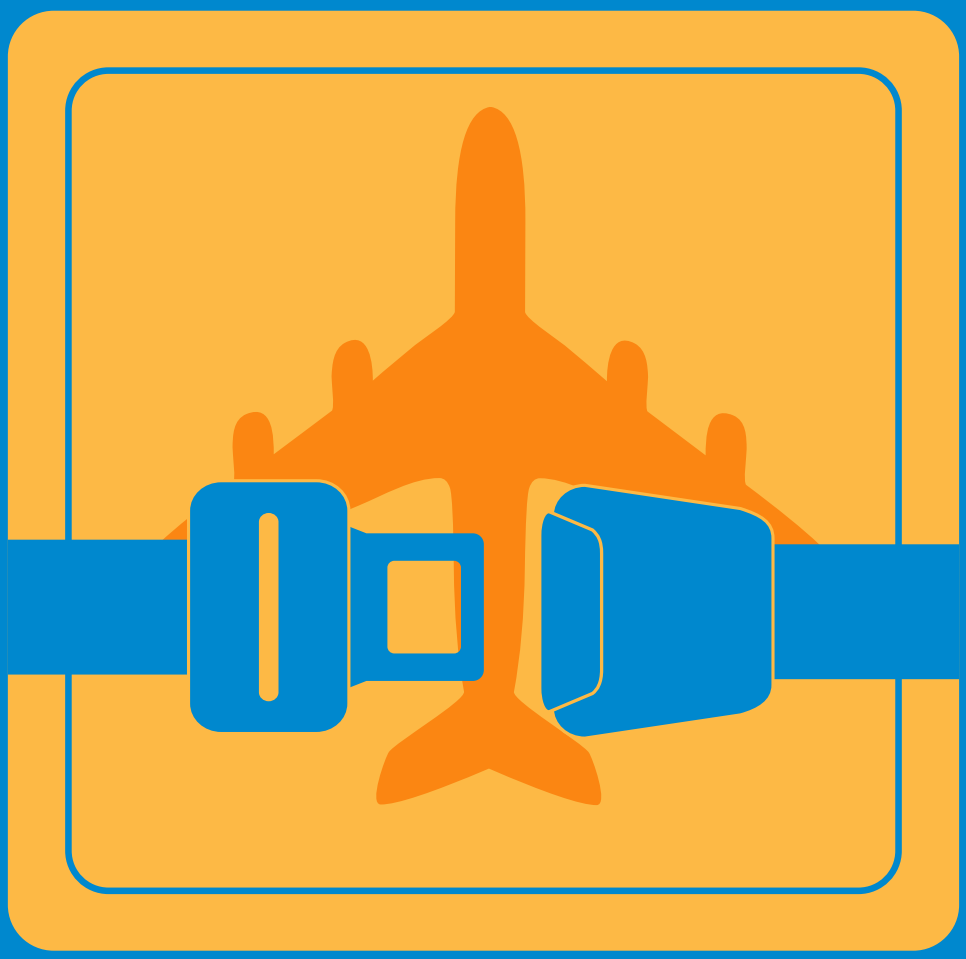
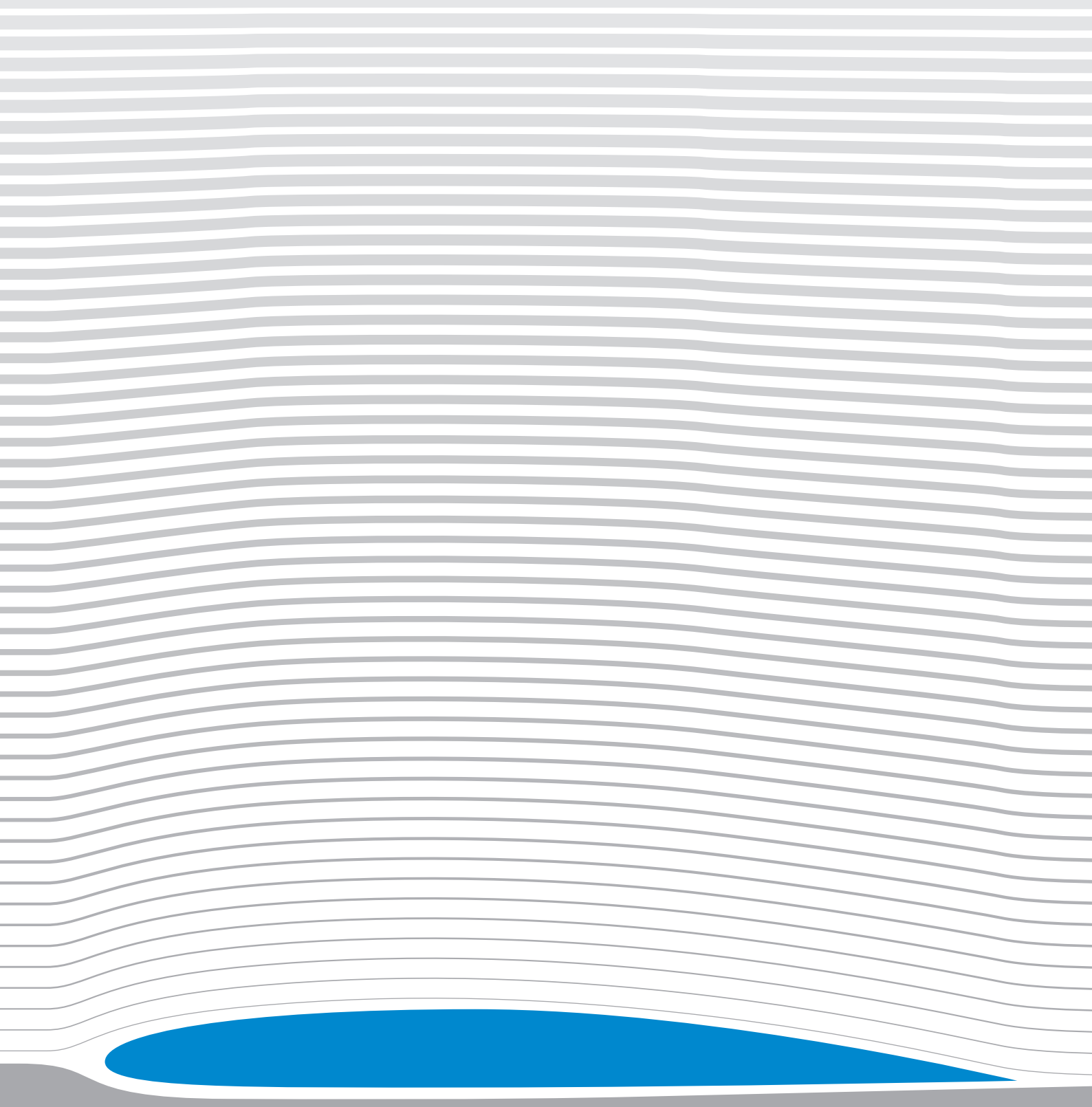
EASA
European Aviation Safety Agency

# Annual Safety Recommendations Review

# 2014





EUROPEAN AVIATION SAFETY AGENCY
SAFETY ANALYSIS AND RESEARCH DEPARTMENT

*Designed in Luxembourg*


Strategy & Safety Management Directorate
Safety Intelligence & Performance Department

# Annual Safety Recommendations Review 2014

## 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 Recommendation 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 2014. 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.

# Contents



# Executive Summary

# Executive Summary

The Annual Safety Recommendations Review is produced by the European Aviation Safety Agency (EASA). This edition provides an overview of both the safety recommendations that were addressed to EASA in 2014 and of the replies to open safety recommendations that were produced by EASA during 2014.

This annual review aims to provide visibility on the follow-up of Safety Recommendations in the context of openness, transparency and accountability that characterises the European public administration. In addition, the review highlights a range of safety issues that are both of interest to the European Aviation Community and the public at large and which is a key source of information for the Agency's safety improvement efforts.

Since 2011, a process to assess and mitigate safety risks at European level has been an integral part of the European Aviation Safety Programme (EASP). It represents a move towards a more pro-active approach that attempts to anticipate potential safety risks in order to further reduce the likelihood of an accident. The outcome of this process is a European Aviation Safety Plan (EASp), which describes the major safety risks in Europe's aviation system, together with the numerous actions that are underway to mitigate them. Information about this process can be found at www.easa.europa.eu/sms.

As Safety Recommendations contain information on the hazards as well as the solutions that are proposed to mitigate the associated safety risks to the aviation system, they constitute a knowledge base and are therefore a valuable input to the safety risk management process at the European level. Several EASp actions originate from Safety Recommendations that were received by the Agency.

# Introduction

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At the European Union level, the principles that govern 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 an obligation for each Member State of the European Union (EU) 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 necessary.

Regulation (EC) No 216/2008 as amended ("the Basic Regulation") transferred to the EU the competence for regulating civil aviation safety in the areas of initial and continuing airworthiness, environmental certification, aircrew licensing, air operations, ATM/ANS and aerodromes. The principal objective of the Regulation is to establish and maintain a high, uniform level of civil aviation safety in Europe. Results of accident investigations play an important role in achieving this objective. This is fully recognised in the preamble to the Basic Regulation, stating 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 procedures to that effect. In addition, EASA publishes this annual review of the safety recommendations that were handled during the year pertaining to the review, including a statistical overview of the situation.

The aim of this Annual Safety Recommendations Review is twofold:

- the review presents general statistical data of the safety recommendations that the safety investigation authorities have addressed to EASA in 2014.
- it presents the replies that EASA produced in 2014 to safety recommendations and shows the safety issues that were managed together with their follow-up.

## Evolution of the EASA Safety Recommendations Process

The safety recommendations process is subject to continuous internal monitoring: Regulation (EU) No 996/2010 mandates that the addressee shall issue the first reply within 90 days. The safety investigation authority shall inform the addressee whether or not it considers the issued reply adequate and, in cases of a decision to take no action, shall provide justification should there be disagreement. Therefore, the Agency receives an assessment of the issued response, enabling it to assess divergent opinions. In this context, in 2014 EASA initiated an internal audit of its safety recommendations process, to identify potential areas for improvement and ensure that the assessment given by the safety investigation authority on the appropriateness of the mitigation measures be considered when closing the recommendation.

In September 2014, EASA underwent an Agency-wide restructuring. As part of the process, mechanisms were created to enhance the level of coordination and to support the consolidation of EASA responses through the involvement of domain specific expertise. This in turn assists in the identification and prioritisation of safety issues and the escalation of issues to higher management whenever urgent reaction is required.

In line with the Agency's extended closure criteria and as necessary, safety recommendations remain open until all actions have been completed in the interests of safety. Where the closure of a recommendation requires the completion of rulemaking activities, the recommendation remains open regardless of the timeframe involved.



# Safety Recommendations Received in 2014

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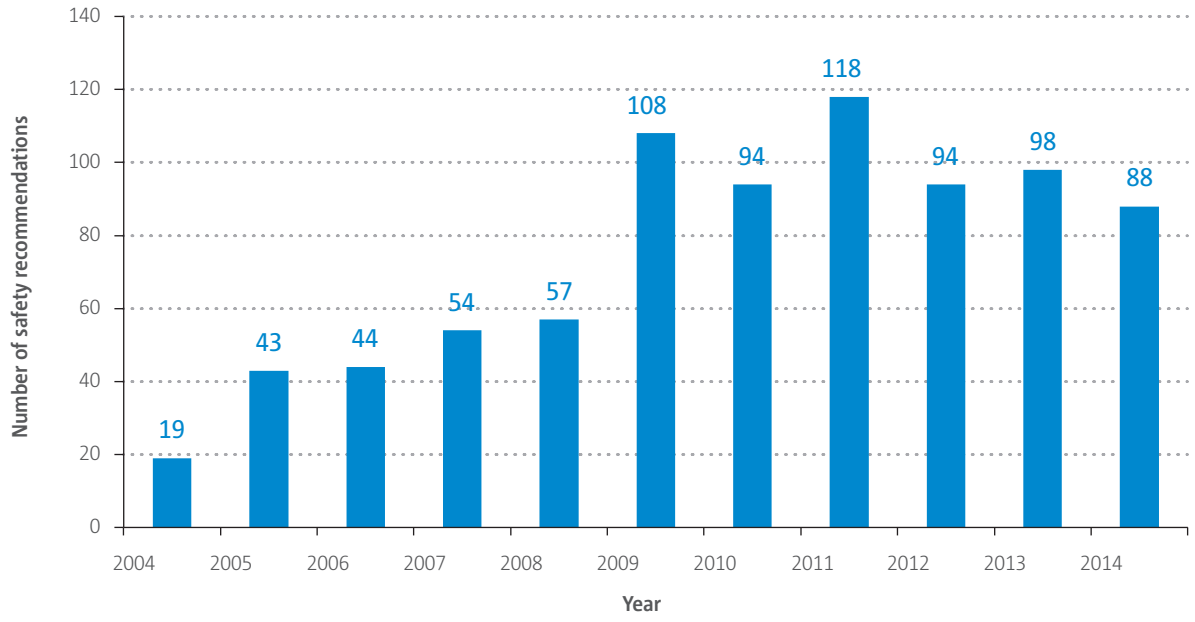
## Overview of Safety Recommendations Received in 2014

During the year 2014, 88 Safety Recommendations were received by EASA. These safety recommendations were related to three studies and 39 different occurrences distributed as follows: 27 accidents, nine serious incidents and three incidents.

The total annual number of safety recommendations that the Agency received during the period 2004-2014 is shown in Figure 1. The number of safety recommendations varies due to variables such as aircraft operations and the number of safety events.

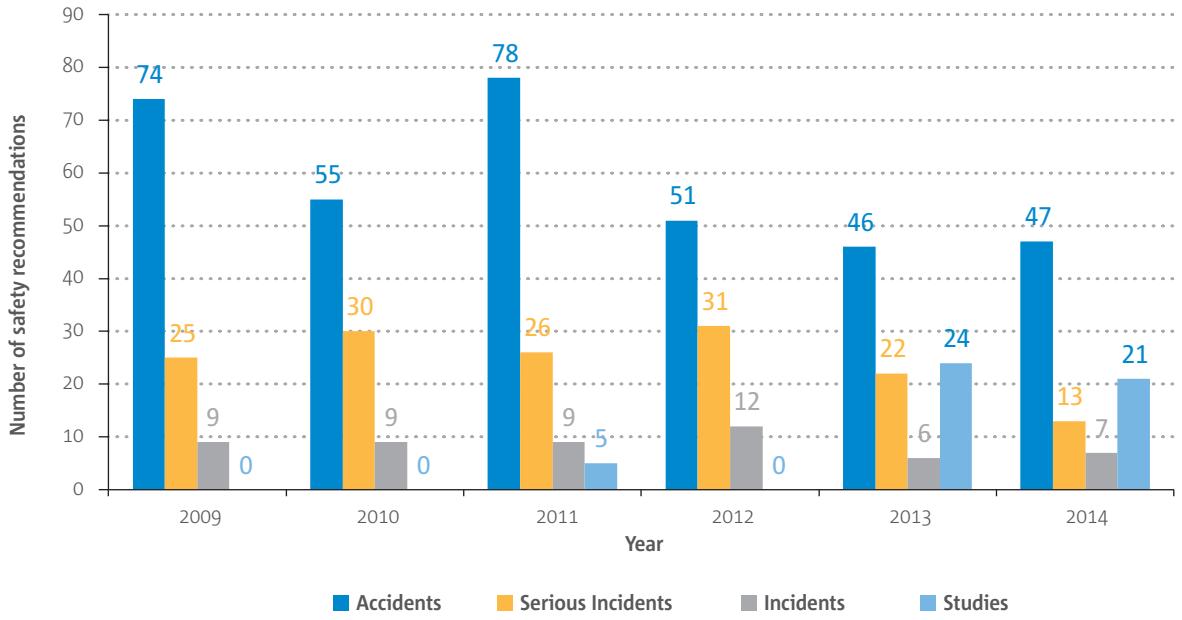
Figure 1: Final safety recommendations per year




It is worth mentioning that while the number of safety recommendations received in 2014 is slightly lower than that which was received in 2013, the number of occurrences that trigger Safety Recommendations remained approximately the same.

