tank feeds its respective engine. During subsequent examination of the helicopter, 76 kg of fuel was recovered from the main fuel tank. However, the supply tank was found to have been empty at the time of impact. It was deduced from wreckage examination and testing that both fuel transfer pumps in the main tank had been selected off for a sustained period before the accident, leaving the fuel in the main tank, unusable. The low fuel 1 and low fuel 2 warning captions, and their associated audio attention-getters, had been triggered and acknowledged, after which, the flight had continued beyond the 10-minute period specified in the Pilot's Checklist Emergency and Malfunction Procedures.

The helicopter was not required to have, and was not fitted with, flight recorders. However, data and recordings were recovered from non-volatile memory (NVM) in systems on board the helicopter, and radar, radio, police equipment and CCTV recordings were also examined.

During the investigation, the EC135's fuel sensing, gauging and indication system, and the Caution Advisory Display and Warning Unit were thoroughly examined. This included tests resulting from an incident involving another EC135 T2+.

Despite extensive analysis of the limited evidence available, it was not possible to determine why both fuel transfer pumps in the main tank remained off during the latter part of the flight, why the helicopter did not land within the time specified following activation of the low fuel warnings and why a MAYDAY call was not received from the pilot. Also, it was not possible to establish why a more successful autorotation and landing was not achieved, albeit in particularly demanding circumstances.

The investigation identified the following causal factors:

1. 73 kg of usable fuel in the main tank became unusable as a result of the fuel transfer pumps being switched off for unknown reasons.

2. It was calculated that the helicopter did not land within the 10-minute period specified in the Pilot's Checklist Emergency and Malfunction Procedures, following continuous activation of the low fuel warnings, for unknown reasons.

3. Both engines flamed out sequentially while the helicopter was airborne, as a result of fuel starvation, due to depletion of the supply tank contents.

4. A successful autorotation and landing was not achieved, for unknown reasons.

The investigation identified the following contributory factors:

1. Incorrect management of the fuel system allows useable fuel to remain in the main tank while the contents in the supply tank become depleted.

2. The RADALT and steerable landing light were unpowered after the second engine flamed out, leading to a loss of height information and reduced visual cues.

3. Both engines flamed out when the helicopter was flying over a built-up area.

Safety Recommendation UNKG-2015-035 (AAIB)

It is recommended that the European Aviation Safety Agency mandate the ICAO Annex 6 flight recorder requirements for all helicopter emergency medical service operations, regardless of aircraft weight. The last two hours of flight crew communications and cockpit area audio should be recorded. The cockpit area audio recording should continue for 10 minutes after the loss of normal electrical power.

Reply No. 3 sent on 28/04/2017:

Commission Regulation (EU) No 965/2012 contains the following provisions on CVR recording duration for Commercial Air Transport (CAT) operations with helicopters (including emergency medical services):

CAT.IDE.H.185 Cockpit voice recorder

(a) The following helicopter types shall be equipped with a cockpit voice recorder (CVR):

(1) all helicopters with an MCTOM of more than 7 000 kg; and

(2) helicopters with an MCTOM of more than 3 175 kg and first issued with an individual CofA on or after 1 January 1987.

(b) The CVR shall be capable of retaining the data recorded during at least:

(1) the preceding two hours for helicopters referred to in (a)(1) and (a)(2), when first issued with an individual CofA on or after 1 January 2016;

In addition, the Agency published, on 03 April 2017, Notice of Proposed Amendment NPA 2017-03 under rulemaking task RMT.0271 'In-flight recording for light aircraft'.

The NPA includes a proposal to mandate the carriage of lightweight flight recorders capable of recording flight parameters for turbine-engined helicopters with a Maximum Certified Take-Off Mass (MCTOM) greater than or equal to 2 250 kg, when the helicopter is newly manufactured, is commercially operated (commercial air transport and commercial specialised operations), and is not currently required to carry a flight data recorder. This includes the Airbus Helicopters EC135, for example. However, the benefit of recording of cockpit audio was not considered sufficient to mandate it.

The impact assessment concluded that voluntary installation (through safety promotion channels) of in-flight recording systems (also capable of recording cockpit audio) is the most appropriate way forward for all other cases.

The next RMT.0271 deliverable, an EASA Opinion, is planned to be published in 2018. Pending adoption of the Opinion and publication of the related amending regulation to Commission Regulation (EU) No 965/2012, an Executive Director's Decision containing the associated Acceptable Means of Compliance and Guidance Material will be published.

The issue of an alternate power source for the CVR is currently being considered within the framework of RMT.0249 'Recorders installation and maintenance thereof - certification aspects' which was launched on 18 September 2014 with the publication of the Terms of Reference. The Notice of Proposed Amendment (NPA) from this rulemaking task is planned to be published in the first half of 2017.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
G-WNSB	AEROSPATIALE AS332	on approach to Sumburgh Airport in the Shetland Islands	23/08/2013	Accident

Synopsis of the event:

At 1717 hrs UTC on 23 August 2013, an AS332 L2 Super Puma helicopter with sixteen passengers and two crew on board crashed in the sea during the approach to land at Sumburgh Airport. Four of the passengers did not survive.

The purpose of the flight was to transport the passengers, who were employees of the UK offshore oil and gas industry, to Aberdeen. On the accident flight, the helicopter had departed the Borgsten Dolphin semi-submersible drilling platform in the North Sea, to route to Sumburgh Airport for a refuelling stop. It then planned to continue to Aberdeen Airport.

The commander was the Pilot Flying (PF) on the accident sector. The weather conditions were such that the final approach to Runway 09 at Sumburgh Airport was flown in cloud, requiring the approach to be made by sole reference to the helicopter's instruments, in accordance with the Standard Operating Procedure (SOP) set out in the operator's Operating Manual (OM). The approach was flown with the autopilot in 3-axes with Vertical Speed (V/S) mode, which required the commander to operate the collective pitch control manually to control the helicopter's airspeed. The co-pilot was responsible for monitoring the helicopter's vertical flightpath against the published approach vertical profile and for seeking the external visual references necessary to continue with the approach and landing. The procedures permitted the helicopter to descend to a height of 300 ft, the Minimum Descent Altitude (MDA) for the approach, at which point a level-off was required if visual references had not yet been acquired.