Figure 2 depicts the number of safety recommendations stemming from different occurrence classes since 2009.

### Figure 2: Safety recommendations by occurrence class per year




The process for issuing safety recommendations and the required follow-up is defined in ICAO Annex 13 and further detailed in Regulation (EU) No 996/2010. In exceptional cases, EASA, acting on its own initiative, agrees to examine safety recommendations that, although not addressed to the Agency, are found to fall within EASA's area of activities.

Although according to Regulation 996/2010 only Safety Investigation Authorities are eligible to issue safety recommendations, in 2014 UK CAA addressed 14 proposals to EASA for action as part of a study on off-shore helicopter operations. While acknowledging that such proposals do not match the definition of Safety Recommendations, EASA considered these proposals under the same process as recommendations stemming from Safety Investigation Authorities. This decision was taken due to the safety issues raised in this field of operations.

# Origin of the Safety Recommendations Received in 2014

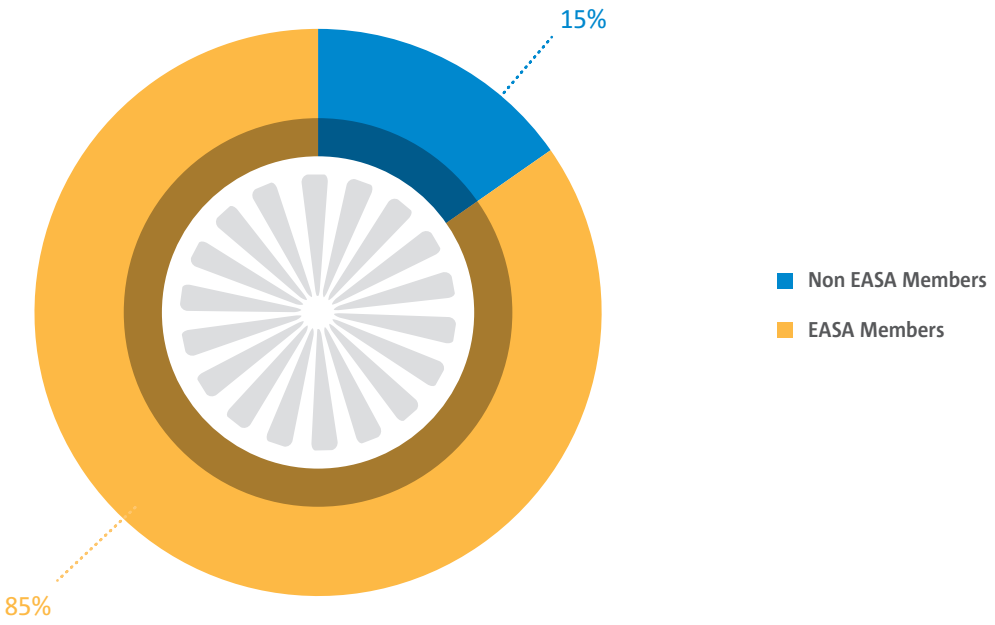
In 2014, Safety Investigation Authorities of 20 different States addressed 74 safety recommendations to EASA, while UK CAA addressed another 14.

13 safety recommendations, accounting for 15% of the total, were addressed to EASA by countries that are not EASA Member States. 85% of safety recommendations were addressed to EASA by Member States. These are the same proportions as in 2013.

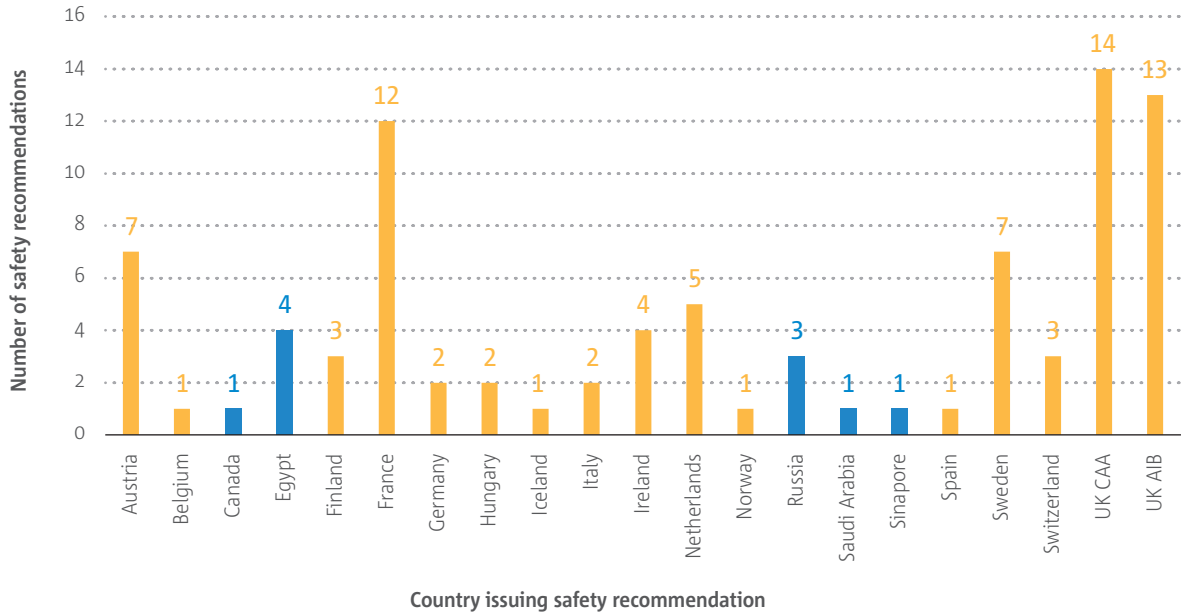
Figure 3 shows the percentage contribution of EASA Member States and non-Member States to safety recommendations addressed to EASA in 2014. Figure 4 shows the data broken down into individual countries. Note that

the recommendations issued via the UK CAA's offshore helicopter study are shown separately from those of the UK's safety investigation authority, the AAIB.

## Figure 3: Safety Recommendations received by EASA Member and Non Member States.




## Figure 4: Safety recommendations issued to EASA per state



# Safety Recommendation Replies in 2014

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## Overview of Safety Recommendation Replies in 2014

In 2014, EASA issued 233 replies to 207 safety recommendations, a similar number of replies compared with the previous year. Two thirds of the replies produced in 2014 were EASA responses to recommendations received in 2013 and 2014. However, replies to recommendations from earlier years were also issued, for cases where action follow-up and possible conclusion had reached a stage that allowed substantial update and/or closure. The figures are summarised in the table below.

Table 1: Number of replies made in 2014, by year in which the recommendation was received.

| Year recommendation received | Number of replies made in 2014 |
|---|---|
| 2006 | 3 |
| 2007 | 1 |
| 2008 | 3 |
| 2009 | 10 |
| 2010 | 16 |
| 2011 | 18 |
| 2012 | 27 |
| 2013 | 72 |
| 2014 | 83 |

Each reply closing a safety recommendation is classified according to the categories[1] given in Annex C.

1 These definitions of classification categories have been developed in collaboration with European Accident Investigation authorities and are part of a taxonomy aimed at facilitating the management of safety recommendations.

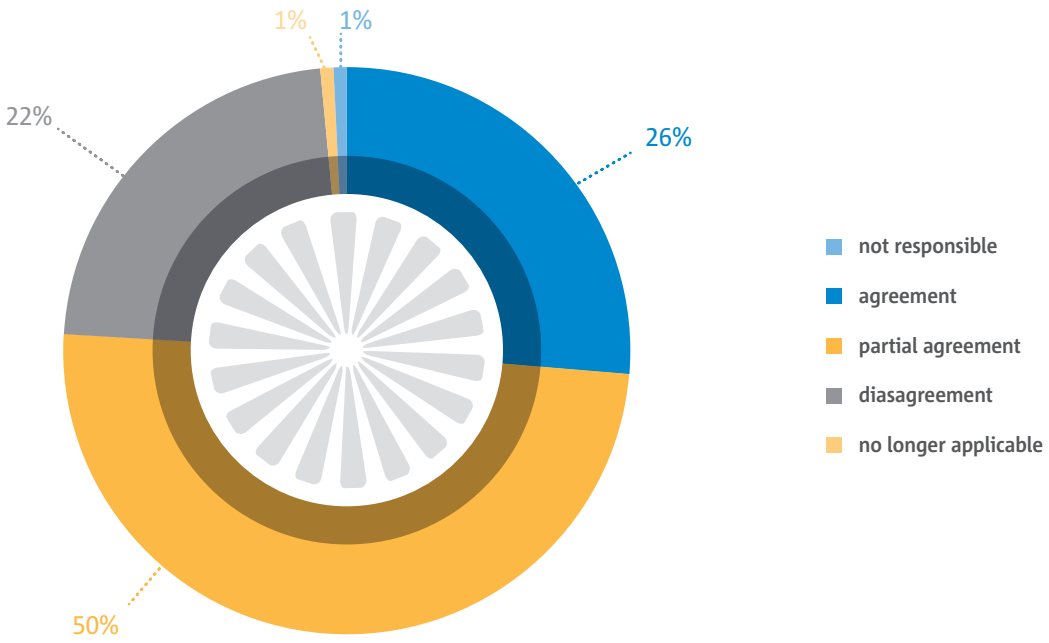
Among the 233 replies produced in 2014, 133 were final, thus closing 133 safety recommendations with the following EASA response category distribution:

- EASA took remedial actions on 101 recommendations either by agreeing, in 35 of the cases, and following the safety recommendations issued by the Safety Investigation Authorities, or by partially agreeing, in 66 of the cases, thus recognising the safety issue but taking alternative remedial actions to the one recommended.

- In another 30 cases the safety recommendations were evaluated and the safety benefit was not agreed. No action was taken.

Figure 5 below depicts this distribution

Figure 5: Categories of closing replies to safety recommendations in 2014




# Status of the Safety Recommendation Replies in 2014

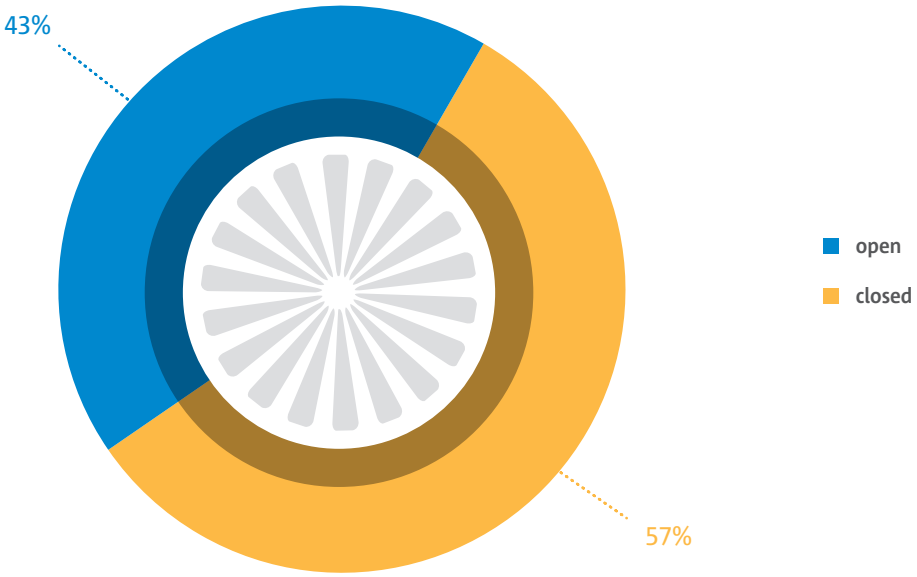
As a general rule and in order to ensure monitoring of the safety recommendations, their status remains open until each of the accompanying proposed actions have been fully developed and published.

Taking into consideration the above principle, 133 closing replies were issued in 2014 signifying that the actions related to them have reached the required level of maturity. In addition to the closing replies, 100 updating replies were also issued in the same year providing information on the progress of the actions decided to be taken by the Agency and for which it was assessed that the relevant activities were not yet completed.

Especially for safety recommendations implying changes to regulations, it has to be remembered that such changes require time, thus affecting the overall picture of the open safety recommendations. Because a regulatory modification has a wider impact on the overall aviation system, it needs to be carefully assessed before being implemented. This includes a collaborative drafting process involving stakeholders and a formal consultation and response process before the final publication of the resultant regulatory change. Particularly in the case of mandating new systems or equipment, additional procedures often involve the study of the available technology and its maturity levels, review of existing technical standards or the development of new technical standards, followed by assessment of the safety benefits.

In all cases, nevertheless, the traceability of the rulemaking process as well as its deliverables is fully available online on the EASA website, thus allowing an easy monitoring of the recommendation follow-up till the publication of the rule.

Figure 6: Status of safety recommendations replied in 2014





# Overview of Safety Issues Processed and Actions Carried Out in 2014

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Among the actions taken in 2014 several key safety issues are highlighted below with the EASA action taken. The description highlights the safety issue stemming from the Safety Recommendations and includes the EASA response. EASA responses cover risk mitigation actions in the areas of improvement of aircraft equipment, review of operations and improvement of personnel training.

## Situational Awareness-/Flight Path Management Under Unusual Conditions

Taking into account recommendations related to automation systems and information to the crew, EASA launched a review of flight director logic and coherence with Autopilot engagement. As a result, some aircraft design improvements have been identified and are currently on-going. Learning from the accidents, some design improvements in stall warning are also underway.

In the area of flight crew training, EASA is reviewing provisions related to training in unexpected and/or abnormal conditions, including the required fidelity of Flight Simulator Training Devices (FSTD) to simulate such conditions. This issue contributes to enhanced crew preparation and skills development for complex and/ or difficult situations. It is also related to training on loss of control and recovery another of the rulemaking activities of the Agency. This review is also taking into account ICAO developments as well as recommendations from the International Committee for Aviation Training in Extended Envelopes (ICATEE) and the Loss of Control and Avoidance Recovery Training (LOCART) working groups.

In addition to the above rulemaking actions, EASA issued Safety Information Bulletin (SIB) 2014-09 8 April 2014 on Aeroplane go-around Training and Safety Information Bulletin No 2014-06 addressing Air Navigation Service providers, CAAs, ATCO Training Organisations on the subject of ATC communications to Aircraft Flight Crew during go-around. The intention was to raise immediate awareness on the subject of flight path adherence, in particular when performing go-arounds.

It also issued SIB 2013-02 on ‘Stall and Stick Pusher Training’ to provide further guidance on low speed training exercises.

# Increased Reliance on Aircraft Automation by Flight Crews

The trend towards increased automation in aircraft design calls for a review of the rules to consider the contribution of training on issues such as potential degradation of situational awareness and flight path management due to increased reliance on automation by flight crews. EASA, acknowledging these concerns, has included the subject in its rulemaking activities, in particular those related to the reinforcement of training on Crew Resource Management, as well as loss of control prevention and recovery training.