Although the approach vertical profile was maintained initially, insufficient collective pitch control input was applied by the commander to maintain the approach profile and the target approach airspeed of 80 kt. This resulted in insufficient engine power being provided and the helicopter's airspeed reduced continuously during the final approach. Control of the flightpath was lost and the helicopter continued to descend below the MDA. During the latter stages of the approach the helicopter's airspeed had decreased below 35 kt and a high rate of descent had developed.

The decreasing airspeed went unnoticed by the pilots until a very late stage, when the helicopter was in a critically low energy state. The commander's attempt to recover the situation was unsuccessful and the helicopter struck the surface of the sea approximately 1.7 nm west of Sumburgh Airport. It rapidly filled with water and rolled inverted, but was kept afloat by the flotation bags which had deployed.

Search and Rescue (SAR) assets were dispatched to assist and the survivors were rescued by the Sumburgh-based SAR helicopters that attended the scene.

The investigation identified the following causal factors in the accident:

- The helicopter's flight instruments were not monitored effectively during the latter stages of the non-precision instrument approach. This allowed the helicopter to enter a critically low energy state, from which recovery was not possible.

- Visual references had not been acquired by the Minimum Descent Altitude (MDA) and no effective action was taken to level the helicopter, as required by the operator's procedure for an instrument approach.

The following contributory factors were identified:

- The operator's SOP for this type of approach was not clearly defined and the pilots had not developed a shared, unambiguous understanding of how the approach was to be flown.

- The operator's SOPs at the time did not optimise the use of the helicopter's automated systems during a Non-Precision Approach.

- The decision to fly a 3-axes with V/S mode, decelerating approach in marginal weather conditions did not make optimum use of the helicopter's automated systems and required closer monitoring of the instruments by the crew.

- Despite the poorer than forecast weather conditions at Sumburgh Airport, the commander had not altered his expectation of being able to land from a Non-Precision Approach.

Safety Recommendation UNKG-2016-008 (AAIB)

It is recommended that the European Aviation Safety Agency considers establishing a European Operators Flight Data Monitoring forum for helicopter operators to promote and support the development of Helicopter Flight Data Monitoring programmes.

Reply No. 2 sent on 28/04/2017:

The Agency decided to focus firstly on offshore helicopter operators for promoting flight data monitoring (FDM), through paragraph SPA.HOFO.145 in Annex V to Commission Regulation (EU) 965/2012, which requires offshore operators to implement an FDM programme by 01 January 2019 (see Commission Regulation (EU) 2016/1199 of 22 July 2016 amending Regulation (EU) No 965/2012).

Hence, an on-line survey was conducted by the Agency in September and October 2016, which included the topic of creating an FDM forum for the exchange of good practice between offshore operators.

Twenty-six organisations responded, among which sixteen were offshore operators (eleven of which have their principal place of business in an EASA Member State). The survey results showed clear support from offshore operators for the proposal to create such an FDM forum, as well as the need to share experience between experts in the FDM field.

Based on this result and after coordination meetings with CAA-UK and HeliOffshore (safety association), it was decided to open up the next FDM conference organised by the Agency to helicopter operators. This FDM conference will take place in June 2017, as announced on the EASA website.

In addition, the European Operators Flight Data Monitoring (EOFDM) forum has been extended to include participation from helicopter operators: the terms of reference of EOFDM were amended for that purpose. Helicopter operators (starting with offshore operators) will be invited to join the working group C of EOFDM.

Status: Closed – **Category**: Agreement

Safety Recommendation UNKG-2016-009 (AAIB)

It is recommended that the European Aviation Safety Agency collaborates with National Aviation Authorities and helicopter operators to develop and publish guidance material on detection logic for Helicopter Flight Data Monitoring programmes.

Reply No. 2 sent on 20/01/2017:

In June 2016, the Agency discussed the idea of developing guidance material on detection logic for helicopter Flight Data Monitoring (FDM) programmes with the European Authorities coordination group on Flight Data Monitoring (EAFDM). The need for such guidance material was acknowledged by this group. Further to that, in September 2016, the Agency launched an industry survey on FDM programmes addressed to helicopter offshore operators. Among others, the results of this survey indicate that three quarters of respondents identify a need for guidance on detection logic for helicopter FDM programmes.

In the meantime, the Civil Aviation Authority of United Kingdom (CAA-UK) announced its intention to produce 'guidance on best practice to support the new European Air Operations Regulations for offshore operations (SPA.HOFO)': refer to CAP1386 (Safety review of offshore public transport helicopter operations in support of the exploitation of oil and gas: Progress report 2016) available on the CAA-UK website. This guidance material is foreseen to include 'new or revised "events" or "measurements" to monitor for adherence to company Standard Operating Procedures'. For this project, the CAA UK plans to work with 'UK helicopter operators and EASA'.

It is considered that this CAA-UK project will satisfy the intent of the safety recommendation, and the Agency is supporting it.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
G-LGNO	SAAB 2000	en-route	15/12/2014	Serious incident

Synopsis of the event:

The aircraft was inbound to land on Runway 27 at Sumburgh when the pilots discontinued the approach because of weather to the west of the airport. As the aircraft established on a southerly heading, it was struck by lightning. When the commander made nose-up pitch inputs the aircraft did not respond as he expected. After reaching 4,000 ft amsl the aircraft pitched to a minimum of 19° nose down and exceeded the applicable maximum operating speed (VMO) by 80 kt, with a peak descent rate of 9,500 ft/min. The aircraft started to climb after reaching a minimum height of 1,100 ft above sea level.

Recorded data showed that the autopilot had remained engaged, contrary to the pilots' understanding, and the pilots' nose-up pitch inputs were countered by the autopilot pitch trim function, which made a nose-down pitch trim input in order to regain the selected altitude.

Five Safety Recommendations are made relating to the design of the autopilot system and the certification requirements for autopilot systems.

Safety Recommendation UNKG-2016-050 (AAIB)

It is recommended that the European Aviation Safety Agency review the design of the Saab 2000 autopilot system and require modification to ensure that the autopilot does not create a potential hazard when the flight crew applies an override force to the flight controls.

Reply No. 1 sent on 20/01/2017:

The European Aviation Safety Agency has performed a preliminary review of the design of the Saab 2000 autopilot system, together with a review of the in-service experience of the Saab 2000 and a benchmark of the other certified autopilot systems, in light of the Loganair incident and associated investigation report. While it was found that some simple improvements to the design could possibly further enhance safety and should be further evaluated in cooperation with the TC holder, it is not believed that an extensive change such as enabling autopilot disengagement by pilot input force on the control column would be commensurate.