# Ice Contamination of Aircraft Critical Surfaces

To address the sensitivity of some aeroplane designs to slight ground ice contamination that is difficult to detect, the Agency added a rulemaking task to the Rulemaking Programme 2014-2017 to amend CS-25. The aim is to demonstrate that prior to take-off, the aircraft aerodynamic surfaces cannot accumulate undetectable, hazardous quantities of ice contamination or to provide a means of protection against this hazard. Prior to this, the Agency had hosted a Safety conference in 2013 on icing topics and conducted some research in 2014 on de-icing fluid wind tunnel testing. This follows the initial actions previously taken mandating operational restrictions for known susceptible airplanes and informing operators of aircraft with unpowered elevator controls of this phenomenon.

# Aircraft Localisation in Emergency Situations

One of the major recommended evolutions in safety carried out in 2014 was launched in the aftermath of the the A330 AF447 Rio-Paris accident on 1st June 2009, and also learning from more recent experience with the B777 MH370 disappearance on 8 March 2014. EASA issued opinion 01/2014 on 6 May 2014, amending requirements for flight recorders and underwater locating devices which includes an extension of Cockpit Voice Recording duration, the extension of Underwater Location Device (ULD) transmission time from 30 to 90 days, and mandating the retrofit of large aeroplanes performing commercial long range flights with a longer range 8.8 kHz ULD or alternatively with the means to locate the point of end of flight in case of accident.

In addition, the need for expansion of the conditions of carriage of flight recorders is being considered in the frame of a rulemaking task related to flight data recorders. The objective is to improve the availability and quality of data and better support the investigation of accidents and incidents.

# Crash Survivability

There have been several safety recommendations on amendments to certification specifications CS-23 related to survivability issues. This is one of the identified areas where new standards permit the introduction of safety enhancing features in aeroplanes. EASA in partnership with the European Commission and other stakeholders has

created a Road Map for the Regulation of General Aviation, called the "GA Road Map". This approach will permit the proportionate implementation of requirements based on performance, complexity and type of operation, using different possible technical solutions and complying with international standards. In this context, new design standards developed by ASTM will provide Acceptable Means of Compliance to new objective requirements. In particular, a group has been initiated in the ASTM F44 Technical Committee as Work Item: WK41313 - New Specification for Emergency Conditions and Occupant Safety.

For commercial aeroplanes, based on the very rare experience of an A320, Flight AWE1549, performing a ditching in New York on 15th January 2009, a retrofit was mandated to improve the crashworthiness of the specific aircraft type. In addition, revision of the European Technical Standards for life vest retrieval requirements is currently underway.

# Helicopter Off-shore Operations

Rotorcraft activity also received many suggestions for safety improvements. This is mainly driven by Continuing Airworthiness activity but also by the UK CAA study on off-shore helicopter operations, which triggered proposals for action by the Agency. These proposals address survivability after ditching, safety management, maintenance and training for off-shore passengers.

EASA actively engaged with the UK CAA in a regular monitoring of all identified proposals listed in the aforementioned study. Among the various issues that were addressed, the Operational Suitability Data (OSD) became effective in 2014 and help to enhance the effectiveness of pilot training for new or existing complex rotorcraft. Aircraft manufacturers are now required to establish data important for the safe operation of the type. Such data are approved by the Agency under the type certificate and shall be used by operators and training organisations.

EASA launched a rulemaking task in which a broad range of helicopter ditching, water impact and survivability issues is considered, with the objective of reviewing existing rules and ensuring that they remain appropriate to meet identified hazards. Once the overall review is complete, the drafting group will propose changes to equipment standards and also possibly to rotorcraft certification specifications (CS-27 and CS-29).

# Unexpected Auto Pilot Behaviour on Glide Slope Interception

The AIB Netherlands published a report on unexpected behaviour of the Automatic Pilot on ILS glide slopes, addressing to EASA safety recommendations related to: awareness of glide slope characteristics and possible consequences, technical measures to avoid severe pitch-up attitudes in case of interception of the glide path from above and also recommendations addressing more general issues. These include: training on the degradation of situational awareness due to reliance on the automated systems, review of the safety management system to allow early identification of safety deficiencies and the adoption of longer term measures such as the support of the development of new landing systems.

While reviewing possible technological development to raise awareness when capturing side lobe glide slope, the Agency raised the awareness of operators on the shortcomings of capturing a false glide slope through

a Safety Information Bulletin. This was SIB 2014-07, issued on 25 March 2014 titled “Unexpected Autopilot Behaviour on Instrument Landing System (ILS) Approach” and SIB 2014-17 “Aeroplane Mode Awareness During Final Approach”.

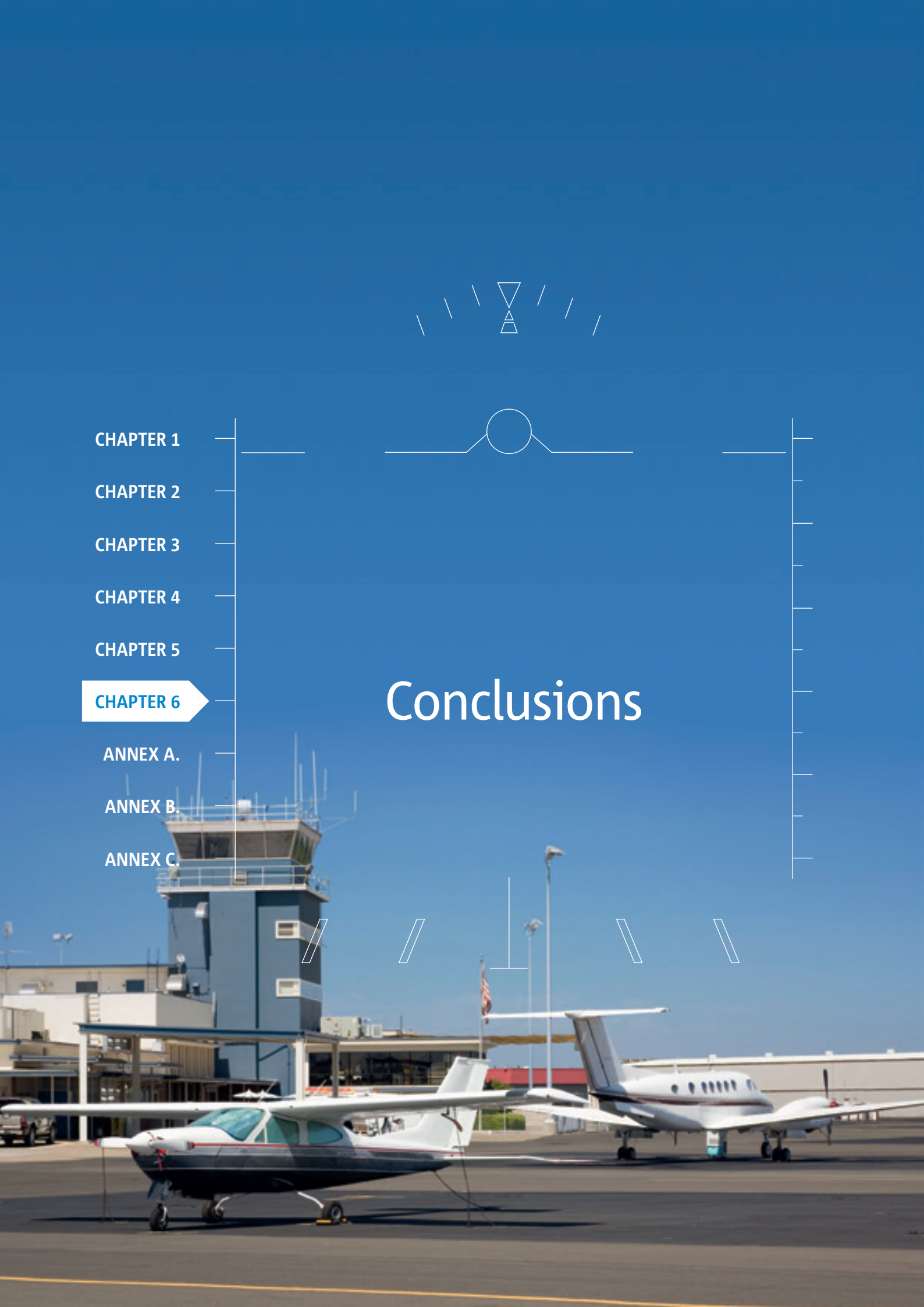
## Personal Electronic Equipment Induced Fire in Cabin

EASA has reviewed and published new Guidance Material applicable to Commercial Air Transport (CAT), Non-Commercial operations and Specialised Operations (SPO) which contains a reference to ICAO Doc 9481 and provides detailed cabin crew checklists for handling PED fires in the aircraft cabin.

## Erroneous Take-off Data Parameters Input

EASA published EDD 1-2014 with amended Applicable Means of Compliance (AMC-20)related to Electronic Flight Bag (EFB). It improves the airworthiness and operational consideration given to EFB with the objective to mitigate erroneous data inputs with the potential to lead to erroneous aircraft take-off performance calculation.

# Conclusions



# Conclusions

Since 2009, the number of safety recommendations addressed to EASA has remained at a constant level. In recent years a significant source for safety recommendations has been safety studies.

The monitoring of the actions triggered by safety recommendation is an important part of the monitoring of the effectiveness of this procedure. Thus EASA in 2014 amended the closing criteria to better ensure that the mitigation intended is actually in place before a recommendation is considered as "closed".

Safety recommendations are the outcome of investigations and identify safety issues where improvements are needed. Safety issues range from very specific topic like the correction of design related unsafe conditions that can be handled locally, to more general themes that need a coordinated approach.

At international level, ICAO has defined the concept of Safety Recommendations of Global Concern (SRGC). Being relevant internationally, it has been agreed in coordination with the European Network of Safety Investigators to further develop a definition of Safety Recommendations of Union-wide relevance (SRUR) and to highlight Safety Recommendations addressing systemic safety issues and not solely national ones. The draft definition adds the following criteria:

- Not related to a specific aircraft type, operator, manufacturer component, maintenance organisation, air navigation service and/or approved training organisation;
- There is a history of recurrence across Europe of the relevant deficiency.

The Agency has launched a process to identify and review Safety Recommendations of Union-wide relevance with the objective to define a catalogue of Safety Issues that deserve a global or coordinated approach.

In line with the implementation of a data driven approach to Safety Management, EASA intends to keep a close monitoring of global Safety Issues with the objective to better identify the main safety risks, define and implement actions that commensurate to the risks and monitor their effectiveness as well as identify adverse trends in the overall safety picture.



# List of 2014 Safety Recommendations Replies

# ANNEX A: List of 2014 Safety Recommendations Replies

The responses made in 2014 to Safety Recommendations are listed below. In the case of multiple replies sent during the year, only the latest reply is provided. They are sorted by country of origin and grouped by occurrence.

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## Austria

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| | BELL 206 | Ungenach, Oberösterreich | 23/05/2009 | Accident |

### Synopsis of the event

Am 23. Mai 2009 um 07:35 Uhr startete der Pilot mit einem Hubschrauber der Type Bell 206BII mit drei Passagieren vom Flugplatz Wels(LOLW) zu einem Fotoflug. Es wurde eine Gaspipeline im Bereich der Ortschaft Timelkam gefilmt und fotografiert. Der Hubschrauber befand sich beim Übergang von einem Schiebeflug (Versetzung ungefähr 20° rechts zur Flugrichtung) in eine Rechtskurve, mit geringer Fluggeschwindigkeit, mit hoher Gesamtmasse, in einer ungefähren Flughöhe von 90m AGL, als sich der Hubschrauber plötzlich entgegen der Hauptrotordrehrichtung im Uhrzeigersinn eindrehte. Der Pilot konnte die folgenden Rechtsdrehungen durch Betätigung des linken Leistungspedals nicht mehr stoppen. Es folgte eine Autorotation, wobei der Hubschrauber beim Aufprall um ungefähr 08:02 Uhr zerstört wurde. Die Insassen und der Pilot erlitten leichte Verletzungen.

### Safety Recommendation AUST-2012-006 (AAIB)

Die standardisierte praktische Prüfung bzw. Befähigungsüberprüfung für Hubschrauber mit einem Piloten sollte im Protokoll für den Type Rating Skill Test (gemäß Anhang 3 zu JAR-FCL 2.240) sowie für den Prof. Check (gemäß JAR-FCL 2.245 (b) (1)) unter Punkt 4 „Außergewöhnliche Verfahren und Notverfahren“ um einen weiteren Inhalt bezüglich Verhalten und Verfahren im Falle eines LTE, in einem geeigneten theoretischen Umfang (nach Möglichkeit Simulatortraining) erweitert werden. Das Phänomen LTE wird in vielen Aircraft Flight Manuals unterschiedlicher Hubschrauber Hersteller leider nicht beschrieben bzw. abgedeckt und sollte daher Bestandteil bei Befähigungsüberprüfungen sein.

**Reply**

The Joint Aviation Requirements on Flight Crew Licencing (JAR-FCL) have been replaced by Commission Regulation (EU) No 1178/2011 of 03 November 2011, related to civil aviation aircrew.

Appendix 9 to Annex I (Part-FCL) of this regulation includes details of the training, skill test and proficiency check for the Multi-crew Pilot Licence (MPL), the Airline Transport Pilot Licence (ATPL), the type and class ratings and proficiency check for Instrument Ratings (IR).

Item 7 of subpart A (General) in Appendix 9 states that the examiner shall verify, during the proficiency check, that the holder of the class or type rating maintains an adequate level of theoretical knowledge. The specific manoeuvres or procedures checked are practical exercises and not theoretical test/check items. It is not foreseen that specific theoretical topics, such as Loss of Tail Rotor Effectiveness (LTE) will be included in the skill tests or proficiency checks contained in this Appendix.

Rulemaking tasks RMT.0188 and RMT.0189 [former FCL.002 (a) and (b)] 'Updating EASA FCL implementing rules' address open issues and necessary changes to Annex 1 (Part-FCL). The rulemaking group is actively reviewing the theoretical knowledge and initial flight training for helicopter pilots and is considering including the Loss of Tail Rotor Effectiveness (LTE) phenomenon. The outcome of the group's consideration will be published in the associated Notice of Proposed Amendment (NPA), in accordance with the Agency's Rulemaking Procedure.

In addition, the Agency has published a Safety Information Bulletin (SIB No. 2010-12R1, dated 21 October 2010) on LTE, 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.

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

| 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-2013-005 (AAIB)

EASA, FAA, aircraft manufacturer: SE/SUB/ZLF/5/2013: Securing valve stems on landing gear tyres of commercial aircraft: The valve stems on the landing gear tyres were not secured on this aircraft. A means of securing was also not specified. Because it was not secured, the valve stem of tyre 2 could come loose after the O-ring was damaged. This ultimately resulted in serious damage to the aircraft and flight situations with increased risk. Certification requirements for commercial aircraft should therefore be revised to specify that the valve stems on the landing gear tyres of commercial aircraft should be effectively secured (e.g. with thread locker or wire).

**Reply**

Based on the Agency's review of tyre underinflation related events and experience from continuing airworthiness reviews, the failure mode presented in this occurrence does not justify a rulemaking action to mandate valves securing means.