Status: Closed – **Category**: Disagreement

Registration	Aircraft Type	Location	Date of event	Event Type
G-BYCP	BEECH B200	Near Chigwell, Essex	03/10/2015	Accident

Synopsis of the event:

The aircraft was climbing through approximately 750 ft amsl after takeoff when it began to turn right. It continued to climb in the turn until it reached approximately 875 ft amsl when it began to descend. The descent continued until the aircraft struck some trees at the edge of a field, approximately 1.8 nm southwest of the aerodrome. The evidence available was consistent with a loss of aircraft control in Instrument Meteorological Conditions (IMC), but this could not be concluded unequivocally because of a lack of evidence from within the cockpit. However, it is possible the pilot became incapacitated and the additional crew member was unable to recover the aircraft in the height available.

Three Safety Recommendations are made regarding the fitment of Terrain Awareness and Warning Systems (TAWS).

Safety Recommendation UNKG-2016-055 (AAIB)

It is recommended that the European Aviation Safety Agency require all in-service and future turbine aircraft with a Maximum Certificated Take-off Mass of 5,700 kg or less and with a maximum operational passenger seating configuration of between six and nine passengers to be fitted with, as a minimum standard, a Class B Terrain Awareness and Warning System certified to ETSO-C151b.

Reply No. 3 sent on 17/11/2017:

EASA has evaluated the existing regulatory mitigation for the risk of Controlled Flight into Terrain (CFIT) accidents with small turbine-powered aeroplanes, within the context of Rulemaking Tasks RMT.0371 and RMT.0372 on Terrain Awareness Warning Systems (TAWS). The tasks were conducted in accordance with the EASA Management Board (MB) Decision No 18-2015 (the rulemaking procedure). The deliverables developed by EASA were based on input from a dedicated rulemaking group representing authorities and industry. All interested parties were consulted through public consultation of Notice of Proposed Amendment NPA 2015-21. Comments received and the associated EASA responses were published in Comment-Response Document CRD 2015-21. EASA Opinion 15/2016, was published on 16 December 2016.

The Opinion includes proposals for amendments to Commission Regulation (EU) No 965/2012 to require turbine-powered aeroplanes performing commercial operations for which the individual Certificate of Airworthiness (CofA) is first issued after 1 January 2019, having a Maximum Certified Take-Off Mass (MCTOM) of 5 700 kg or less, and a Maximum Operational Passenger Seating Configuration (MOPSC) of six to nine, to be equipped with a TAWS that meets the requirements for Class B equipment, as specified in an acceptable standard. Existing guidance material defines 'acceptable standard' as the applicable European Technical Standards Order (ETSO) issued by the Agency (e.g. ETSO-C151 (any revision) or equivalent.

Mandating TAWS to be installed on existing aeroplanes (retrofit) and to be applied to aircraft used for non-commercial operations was also considered under the RMT. The outcome of the data analysis and impact assessment did not support this, especially taking into account the principle of proportionality for general aviation legislation. However, considering the potential safety benefits of TAWS, i.e. further reducing the probability of CFIT accidents, and taking into account that ICAO recommends that all turbine-engined aeroplanes of a MCTOM of 5700 kg or less and authorized to carry more than five but not more than nine passengers should be equipped with a ground proximity warning system, EASA considered that there were significant grounds to recommend the installation of TAWS on such aeroplanes.

Therefore, the Agency published a Safety Information Bulletin (SIB No 2017-14), on 06 September 2017, recommending that owners and operators of the afore-mentioned aeroplanes, as well as affected aeroplane manufacturers, install a TAWS that meets the requirements for Class B equipment, as specified in an acceptable standard, e.g. ETSO-C151 (any revision), or equivalent.

During the RMT, when building the safety case during a regulatory impact assessment (RIA), one of the major aspects taken into account was that the absence of TAWS in the aircraft within the scope of the task was a factor in only two accidents in Europe in the last 10 years.

Technology has evolved and most terrain awareness functions are nowadays an integral part of the avionics. Manufacturers in Europe and the US offer this system with their new aircraft, in line with the recommendation from ICAO and the FAA requirements on TAWS. Furthermore, a significant proportion of operators have voluntarily installed TAWS or an equivalent terrain awareness system to existing aircraft in Europe (20 % of those responding to an EASA survey conducted under the TAWS RMT).

Lastly, the risk area of terrain conflict, including controlled collision with terrain, features in the published EASA Rulemaking and EPAS programme 2017-2021. The Agency is committed to the continuous assessment and improvement of risk controls to mitigate the risk of controlled flight into terrain, through monitoring of safety issues identified in the Commercial Air Transport Fixed Wing Portfolio (see the EASA Annual Safety Review 2016) for this particular risk area.

This includes the establishment of a Member State Task MST.006 to include CFIT in national State Safety Programmes, including, as a minimum, agreeing a set of actions and measuring their effectiveness. Any weaknesses identified in the regulatory framework will be acted on appropriately in order to close any emerging safety gaps.

Status: Closed – **Category**: Partial agreement

Registration	Aircraft Type	Location	Date of event	Event Type
G-GSGS	GLASFLUGEL 304	Parham Airfield	10/08/2017	Accident

Synopsis of the event:

The pilot had fully charged both Front Electric Sustainer (FES) batteries on 4 August 2017, after which they were removed from the chargers for storage. He installed them in the glider on the morning of 10 August, with the intention of flying the glider that afternoon. He initiated the FES battery self-checking procedure before conducting a daily inspection of the glider, after which the self-checking procedure had completed with no faults indicated on the FES Control Unit (FCU). He then fitted the FES battery compartment cover and applied tape around the edges of the cover.

The pilot conducted a ground run of the FES propeller, which operated normally. He then switched the Power Switch OFF, and also turned the FCU OFF, which was contrary to his normal practice of leaving the FCU switched ON.

The pilot launched from Parham Airfield by aerotow at 1021 hrs and flew in ridge lift for a period of 38 minutes before encountering a rain shower. He decided to use the FES propulsion system and turned the Power Switch ON. He then noticed that the FCU was switched OFF, so he switched the FCU ON without moving the Power Switch position.

After waiting a few seconds for the FCU green LEDs to show that the FES propulsion system was available, he operated the FES motor which responded normally and operated for 4 minutes. The pilot did not recall observing any fault messages on the FCU during the motor operation.

After stopping the FES motor the pilot noticed that the propeller did not realign itself correctly against the nose of the glider. The pilot had experienced this problem previously and did not consider it to be a significant issue, so he did not attempt to realign the propeller. He switched the Power Switch OFF, leaving the FCU switched ON and continued in soaring flight for a further 1 hour 15 minutes before positioning the glider to land on grass Runway 22 at Parham Airfield. The circuit was flown normally to a smooth touchdown, however at the moment of touchdown the pilot heard an unexpected noise.

As the glider slowed during the ground run, the pilot smelled burning and the cockpit filled with smoke that was moving forwards from behind the pilot's head. The pilot did not report observing any warning messages or illuminated LEDs on the FCU, although his attention was drawn outside the cockpit during landing. He vacated the cockpit normally, without injury, and observed that the FES battery compartment cover was missing and that smoke, followed shortly by flames, was coming from the battery compartment. The airfield fire truck arrived promptly and an initial attempt was made to extinguish the fire using a CO2 gaseous extinguisher, but this proved unsuccessful. Aqueous film-forming foam (AFFF) was then sprayed into the FES battery compartment and the fire was extinguished.

The FES battery compartment cover was found close to the glider's touchdown point. The cover's rear carbon fibre catch was fractured, consistent with a vertical load acting on the inside of the cover. The cover did not exhibit any overheating damage.

Safety Recommendation UNKG-2017-018 (AAIB)

It is recommended that the European Aviation Safety Agency (EASA) requires that all powered sailplanes, operating under either an EASA Restricted Type Certificate, or an EASA Permit to Fly, and fitted with a Front Electric Sustainer (FES) system, are equipped with a warning system to alert the pilot to the presence of a fire or other hazardous condition in the FES battery compartment.

Reply No. 1 sent on 17/11/2017:

The Agency agrees with the intent of the Safety Recommendation.

As first action, the Emergency Airworthiness Directive (EAD) 2017-0167-E was published on September 6th, 2017. This EAD requires removal of the Front Electrical Sustainer (FES) battery pack or an EASA approved modification of the FES batteries before the next flight. The three affected manufacturers are currently in the process of developing the corrective action addressed by the EAD and the Air Accident Investigation Branch (AAIB) Special Bulletin. EASA concurs with the recommendation and will require a warning system as part of the corrective action. Design details of such warning systems are not available yet, since the systems are still under development.

Moreover, the Agency will look into further items such as, Aircraft Flight Manual (AFM) improvement, Flight Control Unit (FCU) software update with regard to the warnings presented to the pilot and modifications to the FES battery design itself.

EASA will ensure that the same corrective action is applied to aircraft under Permit to Fly as well.

Status: Open – **Category**:

United States

Registration	Aircraft Type	Location	Date of event	Event Type
N106US	AIRBUS A320	Hudson River about 8,5 miles from La Guardia Airport, New York, USA	15/01/2009	Accident

Synopsis of the event:

Loss of Thrust in Both Engines After Encountering a Flock of Birds and Subsequent Ditching on the Hudson River

On January 15, 2009, about 1527 eastern standard time, US Airways flight 1549, an Airbus Industrie A320-214, N106US, experienced an almost complete loss of thrust in both engines after encountering a flock of birds and was subsequently ditched on the Hudson River about 8.5 miles from LaGuardia Airport (LGA), New York City, New York. The flight was en route to Charlotte Douglas International Airport, Charlotte, North Carolina, and had departed LGA about 2 minutes before the in-flight event occurred. The 150 passengers, including a lap-held child, and 5 crewmembers evacuated the airplane via the forward and overwing exits. One flight attendant and four passengers were seriously injured, and the airplane was substantially damaged.

The scheduled, domestic passenger flight was operating under the provisions of 14 Code of Federal Regulations Part 121 on an instrument flight rules flight plan. Visual meteorological conditions prevailed at the time of the accident.

The National Transportation Safety Board determines that the probable cause of this accident was the ingestion of large birds into each engine, which resulted in an almost total loss of thrust in both engines and the subsequent ditching on the Hudson River. Contributing to the fuselage damage and resulting unavailability of the aft slide/rafts were (1) the Federal Aviation Administration's (FAA) approval of ditching certification without determining whether pilots could attain the ditching parameters without engine thrust, (2) the lack of industry flight crew training and guidance on ditching techniques, and (3) the captain's resulting difficulty maintaining his intended airspeed on final approach due to the task saturation resulting from the emergency situation.

Contributing to the survivability of the accident was (1) the decision-making of the flight crewmembers and their crew resource management during the accident sequence; (2) the fortuitous use of an airplane that was equipped for an extended overwater flight, including the availability of the forward slide/rafts, even though it was not required to be so equipped; (3) the performance of the cabin crewmembers while expediting the evacuation of the airplane; and (4) the proximity of the emergency responders to the accident site and their immediate and appropriate response to the accident.

Safety Recommendation UNST-2010-088 (NTSB)

The National Transportation Safety Board makes the following recommendations to the European Aviation Safety Agency: Modify the small and medium flocking bird certification test standard in Joint Aviation Regulations–Engines to require that the test be conducted using the lowest expected fan speed, instead of 100-percent fan speed, for the minimum climb rate. [A-10-88]

Reply No. 4 sent on 17/11/2017:

Rulemaking task RMT.0671 started on 30 May 2017 with the publication of its terms of reference.

The Agency published the Notice of Proposed Amendment (NPA) NPA 2017-16 for consultation on 2 October 2017. The NPA proposal has taken into account this accident and the related safety recommendations, as well as the Engine Harmonization Working Group (EHWG) report 'Turbofan Bird Ingestion Regulation' of 19 February 2015. The EHWG was formed after the FAA tasked the Aviation Rulemaking Advisory Committee (ARAC) to address the NTSB safety recommendations from this accident. EASA actively participated in this working group.

The NPA proposes to amend the medium flocking bird ingestion demonstration provisions in Certification Specification for Engines (CS-E) to include an additional test specification for turbine engines to be required to continue to operate following the ingestion of a medium-sized bird into the engine core with a fan speed that is representative of the climb condition (i.e. the lowest expected available climb thrust setting for the engine installation).