It is nevertheless agreed that it would be good practice to secure the valve stems by means of a secondary locking device (e.g. thread locker or wire). Therefore, as the Agency is represented in the SAE committee A-5A developing standards for aircraft wheels, it will promote this item at the next April 2014 committee meeting for consideration in the revision of the standards.

**Status:** Closed – **Category**: Disagreement

### Safety Recommendation AUST-2013-006 (AAIB)

EASA, FAA, aircraft manufacturer: SE/SUB/ZLF/6/2013: Include all observation and inspection options in checklists for emergency procedures: In this aircraft the pilots had the option of visually verifying the locking mechanism of both sets of main landing gear when extended during flight from the floor of the passenger cabin with a periscope. The pilots did this in this incident, because the company emergency procedure checklist for "Abnormal Gear Indication with the Handle Down" listed this option. The aircraft manufacturer's checklist did not list this option. The emergency checklists in commercial aircraft should list all available options for observation and control of components during flight.

**Reply**

EASA acknowledges receipt of this Safety Recommendation. Please be advised that it is under consideration and that the outcome will be communicated to you in due course.

This reply gives the status within the 90 days period in compliance with Article 18 of Regulation (EU) No 996/2010.

**Status:** Open – **Category**:

### Safety Recommendation AUST-2013-007 (AAIB)

EASA, FAA, aircraft manufacturer: SE/SUB/ZLF/7/2013: Visual inspection of commercial aircraft during flight: During flight pilots are faced with the problem, as in this serious incident, that they can be confronted with faults, damage and emergencies without having sufficient information about the status of the parts or components involved, because they are only partly or not visible at all from the cockpit or passenger cabin. This means they lack the information required to make quick and correct decisions. Sensors installed at various locations often only provide specific information and, as in this incident, where the locking indicator for the left landing gear gave incorrect information because of damage, this resulted in additional ambiguities and resulting problems. The inability to visually check the engines and landing gear meant that the pilots could not make the most useful decisions and this also led to flight situations with an increased risk. The certification requirements for commercial aircraft should be revised to allow pilots the option of visual inspection of at least the most important parts of the aircraft (e.g. landing gear, engines, main control surfaces) during flight.

**Reply**

Visual inspection in-flight of an aircraft component by the flight crew does not necessarily help the troubleshooting action. There may be some situations where a view on a component provides a confirmation on the state of the component, i.e. when the state is obvious from a remote outside position. However, the visual inspection may also introduce uncertainties or may not help at all as it only provides an external overview of the component; for instance it does not provide any information on internal failures or states.

Taking the example of the landing gear, the introduction of a visual inspection means raises the issue of maintaining a clear and clean view of the gear (illustrated by this event where “the field of vision was obscured by dirt”). In addition, the observation of a potential complex gear geometry from a non-ideal location, with parallax viewing issues, results in a questionable diagnostic which may not provide any help, and could potentially mislead. Experience also suggests that it is difficult to determine the state of a gear only by looking at it on ground without the aid of illumination and markings on the mechanism itself. Requiring a visual inspection means would thus provide no additional benefit than would be provided by an additional redundant sensor as is the case on more recent types of aeroplane, where redundancies have been introduced on gear indication systems.

**Status:** Closed – **Category**: Disagreement

### Safety Recommendation AUST-2013-008 (AAIB)

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**

The Agency recognizes the importance of ensuring that tyres remain correctly inflated within the pressure specifications defined by the aircraft manufacturer.

The Agency acknowledges that rulemaking to review and improve, as far as possible, current regulations enforcing tyre inflation requirements could contribute to mitigating the identified risk. The installation of tyre pressure monitoring systems can mitigate the cases escaping current safety barriers (e.g. air leakage in the tyre/wheel assembly, maintenance error or negligence, failure/inaccuracy of the inflation equipment, operator not correctly performing the regular checks, etc.).

The Agency considers implementing a new task in the rulemaking programme, and an updated response will be provided when the decision has been taken.

Please note that CS-25 was also recently amended to upgrade large aeroplane certification standards for protection against the effects of tyre and wheel failures (which includes the threat from under-inflated tyres).

**Status:** Open – **Category**:

### Safety Recommendation AUST-2013-009 (AAIB)

EASA: SE/SUB/ZLF/9/2013: Revision of training, education and advanced education of pilots of commercial aviation to intensify attention with aspects of the occurrence of various incidents. In this serious incident, two different incidents occurred as a result of a single event, and the response to them resulted in flight situations with an increased risk. Pilots face the problem of developing the best response to the simultaneous occurrence of different incidents. The occurrence of two incidents, each of which could be systematically managed separately without difficulty, can in combination lead to completely different risks and required actions. Therefore, actions required by different emergency procedures may be contradictory. The best possible solution for a multiple incident scenario cannot simply be to apply procedure for the first incident applied to the second incident, but would be a different view that recognises the overall problem and takes all aspects into account. It is not sufficient simply to process the checklists in sequence to deal with multiple incidents. This means that persons dealing with the incident must be open to changes in plans. Training, education and advanced education of pilots should be revised to the effect of improving responses to aspects of the occurrence of various incidents. (For example, this could involve increased theoretical education, training and improvement of awareness.)

**Reply**

Flight crew training, education and advanced education is already required to include training elements related to the occurrence of multiple simultaneous failure scenarios and a flexible approach to the associated problem solving. In this context, actions required in the application of multiple, possibly conflicting, emergency procedures are required to be included in existing training syllabi.

The applicable requirements are laid down as follows:

- Threat and error management training in Part-FCL of Commission Regulation (EU) No 1178/2011; and
- Crew resource management (CRM) training and operator responsibilities concerning checklists in Part-ORO of Commission Regulation (EU) No 965/2012.

In addition, within the framework of EASA Rulemaking Task RMT.0411 on CRM training, the Agency is considering introducing provisions concerning the surprise and startle effect.

Consequently, no need is seen for any additional revision of the rules concerning existing training schemes.

**Status:** Closed – **Category**: Disagreement

### Safety Recommendation AUST-2013-010 (AAIB)

EASA: SE/SUB/ZLF/10/2013: Development of processes that ensure that the daily technical checks and preflight checks of commercial aircraft are correctly performed. In this serious incident, measurable and visible defects on the aircraft were not detected by the daily technical and preflight checks. The consequence was that the defects caused serious damage to the aircraft and resulted in flight situations with increased risk. EASA should initiate action to ensure that the daily technical checks and the preflight checks of commercial aircraft are correctly performed.

**Reply**

Regulation EC 2042/2003, Annex I (Part-M) already contains adequate provisions to ensure the proper performance by qualified personnel of pre-flight checks and other daily technical checks.

For pre-flight checks: the responsibility is defined in paragraph M.A.201(d): 'The pilot-in-command or, in case of commercial air transport, the operator shall be responsible for the satisfactory accomplishment of the pre-flight inspection. The inspection must be carried out by the pilot or another qualified person but need not be carried out by an approved maintenance organisation or by Part-66 certifying staff'.

In the case of commercial air transport (CAT), the operator has to provide appropriate instructions to its pilots-in-commands, which are normally part of the Aircraft Flight Manual.

Other daily technical checks: daily checks, transits or other technical inspections shall be considered as maintenance tasks.

These maintenance actions for large aircraft, aircraft used for CAT and components thereof shall be allocated to approved Part-145 maintenance organisations as per paragraph M.A.201(g).

In the case of CAT, the responsibility of the operator for managing appropriately the maintenance actions to an approved Part-145 organisation is also clearly established by paragraph M.A.201(h).

The operator must be approved as a continuing airworthiness organisation (CAMO) under Part-M, Subpart G, and manage properly the continuing airworthiness of the aircraft under its scope of approval (defined in paragraph M.A.711). This includes providing the appropriate instructions (order, taskcards/worksheets).

It is not deemed necessary to change these regulatory provisions. In the present case, it is not known what was the extent of the tyre tread defect and if any defect was visible or not before the incident flight; therefore the pre-flight and daily checks may have been performed correctly without being able to detect any defect.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| | CIRRUS SR22 | Airport Vienna (LOWW) | 26/09/2012 | Accident |

### Synopsis of the event

Während des Landeanfluges auf den Flughafen Wien-Schwechat (LOWW) kam es beim Einkurven auf die Piste 29 zu einer Unterschreitung der Mindestfluggeschwindigkeit. Trotz unmittelbarer Erhöhung der Triebwerksleistung durch den Piloten, berührte das Luftfahrzeug anfänglich mit der linken Tragflächenspitze sowie dem linken Hauptfahrwerk, kurz darauf mit der rechten Tragflächenspitze, dem rechten Hauptfahrwerk sowie dem Propeller die Piste. Das Luftfahrzeug schlitterte über die Piste und kam nahe dem Rollweg A5 im Sicherheitsstreifen der Piste 29 zum Stillstand.

### Safety Recommendation AUST-2014-001 (AAIB)

SE/SUB/ZLF/13/2013, ergeht an EASA und nationale Zivilluftfahrtbehörden: Im gegenständlichen Flugunfall war das Luftfahrzeug lediglich mit einem kleinen Warnaufkleber versehen. Dieser soll vor den Gefahren, welche von einem Rettungssystem ausgehen, warnen. Allerdings ist dieser mit einer Seitenlänge von ca. 40 mm nur schwer erkennbar. Es sollten möglichst große und einheitliche Gefahrenaufkleber in auffälliger Farbe für alle Luftfahrzeuge mit einem Rettungssystem verwendet werden. Des Weiteren sollte am Flugzeugrumpf die Ausschussöffnung der Rakete des Rettungssystems eindeutig gekennzeichnet sein. Die Zelle des Luftfahrzeuges sollte so markiert sein, dass für Rettungskräfte eindeutig ersichtlich ist wo Teile des Luftfahrzeugrumpfes im Zuge einer Bergung aufgeschnitten werden dürfen, und wo nicht.

**Reply**

The Agency requires placards to be installed for certification of light aircraft equipped with ballistic recovery systems. A Special Condition (SC) is used which requires the installation of placards in compliance with ASTM standard F2316-12 (“Standard Specification for Airframe Emergency Parachutes”).

This ASTM standard requires provision of three different types of placard or label (“danger”, “identifying” and “warning” placards) in order to alert rescue or other personnel at the scene of an accident or incident. The minimum sizes of the labels and the colours to be used are addressed by this standard. These minimum sizes and colours are considered adequate to provide an alerting function when a personnel is approaching the aircraft at a reasonable distance.

The suggestion to add markings for the direction of projection of the rocket and for the fuselage cutting areas should be discussed by the relevant ASTM committee when preparing the next revision of the standard F2316. The Agency will forward this safety recommendation for consideration by the committee, in which the Agency has a member.

**Status:** Open – **Category**:

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| | SCHEIBE<br>SF25 | Flugplatz Zell am See (LOWZ), Salzburg | 22/09/2012 | Accident |

### Synopsis of the event

Am Unfalltag führte ein Fluglehrer mit einem Flugschüler im Zuge der Privatpilotenausbildung an einer registrierten Zivilluftfahrerschule (Registered Facility/RF) am Flugplatz Zell am See im Land Salzburg Platzrundenflüge mit einem Motorsegler durch. Bei der zweiten Landung kam es zu einem harten Aufsetzen mit anschließendem Wiederabheben. Der Fluglehrer übernahm das Steuer, das Luftfahrzeug brach nach rechts aus, schlug anschließend auf einem Rollweg auf und kollidierte mit dem Heck mit einem geschlossenen Hangartor. Fluglehrer und Flugschüler blieben unverletzt, das Luftfahrzeug wurde erheblich beschädigt.

### Safety Recommendation AUST-2014-002 (AAIB)

Lernunterlage betreffend der Übernahme von Verfahren der Verkehrsluftfahrt in die allgemeine Luftfahrt:

Bei gegenständlichem Flugunfall kam es bei einem Grundausbildungsflug für den Privatpilotenschein mit einem Motorsegler des Musters SF25 zu einem harten Aufsetzen mit anschließendem Wiederabheben. Trotz anschließender Steuerübernahme durch den Fluglehrer schlug das Luftfahrzeug hart am Boden auf und wurde erheblich beschädigt. Der Flugschüler sagte aus, dass der Fluglehrer keine „sanften" Landungen wollte, sondern sogenannte „positive Landungen", wobei der Flugschüler aussagte dass der Fluglehrer damit meinte, dass man diese Landungen spüren sollte. In den letzten Jahren sind verstärkt Verfahren bekannt geworden, die Fluglehrer aus der Verkehrsluftfahrt in die allgemeine Luftfahrt übernehmen (z.B.: positive Landungen, generelle 3° Anflüge etc.). Dies entstammt vielleicht der Überlegung, dass man annimmt, dass langjährig in der Verkehrsfliegerei angewandte Verfahren auch in der allgemeinen Luftfahrt die am besten anzuwendenden Verfahren sein müssten.

Die EASA soll in Zusammenarbeit mit der Austro Control GmbH eine Lernunterlage erarbeiten, die definiert wann und wo die Anwendung von Verfahren der Verkehrsluftfahrt in der allgemeinen Luftfahrt sinnvoll, teilweise sinnvoll oder nicht sinnvoll erscheint.

**Reply**

According to Commission Regulation (EU) No 1178/2011, as last amended (the Aircrew Regulation), an applicant for a LAPL (Light Aircraft Pilot Licence), BPL (Balloon Pilot Licence), SPL (Sailplane Pilot Licence) or PPL (Private Pilot Licence) is required to complete a training course within an ATO (Approved Training Organisation). The course shall include theoretical knowledge and flight instruction appropriate to the privileges given.

The applicant is required to demonstrate, through the completion of a skill test, the ability to perform, as PIC (Pilot-In-Command) on the appropriate aircraft category, the relevant procedures and manoeuvres with competency appropriate to the privileges granted.

An applicant for an instructor certificate is required to complete a course of theoretical knowledge and flight instruction at an ATO and pass an assessment of competence to demonstrate the ability to instruct a student pilot to the level required for the issue of the relevant licence, rating or certificate. This assessment should include practical exercises and the demonstration of the required competencies during pre-flight, post-flight and theoretical knowledge instruction.

The afore-mentioned indicates the level of detail that the regulation goes into. More detail, such as specific instructional techniques, as suggested in the recommendation, may be provided in the ATO's Training Manual. Any safety need to define when and where the application of techniques of commercial aviation in general aviation training may be sensible, partially useful or not useful, should be identified through the training organisation's Management System process. In addition, the Competent Authority issuing the training organisation's approval may also identify a safety need for such detail, during the organisation approval process and/or during subsequent oversight activities.

However, as such detail could be in conflict with the individual Aircraft Flight Manuals for the different types of aircraft used in general aviation training, the Agency does not foresee the establishment of a booklet for all EASA Member States to follow.

**Status:** Closed – **Category**: Disagreement

### Safety Recommendation AUST-2014-003 (AAIB)

Verwendung von Kopfhörern (Headsets) mit Intercom bei Ausbildungsflügen: Die Nichtverwendung von Kopfhörern (Headsets) mit Intercom im Cockpit von Motorflugzeugen erhöht bei Ausbildungsflügen das Stressniveau, damit die Fehlerwahrscheinlichkeit, behindert Lerneffekte, erschwert die Verständigung im Luftfahrzeug und kann dadurch z.B. auch zu Missverständnissen zwischen den Besatzungsmitgliedern führen.

Die EASA soll die Verwendung von Kopfhörern (Headsets) und Intercom im Cockpit von Motorflugzeugen bei Ausbildungsflügen verpflichtend vorschreiben.