However, no change is proposed to the maximum take-off thrust requirement for other aspects of the medium flocking bird provisions since this requirement is far more stringent for the fan blades.

The final EASA Executive Director decision to amend CS-E is planned for second quarter of 2018.

Status: Open – **Category**:

Safety Recommendation UNST-2010-089 (NTSB)

The National Transportation Safety Board makes the following recommendations to the European Aviation Safety Agency: During the bird-ingestion rulemaking database (BRDB) working group's reevaluation of the current engine bird-ingestion certification regulations, specifically reevaluate the Joint Aviation Regulations–Engines (JAR-E) large flocking bird certification test standards to determine whether they should

1) apply to engines with an inlet area of less than 3,875 square inches and

2) include a requirement for engine core ingestion. If the BRDB working group's reevaluation determines that such requirements are needed, incorporate them into JAR-E and require that newly certificated engines be designed and tested to these requirements. [A-10-089]

Reply No. 4 sent on 17/11/2017:

Rulemaking task RMT.0671 started on 30 May 2017 with the publication of its terms of reference.

The Agency published the Notice of Proposed Amendment (NPA) NPA 2017-16 for consultation on 2 October 2017. The NPA proposal has taken into account this accident and the related safety recommendations, as well as the Engine Harmonization Working Group (EHWG) report 'Turbofan Bird Ingestion Regulation' of 19 February 2015. The EHWG was formed after the FAA tasked the Aviation Rulemaking Advisory Committee (ARAC) to address the NTSB safety recommendations from this accident. EASA actively participated in this working group.

In the NPA, the Agency proposes no amendment to the large flocking bird provisions in Certification Specifications for Engines CS-E 800 for the reasons described below.

The large flocking bird certification test provisions were reviewed to determine whether they should apply to engines in the class D size (inlet throat areas of 1.35 to 2.5 m^2/2092 to 3875 in^2) and include additional provisions for engine core ingestion. The potential benefit of adding a large flocking bird requirement to this engine size class was considered and it was found that, due to the shorter fan blade length in this size class, the large flocking bird test condition would not clearly provide any significant safety benefit for either the fan bypass threat or the core ingestion element. Simulations provided by an engine manufacturer revealed that the current additional integrity test requirement provides an equivalent structural challenge to the fan blade up to the 1.58 kg bird size. Manufacturer simulations also showed that the current medium flocking bird requirements provide similar energy at the core intake (within 2%) despite the larger amount of bird material associated with the large flocking bird.

Status: Closed – **Category**: Partial agreement

Safety Recommendation UNST-2010-095 (NTSB)

The National Transportation Safety Board makes the following recommendations to the European Aviation Safety Agency: Require modifications to life vest stowage compartments or stowage compartment locations to improve the ability of passengers to retrieve life vests for all occupants. [A-10-95]

Reply No. 6 sent on 28/04/2017:

The Agency has collaborated with FAA to revise the minimum performance standards for aircraft seating systems, (European) Technical Standard Order (E)TSO-C127a by adding new life vest retrieval requirements taking into account this safety recommendation.

Consequently, the FAA has published TSO-C127b dated 06.06.2014.

The Agency has also revised ETSO-C127 (from issue 'a' to issue 'b') under rulemaking task RMT.0206. The associated ED Decision 2016/013/R amending CS-ETSO (amendment 11) entered into force on 5 August 2016.

Status: Closed – **Category**: Agreement

Registration	Aircraft Type	Location	Date of event	Event Type
N14053	AIRBUS A300	Belle Harbor	12/11/2001	Accident

Synopsis of the event:

On November 12, 2001, about 0916:15 eastern standard time, American Airlines flight 587, an Airbus Industrie A300-605R, N14053, crashed into a residential area of Belle Harbor, New York, shortly after takeoff from John F. Kennedy International Airport, Jamaica, New York. Flight 587 was a regularly scheduled passenger flight to Las Americas International Airport, Santo Domingo, Dominican Republic, with 2 flight crewmembers, 7 flight attendants, and 251 passengers aboard the airplane. The airplane's vertical stabilizer and rudder separated in flight and were found in Jamaica Bay, about 1 mile north of the main wreckage site. The airplane's engines subsequently separated in flight and were found several blocks north and east of the main wreckage site. All 260 people aboard the airplane and 5 people on the ground were killed, and the airplane was destroyed by impact forces and a postcrash fire. Flight 587 was operating under the provisions of 14 Code of Federal Regulations Part 121 on an instrument flight rules flight plan. Visual meteorological conditions prevailed at the time of the accident.

The National Transportation Safety Board determines that the probable cause of this accident was the in-flight separation of the vertical stabilizer as a result of the loads beyond ultimate design that were created by the first officer's unnecessary and excessive rudder pedal inputs. Contributing to these rudder pedal inputs were characteristics of the Airbus A300-600 rudder system design and elements of the American Airlines Advanced Aircraft Maneuvering Program.

Safety Recommendation UNST-2010-119 (NTSB)

The National Transportation Safety Board recommends that the European Aviation Safety Agency modify European Aviation Safety Agency Certification Specifications for Large Aeroplanes CS-25 to ensure safe handling qualities in the yaw axis throughout the flight envelope, including limits for rudder pedal sensitivity. [A-10-119]

Reply No. 4 sent on 07/07/2017:

The FAA Aviation Rulemaking Advisory Committee (ARAC) established the Flight Controls Harmonization Working Group (FCHWG) to assist in the analysis of the issue of rudder pedal sensitivity and rudder reversals (notice published under Federal register Vol.76, No. 59, dated 28 March 2011). The task of the group was to review the need to revise existing certification specifications for large aeroplanes as well as the need to enforce retroactive measures for the already certificated aircraft.

EASA participated to this Group which released its Rudder Pedal Sensitivity/Rudder Reversal Recommendation Report dated November 7, 2013; the report includes recommendations for the amendment of FAR Part 25 and CS-25. It is available on the FAA Website at:

http://www.faa.gov/regulations_policies/rulemaking/committees/documents/media/taefch_rpsrrt1-32811.pdf

Based on this report, the Agency issued a Special Condition (SC) to ensure that the aeroplane must be designed for loads, considered as ultimate, resulting from the application of two rudder reversal pedal inputs. The SC was published for consultation on 11/12/2015. The final SC, acceptable means of compliance (AMC), and the responses to comments are available on the EASA Website:

https://www.easa.europa.eu/documents/public-consultations/proposed-special-condition-c-xx

This SC will be applied to new Type Certificates for which an application is made after the publication of the final SC. In accordance with Part 21.A.101 the applicability will be evaluated for major significant changes to previously certified aeroplanes.

Rulemaking task RMT.0397 will introduce new certification specifications in CS-25 (applicable to new certification projects for large aeroplanes) to mitigate the risk of pilots unintended or inappropriate rudder pedal usage. RMT.0397 started on 30 May 2017 with the publication of its terms of reference on the EASA Website:

https://www.easa.europa.eu/document-library/terms-of-reference-and-group-compositions/tor-rmt0397

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
N902FX	ATR ATR42	Lubbock, Texas, United States	27/01/2009	Accident

Synopsis of the event:

On January 27, 2009, about 0437 central standard time, an Avions de Transport Régional Aerospatiale Alenia ATR 42-320, N902FX, operating as Empire Airlines flight 8284, was on an instrument approach when it crashed short of the runway at Lubbock Preston Smith International Airport, Lubbock, Texas. The captain sustained serious injuries, and the first officer sustained minor injuries. The airplane was substantially damaged. The airplane was registered to FedEx Corporation and operated by Empire Airlines, Inc., as a 14 Code of Federal Regulations Part 121 supplemental cargo flight. The flight departed from Fort Worth Alliance Airport, Fort Worth, Texas, about 0313. Instrument meteorological conditions prevailed, and an instrument flight rules flight plan was filed.

The National Transportation Safety Board determines that the probable cause of this accident was the flight crew's failure to monitor and maintain a minimum safe airspeed while executing an instrument approach in icing conditions, which resulted in an aerodynamic stall at low altitude. Contributing to the accident were 1) the flight crew's failure to follow published standard operating procedures in response to a flap anomaly, 2) the captain's decision to continue with the unstabilized approach, 3) the flight crew's poor crew resource management, and 4) fatigue due to the time of day in which the accident occurred and a cumulative sleep debt, which likely impaired the captain's performance.

Safety Recommendation UNST-2012-027 (NTSB)

The National Transportation Safety Board makes the following recommendation to the European Aviation Safety Agency: evaluate all European Aviation Safety Agency-certificated transport-category airplanes equipped with stick pushers to ensure that the stick pusher activates at an angle of attack that will provide adequate stall protection in the presence of airframe ice accretions. [A-12-27]

Reply No. 4 sent on 02/06/2017:

Following the National Transportation Safety Board's safety recommendation A12-27 (EASA reference:SR UNST-2012-027), the EASA issued a letter to all large aeroplane European Union Type Certificate holders, ref:HHO/sha/C(1.1) 2013(D)53130, dated 5 July 2013, inquiring feedback on their EASA certified types and models that feature a stick pusher function, and requesting them to provide in this case the values of the angle of attack (AoA) triggering the stall warning (stick shaker) and the stall protection (stick pusher).

Following the EASA preliminary answer provided to this safety recommendation through the letter 2015(D)56316, dated 07th January 2016, the SAAB 340 was identified as having a stall protection (stick pusher function) where the AoA threshold activates the stick pusher irrespective of the icing or non-icing conditions. However, the SAAB 340 stall warning (stick shaker function) has different AoA values depending on the icing or non-icing conditions.

The need for a specific stick pusher setting in icing conditions was already assessed by the Certification Authority in 2008. The outcomes of this assessment confirmed that such a dedicated stick pusher setting for icing conditions was not needed due to the proper activation of the stick pusher function before the aerodynamic stall occurred in both icing and non-icing conditions.

To complete the evaluation of the SAAB 340 design in the frame of this Safety Recommendation, EASA confirms that no in-service occurrence has put into question the conclusions made at the time of the 2008 assessment.

The reliability objectives, imposed by the type certification basis, have also been computed with the current fleet figures (number of occurrences / cumulated flight hours), confirming that the number of reported occurrences does not impair the safety objectives set for the stick pusher system. EASA confirms that the SAAB 340 stick pusher function provides adequate stall protection in the presence of airframe ice accretions.

The particular case of Fokker 70/100 was not mentioned in the EASA letter 2015(D)56316. The design of the Fokker 70/100 does not have different AoA thresholds for the stall protection for icing or non-icing conditions. The stick shaker function, as well as the stick pusher function, are set with AoA thresholds values which ensure sufficient safety margin before reaching the aerodynamic stall of the aeroplane on both non-icing and icing conditions.

Status: Closed – **Category**: Agreement

Registration	Aircraft Type	Location	Date of event	Event Type
N390LG	AEROSPATIALE AS350	Frisco, Colorado	03/07/2015	Accident

Registration	Aircraft Type	Location	Date of event	Event Type
N356AM	EUROCOPTER EC130	St. Louis, Missouri	06/03/2015	Accident

Synopsis of the event:

Crash-Resistant Fuel Systems on Airbus Helicopters

On March 6, 2015, about 2310 central standard time, an Airbus Helicopters EC130 B4 helicopter, N356AM, operated by Air Methods Corporation, doing business as ARCH, struck the edge of a hospital building and impacted its parking lot near St. Louis, Missouri, during approach to an elevated rooftop helipad. The helicopter was destroyed by impact forces and a postcrash fire. The pilot was the sole occupant and sustained fatal thermal injuries. Night visual meteorological conditions prevailed for the flight conducted under the provisions of 14 Code of Federal Regulations (CFR) Part 135. The NTSB's ongoing investigation determined that the accident was immediately survivable in the absence of a postcrash fire.

On July 3, 2015, about 1339 mountain daylight time, an Airbus Helicopters AS350 B3e helicopter, N390LG, operated by Air Methods Corporation, partially impacted a parked recreational vehicle in a parking lot near Summit Medical Center in Frisco, Colorado, after takeoff from a ground-based hospital helipad. The helicopter was destroyed by impact forces and a postcrash fire. Visual meteorological conditions prevailed for the flight conducted under the provisions of 14 CFR Part 135. Video footage from a parking lot surveillance camera revealed a postcrash fire initiating a few seconds after ground impact concurrent with large quantities of fuel flowing from the helicopter wreckage. The pilot and two flight nurses survived the initial ground impact. One flight nurse sustained a back injury and the other sustained serious thermal injuries. A medical staff member on the ground near the crash site also sustained thermal injuries while attempting to rescue the pilot from the helicopter wreckage. The pilot ultimately died from his injuries.2 The NTSB's investigation of this accident is ongoing.