**Reply**

Under the EU civil aviation regulatory framework, training flights are categorised as Non-Commercial operations with Complex motor-powered aircraft (NCC) or Non-Commercial operations with Other than complex motor-powered aircraft (NCO), depending on the type of aircraft used for the training flight.

They are governed by Commission Regulation (EU) No 965/2012 on air operations, as amended by Commission Regulation (EU) No 800/2013 of 14 August 2013 (containing Part-NCC in Annex VI and Part-NCO in Annex VII).

According to NCO.IDE.A.135, NCO.IDE.H.135, NCC.IDE.A.155 and NCC.IDE.H.155 ('A' for aeroplanes and 'H' for helicopters), motor-powered aircraft shall be equipped with a flight crew interphone system, including headsets and microphones for use by all flight crew members, if operated by more than one flight crew member.

As an instructor and a student pilot form a flight crew with two members, use of headsets and an intercom in the cockpit of engine powered aircraft during training flights is already mandated in the existing regulations.

**Status:** Closed – **Category**: No longer applicable

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| | CESSNA F150 | Gemeindegebiet Straßwalchen | 21/06/2012 | Accident |

## Synopsis of the event

Mit der Absicht, eine praktische Privatpiloten-Prüfung abzunehmen, startete ein Prüfer mit einem Flugschüler an Bord der Cessna F150L zu einem Überlandflug vom Flughafen Salzburg zum Flugplatz Gmunden. Während des Rückfluges wurden auf einem Außenlandefeld tiefe Überflüge bis in Bodennähe durchgeführt. Während des dritten Durchstartmanövers gewann das Luftfahrzeug nur langsam an Höhe, kippte nach dem Überflug einer Hochspannungsleitung nach links ab und stürzte auf eine Wiese. Beide Insassen erlitten tödliche Verletzungen. Das Luftfahrzeug wurde zerstört.

Der Unfall wurde wahrscheinlich verursacht durch eine zeitweise auftretende Fehlfunktion des Flügelklappensytems, welche in Verbindung mit der Verwendung eines falschen Schmelzsicherungstyps im Flügelklappenstromkreis zum Auslösen der Schmelzsicherung führte, sodass die vollständig ausgefahrenen Flügelklappen nicht mehr einfahrbar waren und die Steigleistung minderten.

Durch Unterschreitung der Mindestfluggeschwindigkeit in dieser Konfiguration geriet das Luftfahrzeug in einen asymmetrischen überzogenen Flugzustand nach links. Die Höhe über Grund war zu niedrig zum Abfangen des Luftfahrzeuges.

Der Untersuchungsbericht enthält Sicherheitsempfehlungen zur Verwendung von Sicherungsautomaten anstelle von Schmelzsicherungen in elektrischen Systemen, deren Ausfall eine Notlandung erzwingen könnte, sowie zur Vorbereitung und Durchführung von simulierten Notlandungen bei Prüfungsflügen, bei denen die Mindestflughöhe unterschritten wird.

## Safety Recommendation AUST-2014-005 (AAIB)

eine Betriebsbeeinträchtigung verursachen, die eine geordnete Fortsetzung des Fluges unmöglich machen und eine Außenlandung erzwingen könnten (Notlandung).

EASA und FAA sollten prüfen, ob in den Lufttüchtigkeitsanforderungen CS-23 und CS-VLA (Certification Specifications) bzw. FAR 23 (Federal Aviation Regulations) für die Absicherung elektrischer Verbraucher die Verwendung von Sicherungsautomaten anstelle von Schmelzsicherungen vorzusehen wäre, wenn ein Ausfall der betroffenen Systeme eine Notlandung zur Folge haben kann. Dies würde zu einer raschen Wiederherstellung der Spannungsversorgung intakter elektrischer Systeme bzw. Stromkreise nach Wegfall der Überlast während des Fluges beitragen.

In jenen Luftfahrzeugen, in denen austauschbare Schmelzsicherungen verwendet werden, sollte Anzahl, Typ, Nennwert und Aufbewahrungsort der mitzuführenden Ersatzsicherungen für den Piloten klar ersichtlich sein und deren Verfügbarkeit im Rahmen der Vorflugkontrolle überprüft werden.

Sicherungshalter sollten konstruktiv angepasst werden, um beim Austausch von Schmelzsicherungen Verwechslungen in Hinblick auf Typ und Nennwert der Ersatzsicherung durch Piloten oder Instandhaltungspersonal zu verhindern.

**Reply**

EASA rulemaking task RMT.0498 on the 'Reorganisation of Part 23 and CS-23' started with the publication of its Terms of Reference on 31 October 2013. One of the objectives of the task is to reorganise CS-23 in order to establish a single set of Certification Specifications for Aeroplanes in the range from CS-VLA up to CS-23, that:

- contain requirements based on proportionate performance, complexity, and type of operation;
- make Certification Specifications for Light Aeroplanes less susceptible to changes as a result of technological developments or new compliance-showing methods by defining design-independent safety objectives;
- are complemented by acceptable consensus standards (developed by ASTM F44 Committee) that contain the detailed technical requirements to meet the safety objectives set by the certification specifications.

EASA will submit this Safety Recommendation to the ASTM F44 Committee so that it is taken into account in the above mentioned rulemaking activity. An update will be provided based on the discussion held and conclusions.

**Status:** Open – **Category**:

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| | ENSTROM 280 | Kirchham | 05/04/2014 | Accident |

## Synopsis of the event

Due to an flight accident with an Enstrom Helicopter Corporation FX 280 helicopter, in conducting technical investigations, considerable corrosion on the electrical connections of the fuel quantity transmitter have been found. This corrosion was the reason that the fuel quantity transmitter was not able to transmit the correct amount of fuel in the tank to the fuel gauge in the cockpit. As a result of this, the tank display showed an incorrect amount of fuel in the tank. The fuel quantity transmitter is located in a depression on the right fuel tank and is covered by a metal lid. Moisture, in spite of the metal lid in this depression, cannot drain overboard as there is no structurally outflow possibility available. The published manufacturer's maintenance manual provides a review of the wiring of the fuel quantity transmitter either after every 100 flight hours or annually. The same service manual includes storage instructions, as well as preventive maintenance for the corrosion protection of the helicopter. However, it contains no preventive measures against corrosion of the electrical connections of the fuel quantity transmitter.

## Safety Recommendation AUST-2014-007 (AAIB)

No. SE/UUB/LF/7/2014, is issued to the manufacturer, FAA and EASA: The installation of fuel quantity transmitter to Enstrom Helicopter Corporation 280FX helicopters should be chosen so that the electrical connections of the fuel quantity sensor can be effectively protected against corrosion.

**Reply**

EASA, the Federal Aviation Administration and Enstrom Helicopter Corporation are working closely reviewing the issue in question and the outcome of this review and final decision will be communicated in due course.

**Status:** Open– **Category**:

### Safety Recommendation AUST-2014-008 (AAIB)

No. SE/UUB/LF/8/2014, is issued to the manufacturer, FAA and EASA: The inspection of the wiring of the fuel quantity transmitter to Enstrom Helicopter Corporation 280FX helicopters should take place at shorter time intervals.

**Reply**

Based on the review of the additional information provided by Enstrom Helicopters Corporation and FAA, EASA agreed with their conclusions that the current 100 flight hours or annual inspection interval of the fuel quantity transmitter wiring is adequate for the 280FX helicopters.

In fact, according to Enstrom Helicopters Corporation, there is no known history of corrosion of the fuel-level sensor electrical connections.

In absence of evidence that the accident aircraft was maintained in accordance with the applicable maintenance instructions, all elements available up to now indicate that the transmitter and its connections are adequately protected against corrosion when maintenance is carried out in accordance with the applicable instructions.

**Status:** Closed – **Category**: Disagreement

### Safety Recommendation AUST-2014-009 (AAIB)

No. SE/UUB/LF/9/2014, is issued to the manufacturer, FAA and EASA: The storage requirements as well as the preventive measures for corrosion protection in the maintenance manual of Enstrom Helicopter Corporation 280FX helicopters should consider the electrical connections of the fuel quantity transmitter sufficiently.

**Reply**

EASA, the Federal Aviation Administration and Enstrom Helicopter Corporation are working closely reviewing the issue in question and the outcome of this review and final decision will be communicated in due course.

**Status:** Open – **Category**:

# Belgium

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| OO-CQD | AVIONS ROBIN DR400 | a field in the Commune of Pecq | 02/08/2011 | Serious incident |

### Synopsis of the event

At the end of a gliding flight exercise the engine did not respond to the command when the pilot pushed the throttle forward. The pilot moved the throttle several times forward causing the engine reviving briefly before returning to low speed. At 400 ft, the pilot selected a wheat field adequate for a forced landing and landed the airplane successfully.

### Safety Recommendation BELG-2011-023 (AIB)

Recommendation Number 2011-P-23 to EASA to request the airframe TC holder to publish a detailed guideline in order to:

- Properly inspect and, if necessary, repair the exhaust shrouds and mufflers allowing penetration of contaminants in the carburettor heat induction system;
- Adequately drain, rinse or flush the carburettor float chamber.

**Reply**

The DR400 Maintenance Program (reference number: 1001586) has been amended to edition 4 Amendment 12 dated September 2012, and it is already available to the aircraft owners. It includes additional maintenance actions to check and clean the carburettor preheater air entry mesh (every 50 hours / 1 year), to remove and check the hot air duct to the carburettor (every 500 hours / 1 year) and to perform a detailed inspection of the air preheater box (every 50 hours / 1 year). These actions have to be completed together with the "Operator's manual Lycoming" (PN 60297-9) periodic specific 50-Hour Inspection that requests drainage of the carburettor and cleaning of the carburettor fuel strainer. Furthermore, a modification has been made to introduce an air mesh which is mandated by the EASA Airworthiness Directive 2014-0185.

**Status:** Closed – **Category**: Agreement

### Safety Recommendation BELG-2011-024 (AIB)

Recommendation Number 2011-P-24 to EASA to request the airframe TC Holder to improve the design and/or the manufacture of carburettor heat induction system in order to avoid penetration and/or retain of contaminant inside the carburettor heater system.

**Reply**

EASA has approved major change 10049192 that introduces a mesh filter to the warm air entry duct to avoid any contamination of the carburettor intake box. This major change is provided to the customer via Service Bulletin 120205 which has been mandated by the EASA Airworthiness Directive 2014-0185.

**Status:** Closed – **Category**: Agreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| OO-ZGJ | SCHLEICHER KA6 | Off EBSH, Saint-Hubert airfield | 13/08/2010 | Accident |

### Synopsis of the event

The student pilot was performing a solo flight around the Saint-Hubert airfield. For an unknown cause, the sailplane lost altitude, and went under the "safety cone" assigned to each student. The pilot tried to reach the airfield, but the sailplane stalled, was recovered, then stalled a second time, crashing vertically to the ground. The pilot was brought to the hospital in critical condition, where she died shortly after.

### Safety Recommendation BELG-2014-001 (AIB)

AAIU(Be) recommends EASA to support the development of a warning system based on the "safety cone" theory and using GPS and altimeter data to be used on training sailplanes, to warn student glider pilots when the sailplane drops below a minimum safety altitude.

**Reply**

Student glider pilots, should possess the necessary skills, including performing an out landing, before they are permitted to conduct solo flights, (See AMC1 FCL.110.S of ED Decision 2011/016/R containing acceptable means of compliance (AMC) related to Commission Regulation (EU) No 1178/2011 (Regulation Aircrew)). Furthermore, introducing an additional system would likely increase the workload of the student glider pilot.

Nevertheless, EASA has forwarded this investigation report to the Organisation Scientifique et Technique du Vol à Voile / Training and Safety Panel (OSTIV/TSP) in order for them to consider sharing this information, and if deemed appropriate, proposing other training related action to be recommended.

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

# Brazil

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| PR-MBB | AIRBUS A320 | Natal, Rio Grande do Norte State | 17/12/2007 | Serious incident |

## Synopsis of the event

The serious incident in question involved an Airbus 320 232 aircraft, on a flight operated by TAM Airlines, originated in Natal International Airport (SBNT) and destined to Brasilia International Airport (SBBR). After leveling at FL380 (38,000ft ASL), the aircraft sustained a sudden loss of power, with the N1 parameters going below 52%, which consequently set up a complete engine flameout due to lack of fuel supply in both engines. The aircraft got temporarily without electrical power, and the crew performed the procedures for restarting the engines. After losing about 6.000ft and having restarted the engines, the captain chose to return to SBNT, where the aircraft landed successfully. There was no injury to the occupants of the aircraft. The aircraft sustained no damage. In Natal, the aircraft remained on the ground until the investigation of the serious incident gathered information which allowed the aircraft to resume its flight condition. The investigation of the event had the participation of representatives of the operator, of a BEA Accredited Representative from France, the State of Manufacture of the aircraft and of an NTSB Accredited Representative from the United States of America, State of Manufacture of the aircraft engines.

## Safety Recommendation BRAZ-2012-400 (CENIPA)

To reassess before the ANAC whether the current architecture of the fuel system and alerts comply with the certification requirements applicable to the type design, since it allows the start-up of the second engine with the fuel pumps turned off without exhibiting any alerts, when the alert has been cancelled at the start-up of the first engine.

**Reply**

EASA has reviewed the current architecture of the fuel system and alerts and considers that they comply with the certification requirements Joint Aviation Requirements JAR 25.903(e), JAR 25.951(a), JAR 25.1301, JAR 25.1309 and JAR 25.1322.

The dark cockpit concept is the basis of Airbus philosophy and complies with JAR and Certification Specifications (CS) regulation. Even if the Electronic Centralised Aircraft Monitor (ECAM) message was cancelled, Fuel pump light were still remaining on the overhead panel to alert the crew.

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

### Safety Recommendation BRAZ-2012-401 (CENIPA)

To re-evaluate before the ANAC the appropriateness of the alert colour and type displayed in the engine start-up with the fuel pumps turned off, as well as the need to include a procedure in the AFM concerning the start-up with fuel pumps turned off.

**Reply**

The status of the fuel pump switches is displayed on the overhead panel, and when de-selected each switch shows a white 'OFF' status light. There is no Electronic Centralised Aircraft Monitor (ECAM) alert corresponding to a fuel pump off. This is in keeping with the philosophy that switches or actions commanded by the crew are not alerted.

Activation of the pumps is part of the normal check list which includes a line "all white lights... extinguish". As the A320 cockpit is designed using the 'dark cockpit' philosophy that complies with Certification Specifications (CS) and Joint Aviation Requirements (JAR), if all systems are set as expected, then no lights will be on. This should make abnormal selections, such as the fuel pump 'OFF' white lights conspicuous.

There are also ECAM alerts to provide information concerning fuel pressure as follows:

FUEL L (R) TK PUMP 1+2 LO PR

FUEL CTR TK PUMPS LO PR

It is understood that these appear after the first engine is started with pumps off, but will not re-appear if they are cancelled.

There are two pumps per side. According to the Master Minimum Equipment List (MMEL), the aircraft is able to fly (with limitations) with one pump inoperative (i.e. two operative on one side, one on the other). In this case, there is no specific additional procedure. Operation with two or more pumps inoperative is prohibited.

Regarding aircraft operations, the procedures require available pumps be on for engine start. There is no published Aircraft Flight Manual (AFM) or Flight Crew Operating Manual (FCOM) procedure for starting with both pumps off as this is not an approved method.