Neither the AS350 B3e nor the EC130 B4 helicopter was equipped with a crash-resistant fuel system, which if installed, may have prevented or reduced the risk of thermal injuries.

Safety Recommendation UNST-2016-001 (NTSB)

Once Airbus Helicopters completes development of a retrofit kit to incorporate a crash-resistant fuel system into AS350 B3e and similarly designed variants, prioritize its approval to accelerate its availability to operators. [A-16-011]

Reply No. 2 sent on 14/03/2017:

As a result of a close and priority effort with Airbus Helicopters, EASA approved Supplemental Type Certificate (STC) No. 10060852 to certify a crash resistant fuel system in the AS350B3e under certain limitations. Additional flexibility to use this configuration is granted, if needed, by EASA STC No. 10061056.

This design shall be available for operators both in new delivered aircraft and as retrofit kit for aircraft already in service.

EASA continues working together with Airbus Helicopters on the certification of design solutions which may allow the installation of a crash resistant fuel system without limitations.

Status: Open – **Category**:

Registration	Aircraft Type	Location	Date of event	Event Type
N390LG	AEROSPATIALE AS350	Frisco, Colorado	03/07/2015	Accident

Synopsis of the event:

Loss of Control at Takeoff

On July 3, 2015, about 1339 mountain daylight time, an Airbus Helicopters AS350 B3e helicopter, N390LG, operated by Air Methods Corporation, partially impacted a parked recreational vehicle in a parking lot near Summit Medical Center in Frisco, Colorado, after takeoff from a ground-based hospital helipad. The helicopter was destroyed by impact forces and a postcrash fire. Visual meteorological conditions prevailed for the flight conducted under the provisions of 14 CFR Part 135. Video footage from a parking lot surveillance camera revealed a postcrash fire initiating a few seconds after ground impact concurrent with large quantities of fuel flowing from the helicopter wreckage. The pilot and two flight nurses survived the initial ground impact. One flight nurse sustained a back injury and the other sustained serious thermal injuries. A medical staff member on the ground near the crash site also sustained thermal injuries while attempting to rescue the pilot from the helicopter wreckage. The pilot ultimately died from his injuries.2 The NTSB's investigation of this accident is ongoing.

Safety Recommendation UNST-2017-011 (NTSB)

After the actions requested in Safety Recommendation A-17-10 are completed, require operators of Airbus Helicopters dual-hydraulic AS350-series helicopters to incorporate changes to the dual hydraulic system to both ensure pedal control hydraulic assistance and mitigate the possibility of pilot error during any check of the hydraulic system.

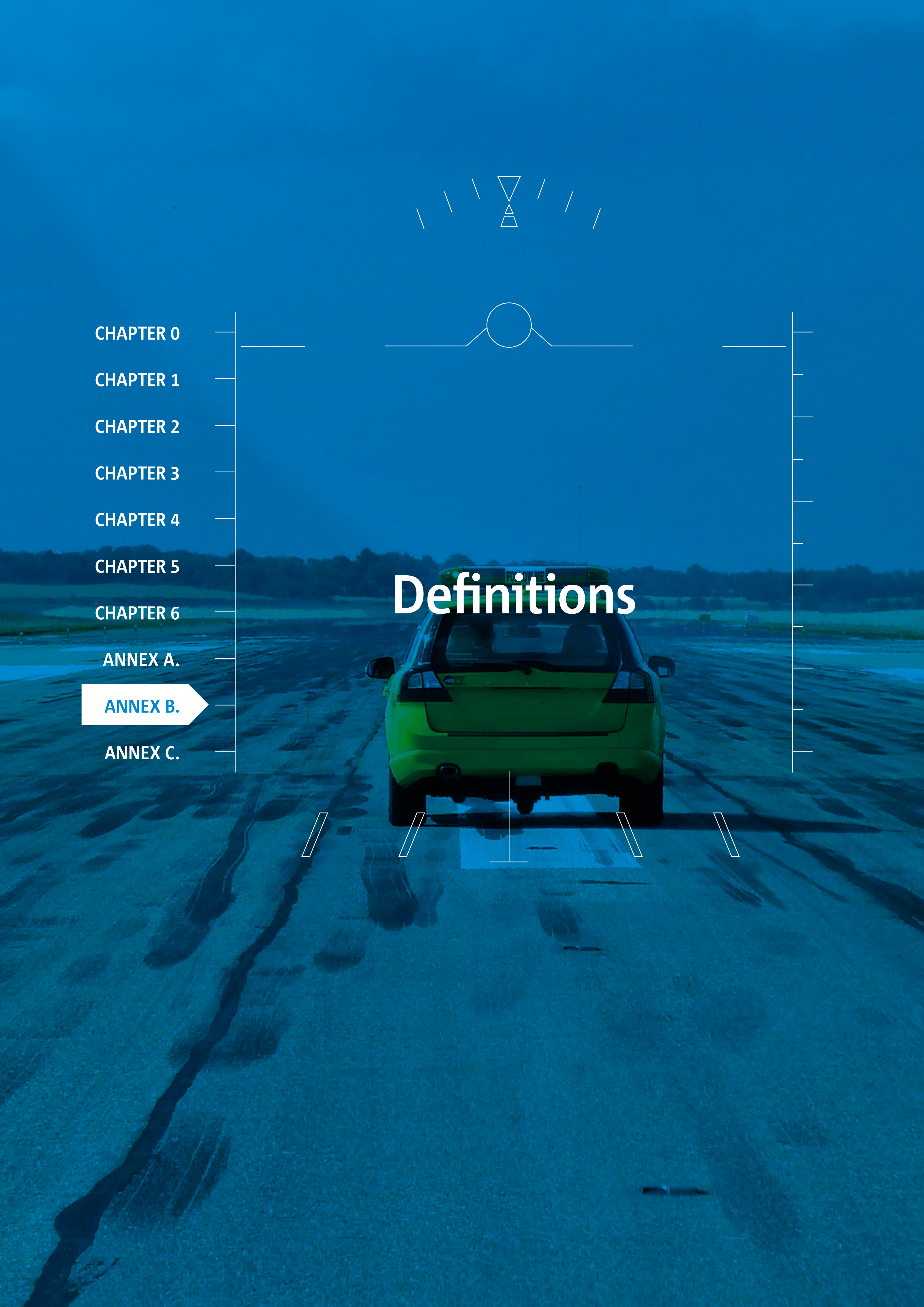
[A-17-10 addressed to Airbus Helicopter is the following: for existing dual-hydraulic AS350-series helicopters, assess and implement changes to the dual hydraulic system that would both ensure pedal control hydraulic assistance and mitigate the possibility of pilot error during any check of the hydraulic system.]