Thus EASA have re-evaluated the indications and alerts which occur if an aircraft is inadvertently started and operated with the pumps off, and considers the existing indications are adequate.

Starting engines with fuel pumps off is not an approved operating method, and therefore a specific procedure would not be appropriate.

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

### Safety Recommendation BRAZ-2012-402 (CENIPA)

To assess before the ANAC the need to review the aircraft checklist and insert a specific item to verify whether fuel pumps are ON.

**Reply**

EASA has assessed the need to review the check list on this topic per above Safety Recommendation.

The dark cockpit philosophy is one of the basis of A320 Human Machine Interface (HMI) and complies with Certification Specifications (CS) and Joint Aviation Requirements (JAR).

This philosophy was implemented with the main aim to ease the work of crew,to give them the possibility to check quickly the status of the aircraft.

Regarding the in-service experience of A320 fleet, to apply this philosophy avoids a lengthy check list which checks all the systems.

EASA considers that it is preferable to keep the checklists simple, following the Acceptable Means of Compliance (AMC) of CS 25.1581, and do not support the introduction of additional check list items to cover this case.

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

# Canada

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| HB-IWF | MCDONNELL DOUGLAS MD11 | Peggy's Cove, Nova Scotia 5 nm SW | 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-1999-003 (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**

Regarding backup power for the Cockpit Voice Recorder (CVR), the more flexible concept of 'alternate power source' has been recognised by flight recorder experts and it has replaced the concept of 'recorder independent power supply' in both EUROCAE Document 112A (performance specifications for crash-protected airborne recorders) and ICAO Annex 6 Part I (International commercial air transport operations with aeroplanes).

This safety recommendation will be considered within the framework of rulemaking task RMT.0308 'Amendment of requirements for data recorders II'. The requirements referred to in the RMT title are the EU air operations requirements. This rulemaking task is included in the published Agency's rulemaking programme.

In the meantime, ongoing rulemaking task RMT.0249, 'Recorders installation and maintenance thereof – certification aspects' is considering, among other issues, the definition of new certification specifications for the alternate power source for the CVR. This task was launched on 18 September 2014 with the publication of the associated Terms of Reference.

**Status:** Open – **Category**:

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| 9G-MKJ | BOEING 747 | Halifax International Airport | 14/10/2004 | Accident |

### Synopsis of the event

On 14 October 2004, an MK Airlines Limited Boeing 747-244SF (registration 9G-MKJ, serial number 22170) was being operated as a non-scheduled international cargo flight from Halifax, Nova Scotia, to Zaragoza, Spain. At about 0654 coordinated universal time, 0354 Atlantic daylight time, MK Airlines Limited Flight 1602 attempted to take off from Runway 24 at the Halifax International Airport. The aircraft overshot the end of the runway for a distance of 825 feet, became airborne for 325 feet, then struck an earthen berm. The aircraft's tail section broke away from the fuselage, and the aircraft remained in the air for another 1200 feet before it struck terrain and burst into flames. The aircraft was destroyed by impact forces and a severe post-crash fire. All seven crew members suffered fatal injuries.

### Safety Recommendation CAND-2006-007 (TSB)

The Board recommends that the Department of Transport, in conjunction with the International Civil Aviation Organization, the Federal Aviation Administration, the European Aviation Safety Agency, and other regulatory organizations, establish a requirement for transport category aircraft to be equipped with a take-off performance monitoring system that would provide flight crews with an accurate and timely indication of inadequate take-off performance.

**Reply**

No standard exists and the feasibility of such system has not yet been demonstrated.

Nevertheless a feasibility study has been launched by the European Organization for Civil Aviation Equipment (EUROCAE) under its WG-94 "Take Off Performance Monitoring System" (TOPMS). The Working Group should prepare a Technical Report identifying the state of the art with respect to the technology and systems that are available to support a TOPMS. The report should also provide guidance and recommendation on the feasibility of developing a standard or a series of standards for a TOPMS.

If the feasibility study concludes that a TOPMS standard could be prepared, then a second phase would be planned for WG-94 to draft such standard.

EASA is monitoring the progress of WG-94 and will consider establishing a certification specification if a TOPMS standard is issued.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| C-GZCH | SIKORSKY<br>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**

The Terms of Reference (ToR) for rulemaking task RMT.0608 were published on 22 May 2014 on the EASA Website, together with its Group Composition which includes Transport Canada (TCCA) and the Federal Aviation Administration (FAA). A reference to this accident and safety recommendation is included in the ToR. The specific objective of this task is to implement the recommendations of the Joint Cooperation Team (JCT) and to strengthen the existing Certification Specifications for Large Rotorcraft (CS-29) requirements pertaining to rotor drive system lubrication.

Following initial discussions within RMT.0608, it is the group's view that the 'extremely remote' provision remains justified for designs which provide an independent means of continued lubrication in the event of loss of oil or failure of the main lubrication system. It is accepted that further clarification would be beneficial and some additional guidance to the Advisory Circular (AC) 29.927 has already been jointly developed by FAA/EASA/TCCA and published. In addition, RMT.0608 will explore the possibilities of bringing the main gearbox lubrication system within the design assessment of CS 29.917, thereby strengthening the approach to design and certification. Regarding existing Category A transport helicopters, 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 |
|---|---|---|---|---|
| D-BAVG | CESSNA 750 | Larnaca Airport, Stand 75, Apron 2 | 10/12/2012 | Accident |

## Synopsis of the event

A potable water truck collided with a parked aircraft during flight preparation. The water truck approached from the rear of the aircraft to collide at the right wing tip. The aircraft's wing broke the windshield and entered the truck's cabin trapping the driver between the wing and his seat. The driver was freed by the RFFS and taken to Larnaca General Hospital.

## Safety Recommendation CYPR-2013-007 (AIIB)

It is recommended that ICAO, EASA and the FAA evaluate the relevance of making mandatory both the wing tip and tail rear position lights, in order to indicate the extremities of an aircraft structure. (AAIIB/7.13.)

**Reply**

EASA provisions for navigation/position lights require lights intended to indicate the extremities of the aircraft as far as practicable. Concerning the rear part of the aircraft, certification specifications for large aeroplanes (CS-25) include a rear position light (white colour) mounted as far aft as practicable, either on the tail or on each wing tip.

When an aeroplane is parked, there is no requirement for such lights to be switched on. Requiring additional lights would therefore not mitigate the risk of collision with ground vehicles when the aeroplane is parked.

**Status:** Closed – **Category**: Disagreement

# Denmark

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| OY-KFF | BOMBARDIER CL600 2B19 | Copenhagen Airport, Kastrup (EKCH), Runway 04R | 09/10/2009 | Incident |

## Synopsis of the event

The incident occurred during a flight from Copenhagen's Kastrup Airport (EKCH) with Aarhus Airport (AKAH) as the planned destination. Following initial take-off from Runway 04R, the pilots noticed a flock of birds in the beam of the aircraft's searchlights. Immediately thereafter, at an altitude of 256 ft, the aircraft was hit by birds, which resulted in powerful vibrations in the aircraft. The vibrations made it difficult for the pilots to read the engine instruments, but they were nevertheless able to read the level of vibrations in the right engine which were fluctuating around the maximum values. The pilots were not able to tell whether the left engine had been hit which is why, in the first instance, they were hesitant to stop the right engine. Since the vibrations in the right engine only partially ceased when the pilots pulled the throttle grip back, they decided to stop the engine. The left engine functioned normally throughout the flight. The incident was observed from the ground and from the control tower (TWR). EKCH's on-duty Bird and Wildlife Control Unit warden was approximately 800 m east of the intersection between Runway 04R and Taxiway I at the time of the incident. He heard a loud bang from the starting aircraft and then saw shooting flames and sparks come from the right engine as it passed Taxiway I above Runway 04R. The air traffic controller from TWR also saw flames come from the right engine of the aircraft immediately after it was in the air. When TWR was informed of the "bird strike" incident by the pilots, the air traffic controller gave the pilots their free choice of landing runway. The pilots turned the aircraft round and flew visually in a right tailwind to Runway 04R where they landed at 21.17 UTC without further incident. The incident occurred in darkness under visual meteorological conditions (VMC).

## Safety Recommendation DENM-2010-003 (AAIB)

It is recommended that the authorities evaluate possible technical solutions for the observation of and warning against migratory birds in darkness and in reduced visibility. This includes the option of installing and using radar equipment for this purpose.

**Reply**

Commission Regulation (EU) No 139/2014 of February 2014 includes the operational requirements for wildlife hazard management by the aerodrome operators (ADR.OPS.B.020) and Annex to ED Decision 2014/012/R includes the necessary acceptable means of compliance (AMC) and guidance material (GM). As far as the issue of technical equipment for wildlife monitoring in darkness and in reduced visibility conditions, the Agency intends to address the issue through a dedicated rulemaking task.

**Status:** Open – **Category**:

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| OY-CIM | ATR<br>ATR72 | Copenhagen Airport, Kastrup (EKCH) | 13/09/2011 | Serious incident |

### Synopsis of the event

Shortly after take-off from runway 22R while climbing through approximately 134 feet Radio Altitude (RA), a cockpit Master Warning was triggered referring to left engine low oil pressure. The cockpit Master Warning was silenced. Subsequently, a cockpit Master Caution was triggered referring to left engine high Inner stage Turbine Temperature (ITT). Smoke was present in the cockpit and in the passenger cabin. The flight crew decided to shut down the left engine (memory items). While climbing through approximately 750 feet RA, a cockpit Master Warning was triggered referring to left engine fire. The cockpit Master Warning was silenced. A Mayday call to Kastrup Tower was made. A left hand visual circling to runway 22L was initiated. The flight crew noted the left engine fire warning lights. Sequentially, both engine fire agents were discharged and the flight crew decided to land on runway 30. Descending through approximately 486 feet RA, a cockpit Master Warning was triggered. The Master Warning was silenced. A single engine landing was performed. On runway 30, the flight crew observed that the fire had extinguished and they cancelled the emergency evacuation of the aircraft.

### Safety Recommendation DENM-2012-005 (AAIB)

EASA to promote an internal debate (e.g.: dedicated working group, workshop, etc.) to carefully evaluate the pros and cons of a continuously increasing of memory items introduced in the implementation or review of the emergency procedure, mainly when to be applied in a critical phase of flight.

**Reply**

EASA promoted an internal debate with reference to the main aspect of the safety recommendation and in addition a specific study was conducted called “Checklist Memory Items”, which has been published on EASA research web page. As reported in such study, an assessment of the available literature, in combination with the views of EASA experts and in addition to the feedback received from members of the European Human Factors Advisory Group, would suggest that memory items are not increasing either in terms of the number of items within the checklist itself or the number of checklists themselves. The advent of new technologies has resulted in a reduction and in a better management of the memory items within checklists as compared to older aircraft. As example, with the introduction of Electronic Centralised Aircraft Monitor (ECAM) and Engine Indicating and Crew Alerting System (EICAS) the crew can easily monitor aircraft functions and system failures. In such systems messages detailing failures, lists of the procedures to correct the problem are provided to the crew which can instantly assess the situation and decide on the actions to be taken. They are designed to ease the crew workload in critical phase of flight, as well as in abnormal and emergency situations.

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

# Egypt

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| SU-283 | ULTRAMAGIC N425 | Luxor | 26/02/2013 | Accident |

## Synopsis of the event

The probable cause for the accident as seen by the investigation committee is due to a hose fuel leak at the upper portion of the forward right hose connected to burner number 193 capturing its ignition source from burner's fire causing a fire that caused a major and direct injury to the balloon captain.

Contributing factors:

- Maintenance actions that were carried out on the hoses could not indicate the need to replace the hose that was the cause of the accident.
- The P/N of the hose connected to burner 193 was for a hose made in 2005 and therefore, it has accumulated high flight hours and sometimes under adverse conditions. This service life and conditions increase the likelihood that the hose experienced weaknesses/defects, that could have contribute to the gas leak.

## Safety Recommendation EGYP-2014-001 (AIB)

Recommendation to balloon manufacturer and its certifying authority: Consider setting a life time, or working hours for the hoses, at which the hoses must be replaced, and not relating the hoses replacement to the operator view.

**Reply**

It is already required that fuel hoses are to be inspected as a function on a regular basis for wear and damage according to 14 CFR Part 31. In addition, a D-check must be performed after 10 years. As a balloon's technical condition is very much dependant on its individual treatment, a replacement of hoses after a fixed amount of flight hours is reached would not solve the safety issue. Operational experience has shown that replacement of hoses is often made far before the formal life time limit has been reached with respect to the Airworthiness Limitations Section of the Maintenance Manual according to 14 CFR Part 31, § 31.82, appendix 1, a31.4.

**Status:** Closed – **Category**: Disagreement

### Safety Recommendation EGYP-2014-002 (AIB)

Recommendation to balloon manufacturer and its certifying authority: In light of the fact that landing with the help of a drop line rope seems commonplace in the operation of large balloons, and that this practice is not included as a standard procedure in the flight manual, it is recommended that the Certifying Authority and the manufacturer consider regulating its inclusion so as to standardise every aspect of this operation.

**Reply**

The Agency's position on how and when to use a drop line is that it should be decided by the Operator, as this provides them the flexibility to adapt safety practices to their particular operational circumstances and situation. This discretion ensures a level of flexible decision making, so safety practices can be altered to the needs and identified risks; the model of which is based on the essential requirements of Annex IV to Basic Regulation 216/2008.

**Status:** Closed – **Category**: Disagreement

### Safety Recommendation EGYP-2014-003 (AIB)

Recommendation to balloon manufacturer and its certifying authority: Consider the revision of fuel system component serial number placement in a way, that would avoid loss under different conditions and to ensure proper tracing.

**Reply**

EASA supports the review of developing suitable permanent markings for serial numbers and will further follow up its implementation.

**Status:** Open – **Category**:

### Safety Recommendation EGYP-2014-004 (AIB)

Recommendation to balloon manufacturer and its certifying authority: Reconsider the requirement to clearly define the details of steps and checks to be carried out during both preparation for flight and PDC [pre departure check] clearly, defining duties and responsibilities of all concerned individuals, to ensure that all the checks are carried out to achieve safety requirements.

**Reply**

The amount of information for pre-departure checks (PDC) which is included in the Aircraft Flight Manual is considered by EASA to be adequate. The responsibility for implementing the various steps and safety-checks are operational issues, that fall outside of product certification, and reside within the National Aviation Authorities (NAA's) remit.

**Status:** Closed – **Category**: Disagreement

# Finland

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| OH-LXL | AIRBUS<br>A320 | flight level 360, north of the Island of Öland in the airspace of southern Sweden | 05/03/2011 | Serious incident |

## Synopsis of the event

On 5 March 2011 at approximately 06:50 a pressurisation failure caused a serious incident on Finnair flight AY831. An Airbus A320-214 airliner, registration OH-LXL, was on a scheduled flight from Helsinki to London. The aircraft was flying in Swedish airspace, north of the Island of Öland at Flight Level (FL) 360 (ca. 10950 m). The only working bleed air system of the aircraft failed. As a result of this, the flight crew had to execute an abnormally rapid descent to a safe altitude.

## Safety Recommendation FINL-2013-001 (AIB)

The Safety Investigation Authority, Finland recommends that the EASA oblige Airbus S.A.S. to compile all engine bleed air failure-related emergency procedures that pilots use, and display the complete set of instructions on the ECAM.

**Reply**

EASA supports the intent of having all engine bleed air failure-related procedures on the Electronic Centralized Aircraft Monitor (ECAM).

In this spirit, the following improvements related to bleed faults have been achieved:

- The Type Certificate Holder (TCH) Operating Engineering Bulletin OEB40, which purpose is to prevent from the loss of the remaining engine bleed by reducing the bleed air demand when a first engine bleed has been lost, is cancelled by upgrade of Flight Warning Computer (FWC) to standard F6 and subsequent standards because the new ECAM actions are now detailing the content of the OEB40.

It is to be noted that FWC F7 will be introduced as a fleetwide standard in the near future.

- A new ECAM alert "AIR ENG 1+2 BLEED FAULT" with an associated procedure covering bleed reset, descent initiation and then referring to Quick Reference Handbook (QRH) is being created for A320 and A330.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| OH-AAA | CESSNA<br>206 | Kontiolahti | 08/11/2013 | Accident |

## Synopsis of the event

A Cessna 208H dual-purpose amphibian aircraft, collided with the ground on a cross-country flight from Joensuu airport to Lappeenranta and was destroyed. The pilot perished in the accident.

The investigation determined that haste affected the pilot's capacity to evaluate the risks associated with the conduct of the flight. Due to insufficient horizontal visibility the pilot became spatially disoriented and lost control of the aircraft in a turn made at a low altitude and in heavy snow. The root cause of the accident was the pilot's decision to take off into excessively demanding meteorological conditions. Haste and biases, typical to humans, degraded the pilots ability to evaluate the risks associated with the conduct of the flight. The direct cause of the accident was probably the pilot's spatial disorientation and loss of control of the aircraft, as a result of which the aircraft collided with the ground. Also, loss of control caused by wing icing cannot be excluded.

### Safety Recommendation FINL-2014-001 (AIB)

SIAF recommends that the EASA study the possibility of drawing up a proposal for a standard which would suggest that all GPS devices intended for use in aviation have a function that records the parameters of the route flown. Moreover, the memory of such devices should not require a power source to retain the stored data. A similar safety recommendation was already issued in 2009, in conjunction with Investigation Report B3/2008L.

**Reply**

The Agency's rulemaking tasks RMT.0271 and RMT.0272 'In-flight recording for light aircraft' were launched on 25 July 2014 with the publication of the associated Terms of Reference.

This safety recommendation is being considered within the framework of these tasks.

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

| 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 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 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. 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.

### Safety Recommendation FINL-2014-002 (AIB)

Yhteiseurooppalainen JAR-FCL 1 -määräys edellyttää, että PPLlentokoulutusohjelmaan kuuluu lentoharjoitus nro 11 ”Syöksykierteen välttäminen”, joka sisältää kohdat ”alkavan syöksykierteen oikaisu” sekä ”opettajan suorittama häirintä sakkauksen aikana”. Englanninkielisessä versiossa jälkimmäinen opetettava ”aihe” on ”instructor induced distractions during the stall”, joka ei tarkoita mitään aktiivista esimerkiksi ohjaamiseen puuttuvaa häirintää, kuten se lähes poikkeuksetta ymmärretään ja pyritään sen mukaisesti toteuttamaan.

Onnettomuustutkintakeskus suosittaa, että Euroopan lentoturvallisuusvirasto (EASA) harkitsisi käännöstä uudelleen sekä lisäksi täsmentäisi kyseisen toiminnan tarkoitusperää tämän harjoituksen yhteydessä ja valaisisi sitä käytännön esimerkeillä. Lisäksi suositetaan, että mahdollinen uusi käännös ja mahdolliset täsmentävät selvitykset vaadittaisiin korjattavaksi myös lentokoulutusorganisaatioiden lentokoulutusohjelmiin.

**Reply**

The acceptable means of compliance (AMC) in ED Decision 2011/016/R to Commission Regulation (EU) No 1178/2011 (Regulation Aircrew) contains provisions for the PPL(A) flight instruction syllabus. Exercise 11 of this syllabus concerns ‘Spin Avoidance’ training and it addresses stalling and recovery at the incipient spin stage as well as instructor induced distractions during the stall. The wording is identical to the former JAR-FCL 1 requirements.

The Agency is currently reviewing the effectiveness of the text within the framework of rulemaking tasks RMT.0581 and RMT.0582 ‘Loss of Control Prevention and Recovery Training’, which were launched by the Agency on 20 August 2013 with the publication of the associated Terms of Reference.

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

### Safety Recommendation FINL-2014-003 (AIB)

PPL(A) -lentokoulutusohjelmassa määrätään, että sakkaus- ja syöksykierteen välttämis-koululentoja tulee lentää yhteensä vähintään kaksi tuntia. Siinä ei määritellä vaadittavien hyväksyttyjen suoritusten lukumäärää tai suoritettavia liikeversioita eikä tehtävien liikkeiden jaottelua aihekokonaisuuksien kesken.

Onnettomuustutkintakeskus suosittaa, että Euroopan lentoturvallisuusvirasto (EASA) lisäisi PPL(A) -lentokoulutusohjelmaan suoritusten vähimmäismäärän kumpaakin vaadittavaa lentolajia kohti. Etenkin syöksykierteen välttämisen, eli alkavien syöksykierteiden, osalta tämä nähdään tärkeänä.

**Reply**

The acceptable means of compliance (AMC) in ED Decision 2011/016/R to Commission Regulation (EU) No 1178/2011 (Regulation Aircrew) contains provisions for the PPL(A) flight instruction syllabus. The current PPL(A) syllabus stipulates that ‘at least two hours of stall awareness and spin avoidance flight training should be completed during the course’. This wording is identical to the former JAR-FCL 1 requirements.

The Agency is currently considering the appropriateness of introducing a minimum number for both stall and spin avoidance manoeuvres, including incipient spins, within the framework of rulemaking tasks RMT.0581 and RMT.0582 ‘Loss of Control Prevention and Recovery Training’, which were launched by the Agency on 20 August 2013 with the publication of the associated Terms of Reference.

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

# France

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| F-GEVN | SOCATA TB20 | Saint Andre les Vergers | 21/04/1997 | Accident |

## Synopsis of the event

En condition de vol à vue, l'avion percute le sol alors qu'il se présente en longue finale sur la piste 36 R de l'aérodrome de Troyes Barberey. Il rebondit en se disloquant partiellement et termine sa course en s'écrasant trente-cinq mètres après le premier impact à un cap pratiquement inverse à celui de l'approche finale.

## Safety Recommendation FRAN-2002-002 (BEA)

Le BEA recommande que la DGAC impose la présence d'un détecteur de monoxyde de carbone à bord des aéronefs d'aviation générale.

**Reply**

The Agency reviewed the safety basis used to justify the provision of rulemaking task RMT.0329/.0330.

Although the safety risk from carbon monoxide (CO) ingress into the cabin of general aviation aircraft exists, the number of accidents where CO poisoning is determined as the root cause remains low compared to other root causes categories.

CO detectors are also available on the market and as such many operators already make use of them, even though there is no rule requiring the installation of CO detectors.

The Agency considers that this issue may be treated by other means than by the creation of a new rule, and rulemaking task RMT.0329/.0330 has been cancelled.

For instance, in June 2010, the Agency published Safety Information Bulletin (SIB) 2010-19 highlighting the importance and need to properly inspect and maintain the exhaust mufflers of piston engine powered Aeroplane and Helicopter in accordance with the specifications for Inspection and Checks of the Appendix to the SIB.

Finally, in the frame of rulemaking task RMT.0498 on the re-organisation of the Certification Specifications for small aeroplanes (CS-23 and FAR Part-23), the Agency proposed to include a provision recommending the installation of CO detectors whenever the design of the aircraft present a risk of contamination of the cabin air; such provision would be found in the ASTM standard which will be used in the future Book 2.

**Status:** Closed – **Category**: Disagreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| STUDY.ER.PAR | | Several occurrences between 2004 and 2006 | 21/04/2008 | Serious incident |

### Synopsis of the event

Les enquêtes sur deux incidents graves de 2004 et 2006 (erreurs d'insertion conduisant à un décollage avec une poussée et des vitesses insuffisantes), complétées par une étude, ont confirmé que, sur les avions de nouvelle génération, des erreurs, parfois lourdes, sont commises par les équipages sans être détectées avant l'envol.

La période de préparation du vol et de mise en oeuvre de l'avion est une phase délicate et essentielle pour la sécurité de l'ensemble du vol et en particulier du décollage. Dans cette phase, l'équipage est soumis à une charge de travail importante dans des délais souvent réduits et perturbés par des contraintes extérieures. Il est nécessaire de réduire ces risques d'erreurs en agissant à la fois sur l'amélioration de la formation, des procédures et des systèmes. L'étude a montré que les vérifications sont parfois inefficaces et que les doutes, lorsqu'ils sont exprimés, ne sont pas levés correctement. Les erreurs commises à divers stades de la préparation et du départ des vols peuvent ainsi se propager jusqu'au décollage et compromettre sa sécurité. L'étude a aussi montré que la présentation des données à insérer dans les systèmes embarqués de gestion du vol peut prêter à confusion et que les valeurs de masses et de vitesses que ces systèmes acceptent peuvent être incohérentes.

### Safety Recommendation FRAN-2008-328 (BEA)

La DGAC se rapproche de l'AESA et de la FAA pour faire évoluer les normes de certification afin que les calculateurs de paramètres prévoient des systèmes de refus ou d'alerte de l'équipage en cas d'insertion de données incohérentes, manifestement erronées ou trop éloignées des valeurs usuelles.

**Reply**

The Agency is reviewing ways of protecting against insufficient take-off performance events. Software under development may help detecting inconsistent take off performance parameters, however their detailed capability is not yet known and the Agency has to further investigate this kind of function before being able to certify or mandate it.

In addition, other actions are addressing the issue:

1) On board weight and balance system: after a positive feasibility study, the European Organisation for Civil Aviation Equipment Working Group (EUROCAE) WG-88 is now working to prepare Minimum Operational Performance Specifications (MOPS), and the Agency is chairing this Working Group; the Agency's rulemaking programme also includes a rulemaking task RMT.0116 dedicated to this subject and which should make use of the future EUROCAE MOPS;
2) Take off performance monitoring system (TOPMS): EUROCAE WG-94 is currently working on a feasibility study, to investigate a possible means to alert the flight crew of any inconsistencies in the aeroplanes' performance during the take-off roll;
3) Operational approval of Electronic Flight Bags: The Acceptable Means of Compliance (AMC) 20-25 has significantly evolved in the frame of Rulemaking Task RMT.0001 and the associated Notice of Proposed Amendment (NPA) 2012-02. This evolution includes more detailed guidelines for the operational evaluation which will improve the protection against the risk of take-off performance calculation errors. Please refer to Comment Response Document (CRD) to NPA 2012-02 which was published on 31 July 2013 on the EASA Website.

The CRD provides the resulting text of AMC 20-25 in its Appendix A. Paragraph D.3.2 of Appendix D to AMC 20-25 provides the following:

"The user should be able to modify performance calculations easily, especially when making last minute changes.

Calculation results and any outdated input fields should be deleted:

(a) when modifications are entered;
(b) when the EFB is shut down or the performance application is closed; and
(c) when the EFB or the performance application have been in a standby or 'background' mode long enough, i.e. such that it is likely that when it is used again the inputs or outputs are outdated."

Further update will be provided when new elements are available from the activities described above.

**Status:** Open – **Category**:

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| D-AXLA | AIRBUS A320 | Canet-Plage (by Perpignan) | 27/11/2008 | Accident |

### Synopsis of the event

Flight GXL888T from Perpignan - Rivesaltes aerodrome was undertaken in the context of the end of a leasing agreement, before the return of D-AXLA to its owner. The programme of planned checks could not be performed in general air traffic, so the flight was shortened. In level flight at FL320, angle of attack sensors 1 and 2 stopped moving and their positions did not change until the end of the flight. After about an hour of flight, the aeroplane returned to the departure aerodrome airspace and the crew was cleared to carry out an ILS procedure to runway 33, followed by a go around and a departure towards Frankfurt/Main (Germany). Shortly before overflying the initial approach fix, the crew carried out the check on the angle of attack protections in normal law. They lost control of the aeroplane, which crashed into the sea.

### Safety Recommendation FRAN-2009-003 (BEA)

The BEA recommends that EASA detail in the EU-OPS the various types of non-revenue flights that an operator from EU state is authorised to perform.

**Reply**

EU-OPS has, since the publication of this accident report, been superseded by Commission Regulation (EU) No 965/2012 on air operations.

This air operations regulation contains a provision, which was not in EU-OPS, on non-commercial operations of aircraft listed in the operations specifications by the holder of an Air Operator Certificate (ORO.AOC.125). However, this does not specify the actual types of non-revenue flights that the operator may perform. This is being considered within the framework of rulemaking tasks RMT.0352 and 0353 (former OPS.075) 'Non-revenue flights' which were launched on 04 December 2013 with the publication of the Terms of Reference.

In addition, RMT.0393 and RMT.0394 (former Multi-Disciplinary Measures task MDM.097) were launched on 04 April 2011 to address, in particular, maintenance check flights.

Moreover, Safety Information Bulletin (SIB) 2011-07 on functional check flights was published on the EASA Website on 05 May 2011 to raise awareness in the community.

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

| 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-2009-008 (BEA)

Le BEA recommande que l'AESA élargisse les conditions d'obligation d'emport d'enregistreurs de vol en transport public.

**Reply**

The Agency's rulemaking tasks Multi-Disciplinary Measure MDM.073:

(a) Recorders for small aircraft 'Review of the operational and certification requirements (Implementing Rules) for recorders for small aircraft'; and

(b) Recorders for small aircraft 'Review of the operational and certification requirements (Certification Specification/Acceptable Means of Compliance/Guidance Material) for recorders for small aircraft';

have now been merged with rulemaking tasks RMT.0271 and RMT.0272 'In-flight recording for light aircraft', which were launched on 25 July 2014 with the publication of the associated Terms of Reference.

This safety recommendation is being considered within the framework of these tasks.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| V2-LFL | DE HAVILLAND DHC6 | Pointe-A-Pitre Airport | 28/06/2008 | Serious incident |

### Synopsis of the event

L'avion, en provenance d'Antigua, effectue une liaison régulière vers Pointe-à-Pitre en régime de vol à vue. A l'arrivée, des orages à proximité de l'aérodrome ne permettent pas à l'équipage de poursuivre à vue. Il demande à effectuer l'approche aux instruments. Au cours de la procédure ILS, l'équipage prolonge la branche d'éloignement au-delà du début de la procédure d'inversion afin d'éviter un grain. L'avion passe 2 200 ft en descente dans un secteur où l'altitude de sécurité est de 3 600 ft. Le contrôleur constate l'altitude anormale de l'avion alors que celui-ci est en virage de procédure en direction du relief. Il demande à l'équipage de remonter à 3 600 ft. L'avion rejoint les axes de l'ILS. La fin de l'approche et l'atterrissage se déroulent normalement.

### Safety Recommendation FRAN-2009-009 (BEA)

Le BEA recommande que l'AESA et l'ECCAA fassent préciser aux exploitants les principes d'utilisation du TAWS et les procédures associées en distinguant les conditions d'exploitation (IFR et VFR).

**Reply**

The Agency's interim response dated 27 September 2011 referred to rulemaking task RMT.0373 (former OPS.079) 'Terrain Awareness and Warning System (TAWS) operation in Instrument Flight Rules (IFR) and Visual Flight Rules (VFR)'.