Reply No. 1 sent on 02/06/2017:

EASA has required operators of Airbus Helicopters dual-hydraulic AS350-series helicopters to incorporate changes as follows:

- EASA Airworthiness Directive (AD) 2015-0178 mandated a new procedure for the functional check of the Yaw Load Compensator, introduced with Airbus Helicopters Service Bulletin (SB) AS350-67.00.66
- EASA AD 2016-0220 mandated the modification to trigger a caution when the hydraulic switch on the collective grip is set to OFF, mandated the installation of an additional indicator light, and mandated the replacement of the bistable ACCU TST push button with a monostable push button. These modifications were introduced by Airbus Service Bulletins (SB) AS350-67.00.64 and SB AS350-67.00.65.

Status: Closed – **Category**: Agreement



Definitions

Definitions

The following definitions are extracted from Regulation (EU) No 996/2010 of the European Parliament and of the Council of 20 October 2010.

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)[8]: 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.

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 authority(ies), manufacturer(s) and operator(s).

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.

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

CHAPTER 0
CHAPTER 1
CHAPTER 2
CHAPTER 3
CHAPTER 4
CHAPTER 5
CHAPTER 6
ANNEX A.
ANNEX B.
ANNEX C.

ANNEX C

Safety Recommendations classification

The classification has been established in the scope of the safety recommendations taxonomy working group in cooperation with representatives from European Accident 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 a 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.

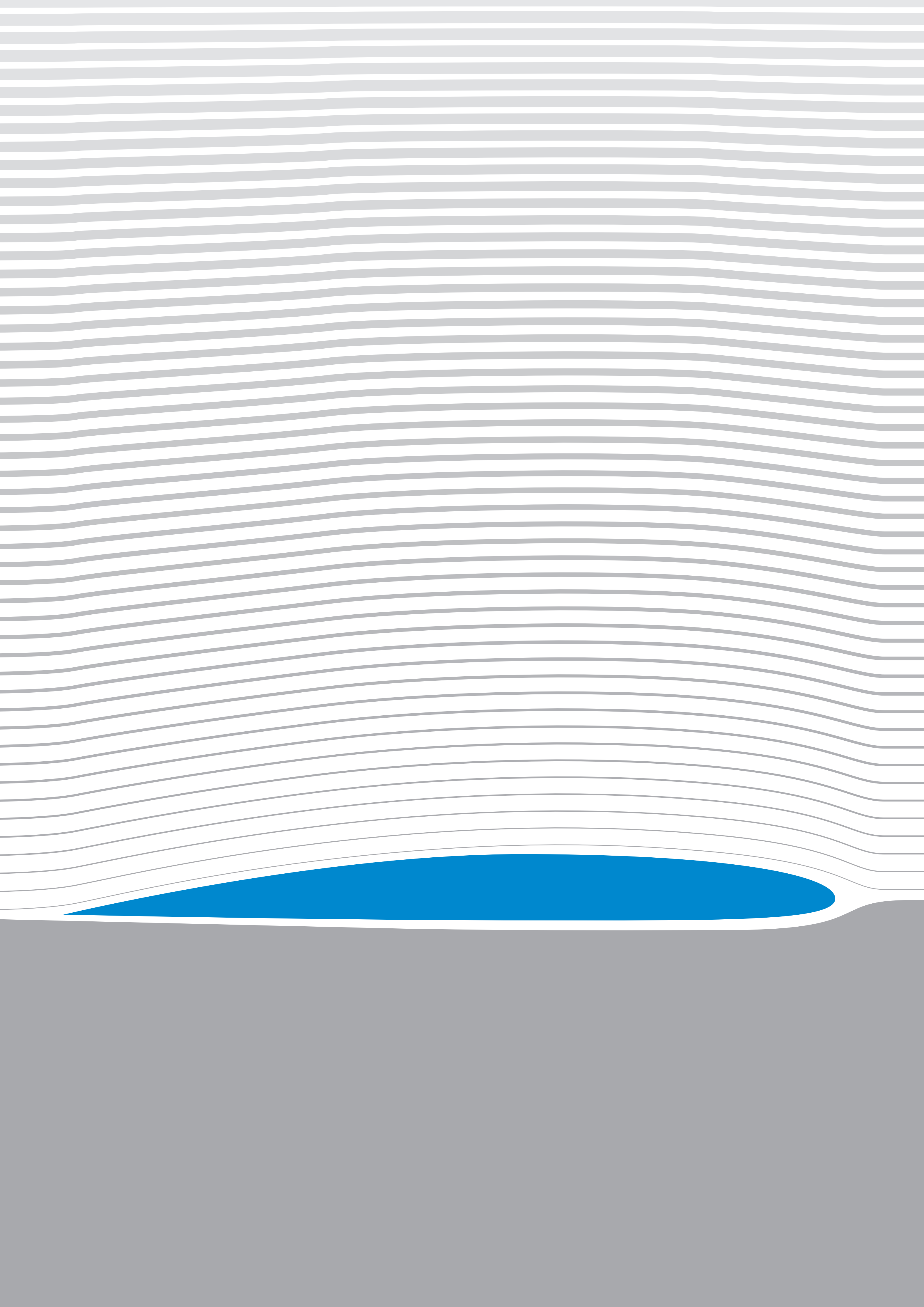
- **Superseded:** if the recommendation has been superseded by another recommendation.

- **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.



EASA
European Aviation Safety Agency

European Aviation Safety Agency
Safety Intelligence & Performance Department

Postal address
Postfach 10 12 53
50452 Cologne
Germany

Visiting address
European Aviation Safety Agency
Konrad-Adenauer-Ufer 3, D-50668
Köln
Germany

Tel. +49 221 89990 - 000
Fax +49 221 89990 - 999
Mail info@easa.europa.eu
Web www.easa.europa.eu