This task has now been merged with RMT.0371 & RMT.0372 [former OPS.078 (a) & (b)] 'TAWS operation in IFR and VFR and TAWS for turbine powered aeroplanes under 5700 kg MTOM (maximum take-off mass) able to carry 6 to 9 passengers'.

These tasks were launched on 31 January 2014 with the publication of the associated Terms of Reference. This safety recommendation is being considered within the framework of these tasks.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| F-GLZC | AIRBUS A340 | Cayenne Rochambeau airport | 25/05/2001 | Incident |

### Synopsis of the event

En approche finale ILS en piste 08 de l'aérodrome de Cayenne-Rochambeau, l'avion rencontre un cisaillement de vent et s'enfonce brutalement à une hauteur d'environ cent pieds. Une alarme SINK RATE retentit. Le copilote, aux commandes, tire sur le manche puis réduit la poussée pour atterrir. Le commandant de bord augmente la poussée et reprend les commandes.L'avion touche sur le train gauche trente mètres avant le seuil de piste, rebondit et atterrit environ cinq cents mètres plus loin.

### Safety Recommendation FRAN-2009-012 (BEA)

Le BEA recommande que la DGAC, en liaison avec les autres autorités européennes, établisse les conditions réglementaires d'emport d'un système prédictif de cisaillement de vent conformément aux recommandations du paragraphe 6.21 de l'Annexe 6 (OACI).

**Reply**

The DGAC forwarded this Safety Recommendation to EASA on 09 December 2009, as EASA is the responsible body for establishing European Union regulations on aviation safety.

The Agency has launched rulemaking tasks RMT.0369 and RMT.0370 [former OPS.077 (a) and (b)] 'Prediction of wind shear for aeroplane CAT operations' with the publication of the associated Terms of Reference on 28 October 2013. This Safety Recommendation is being considered within the framework of these tasks.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| F-GZCP | AIRBUS A330 | en route between Rio de Janeiro and Paris | 01/06/2009 | Accident |

### Synopsis of the event

On 31 May 2009, flight AF447 took off from Rio de Janeiro Galeão airport bound for Paris Charles de Gaulle. The airplane was in contact with the Brazilian ATLANTICO ATC on the INTOL - SALPU - ORARO - TASIL route at FL350. At around 2 h 02, the Captain left the cockpit. At around 2 h 08, the crew made a course change of about ten degrees to the left, probably to avoid echoes detected by the weather radar. At 2 h 10 min 05, likely following the obstruction of the Pitot probes in an ice crystal environment, the speed indications became erroneous and the automatic systems disconnected. The airplane's flight path was not brought under control by the two copilots, who were rejoined shortly after by the Captain. The airplane went into a stall that lasted until the impact with the sea at 2 h 14 min 28.

### Safety Recommendation FRAN-2009-018 (BEA)

The BEA recommends that EASA and ICAO study the possibility of making it mandatory for airplanes performing public transport flights to regularly transmit basic flight parameters (for example position, altitude, speed, heading).

**Reply**

This safety recommendation has been considered in the frame of rulemaking tasks RMT.0400 and RMT.0401, and the Agency has published on 20 December 2013 the Notice of Proposed Amendment (NPA) 2013-26, 'Amendment of requirements for flight recorders and underwater locating devices'.

The report of the Flight Data Recovery Working Group of BEA demonstrated that the regular transmission of position information would facilitate wreckage localisation after an accident of a large aeroplane over an oceanic area. This is because such position reporting would allow localizing the point of impact with the water surface. It would make the search area small enough to quickly locate the wreckage with the help of the underwater locating devices (ULDs) currently attached to flight recorders.

Further to this, the regular transmission of position information was assessed by NPA 2013-26 to be an acceptable alternative to fitting large aeroplanes with a dedicated long-range ULD, in addition to the flight recorders' ULDs.

For this reason, a new Acceptable Means of Compliance (AMC2 CAT.IDE.A.285(f)) and a new Guidance Material paragraph (GM1 CAT.IDE.A.285(f)) are proposed, which include periodic transmission by the aeroplane of its position among the alternatives to installing long-range ULD.

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

### Safety Recommendation FRAN-2011-017 (BEA)

The BEA recommends that EASA and ICAO make mandatory as quickly as possible, for airplanes making public transport flights with passengers over maritime or remote areas, triggering of data transmission to facilitate localisation as soon as an emergency situation is detected on board.

**Reply**

This safety recommendation has been considered in the frame of rulemaking tasks RMT.0400 and RMT.0401, and the Agency has published on 20 December 2013 the Notice of Proposed Amendment (NPA) 2013-26, 'Amendment of requirements for flight recorders and underwater locating devices'.

The report of the Triggered Transmission of Flight Data Working Group of BEA demonstrated that transmission of aircraft position upon automatic detection of an emergency situation would allow localizing the point of impact with the water surface. It would make the search area small enough to quickly locate the wreckage with the help of the underwater locating devices (ULDs) currently attached to flight recorders.

Further to this, transmission of aircraft position upon automatic detection of an emergency situation was assessed by NPA 2013-26 to be an acceptable alternative to fitting large aeroplanes with a dedicated long-range ULD, in addition to the flight recorders' ULDs.

For this reason, a new Acceptable Means of Compliance (AMC2 CAT.IDE.A.285(f)) and a new Guidance Material paragraph (GM1 CAT.IDE.A.285(f)) are proposed, which include, among the alternatives to installing long-range ULD, "emission by the aeroplane of a signal upon detection of an emergency situation or a situation likely to result into an accident."

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

### Safety Recommendation FRAN-2011-018 (BEA)

The BEA recommends that EASA and ICAO study the possibility of making mandatory, for airplanes making public transport flights with passengers over maritime or remote areas, the activation of the emergency locator transmitter (ELT), as soon as an emergency situation is detected on board.

**Reply**

This safety recommendation has been considered in the frame of rulemaking tasks RMT.0400 and RMT.0401, and the Agency has published on 20 December 2013 the Notice of Proposed Amendment (NPA) 2013-26, 'Amendment of requirements for flight recorders and underwater locating devices'.

The report of the Triggered Transmission of Flight Data Working Group of BEA demonstrated that activating the emergency locator transmitter (ELT) upon automatic detection of an emergency situation could significantly increase the probability of successful emission. Indeed, historical data of accidents of large aeroplanes over water indicate that quite often no ELT signal could be emitted, because the ELT, its antenna or the link to its antenna were destroyed by the crash forces, or because the ELT signal was masked by debris. Initiating ELT emission while the aircraft is still airborne would overcome this issue. It would then make the search area small enough to quickly locate the wreckage with the help of the underwater locating devices (ULD) currently attached to flight recorders.

Further to this, automatic ELT activation in flight was assessed by NPA 2013-26 to be an acceptable alternative to fitting large aeroplanes with a dedicated long-range ULD, in addition to the flight recorders' ULDs.

For this reason, a new Acceptable Means of Compliance (AMC2 CAT.IDE.A.285(f)) and a new Guidance Material paragraph (GM1 CAT.IDE.A.285(f)) are proposed, which include, among the alternatives to installing long-range ULD, "emission by the aeroplane of a signal upon detection of an emergency situation or a situation likely to result into an accident."

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

### Safety Recommendation FRAN-2012-045 (BEA)

The BEA recommends that EASA modify the basis of the regulations in order to ensure better fidelity for simulators in reproducing realistic scenarios of abnormal situations.

**Reply**

The Agency intends to consider this safety recommendation within the context of rulemaking tasks RMT.0196 and RMT.0197 [former FCL.007 (a) and (b)] 'Flight Simulation Training Devices (FSTDs)'.

The launching of these rulemaking tasks has been postponed pending publication of amendments to ICAO Doc. 9625 'Manual of Criteria for the Qualification of Flight Simulation Training Devices'. These amendments are needed in order to take into account the latest amendments to ICAO Annex 1 and ICAO Doc. 9868 'Procedures for Air Navigation Services – training (PANS-TRG)' regarding upset recovery and prevention training (UPRT).

In addition, the Agency has launched rulemaking tasks RMT.0581 and RMT.0582 'Loss of control prevention and recovery training'. The outcome is expected to affect the aircrew training regulations as well as the related FSTD provisions. Therefore, the rulemaking tasks on FSTDs will not be launched until the results of RMT.0581 and RMT.0582 are known. The tasks are ongoing and the associated Notice of Proposed Amendment (NPA) is expected to be published in 2015.

**Status:** Open – **Category**:

### Safety Recommendation FRAN-2012-047 (BEA)

The BEA recommends that EASA require a review of the re-display and reconnection logic of the flight directors after their disappearance, in particular to review the conditions in which an action by the crew would be necessary to re-engage them.

**Reply**

EASA has launched a review of flight director re-display and reconnection logic.

As a result, A320 and A330/340 Flight Augmentation Computer (FAC) and Flight Management Guidance Computer (FMGC) will be modified.

Retrofit policy is under discussion.

**Status:** Open – **Category**:

### Safety Recommendation FRAN-2012-048 (BEA)

The BEA recommends that EASA require a review of the functional or display logic of the flight director so that it disappears or presents appropriate orders when the stall warning is triggered.

**Reply**

EASA has launched a review of flight director re-display and reconnection logic.

As a result, A320 and A330/340 will be modified. Flight Director (FD) will be disconnected in case of stall warning.

Retrofit policy is under discussion.

**Status:** Open – **Category**:

### Safety Recommendation FRAN-2012-049 (BEA)

The BEA recommends that EASA study the relevance of having a dedicated warning provided to the crew when specific monitoring is triggered, in order to facilitate comprehension of the situation.

**Reply**

The adequacy of the general crew alerting system is addressed by certification requirements in particular Certification Specifications CS25.1302, CS.1309 and CS25.1322.

In some circumstances, on all Airbus Fly By Wire (FBW) programs, except A350XWB, airspeed can be detected erroneous by the flight control system, while it is still displayed on the Primary Flight Display (PFD).

Studies are on-going to evaluate the relevance of flagging the speed in the cockpit when a system monitoring is triggered on Airbus Flight-by-Wire aircraft except on A350XWB where in case of detection of erroneous airspeed, the switching to the adequate displayed airspeed is automatically realised.

**Status:** Open – **Category**:

### Safety Recommendation FRAN-2012-050 (BEA)

The BEA recommends that EASA determine the conditions in which, on approach to stall, the presence of a dedicated visual indications, combined with an aural warning should be made mandatory.

**Reply**

Stall Warning is a combination of aural warning and Master Warning Light, when parameters are valid.

In order to reinforce crew awareness in case of stall situation, it will be displayed STALL STALL on Primary Flight Display (PFD) when Stall Warning (SW) is triggered.

Modifications of forthcoming display standards for A320 family, A330/A340 family, A380, A350 and A400M aircraft are on-going. Retrofit policy is under discussion.

On the A300/A310/A300-600 family program, as the stick shaker provides an additional warning to the flight crew it is considered sufficient.

**Status:** Open – **Category**:

### Safety Recommendation FRAN-2012-051 (BEA)

The BEA recommends that EASA require a review of the conditions for the functioning of the stall warning in flight when speed measurements are very low.

**Reply**

EASA has reviewed the conditions for the functioning of the stall warning in flight when speed measurements are very low. The stall warning is designed to be efficient in a realistic and recoverable flight domain. It is also designed to avoid spurious triggering, hence the 60 knots stall warning inhibition threshold implemented on a large number of large aeroplanes.

At very low speed (below 60 kts), corresponding to exceptionally high angle of attack, the aircraft flight characteristics are unknown. Flying below 60 knots is out of the flight envelope. Certification requirements are not established to ensure safe flight outside the aeroplane flight envelope.

**Status:** Closed – **Category**: Disagreement

### Safety Recommendation FRAN-2012-052 (BEA)

The BEA recommends that EASA improve the feedback process by making mandatory the operational and human factors analysis of in-service events in order to improve procedures and the content of training programmes.

**Reply**

EASA considers that the current Part 21 (in particular 21.A.3.A) and its Acceptable Means of Compliance and Guidance Material (in particular note 4 of AMC 21.A.3.B and GM 21.A.3.B) adequately address the Human Factors (HF) assessment to be done by the Type Certificate (TC) holder.

Regular audits are performed by EASA on occurrence reporting, in the context of the Design Organisation Approval (DOA) of TC holders.

The new requirements introduced in Part 21 for Operational Suitability Data (OSD) reinforce operational and Human Factor considerations. EASA will review how these new requirements have been implemented by Airbus in the context of the extension of its DOA, required to cover OSD.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| F-WWKK | AIRBUS<br>A330 | the south sector of France, cruising at FL 410 | 21/11/2007 | Incident |

### Synopsis of the event

Descente d'urgence à la suite d'une panne du contrôleur de pressurisation cabine lors d'un vol de démonstration.

### Safety Recommendation FRAN-2010-022 (BEA)

The BEA recommends that EASA asks Airbus to amend the CAB EXCESS CAB ALT procedure so as to require both selecting the transponder 7700 code and the transmission of an emergency distress message.

**Reply**

The A330 Airbus Aircraft Flight Manual and Flight Crew Operating Manual have been amended in February 2011 taking into account this safety recommendation.

**Status:** Closed – **Category**: Agreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| F-ORGB | ROBINSON<br>R22 | the Col des Boeufs, Saint Benoit Commune (974), France | 31/05/2010 | Accident |

### Synopsis of the event

Le pilote du Robinson R22 décolle de la commune de La Nouvelle dans le cirque de Mafate à destination du « Col des Boeufs » situé à 1 940 mètres d'altitude pour récupérer des colis. Trois personnes d'une société d'électricité sont présentes sur le col et doivent se rendre dans une maison forestière pour réaliser des travaux. Le pilote qu'ils ont eu au téléphone leur a proposé de les amener avec le R22 sur le site de la maison forestière depuis le « Col des Boeufs » à l'issue de la première rotation qu'il devait effectuer. Le pilote se pose sur l'hélisurface du « Col des Boeufs » et procède, moteur tournant, à l'embarquement du premier passager. Le pilote décolle en stationnaire d'environ un mètre, puis recule avant de virer à droite dans la pente. Au cours de cette manoeuvre, la queue touche le relief dans la pente puis le patin droit se bloque sous un rocher. L'hélicoptère s'écrase et s'immobilise en contrebas.

### Safety Recommendation FRAN-2011-021 (BEA)

The BEA recommends that EASA and the FAA make mandatory the installation of a fuel cock with a selector as modified since July 2007 on R22 type helicopters in order to avoid any accidental manoeuvres.

**Reply**

The Federal Aviation Administration (FAA) has issued the Airworthiness Directive (AD) AD 2013-19-06 on 01 October 2013 that requires replacing the fuel shut-off valve with a newer design fuel shut-off valve. This action is to prevent inadvertent closing of the fuel valve, which could result in engine power loss from which a safe landing may not be possible. This Airworthiness Directive was adopted by EASA on 03 October 2013.

**Status:** Closed – **Category**: Agreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| F-GUVQ | DIAMOND DA40 | Montélimar aerodrome (26) | 26/06/2011 | Incident |

### Synopsis of the event

Le pilote réalise une navigation entre les aérodromes de Clermont-Ferrand Aulnat (63) et Cannes Mandelieu (83). Après environ 1 heure de vol, en croisière au FL95, à la verticale de l'aérodrome de Montélimar, le pilote constate l'allumage des voyants « ECU(2) A fail » et « ECU?fail » puis une baisse de puissance du moteur vers 5 %. Il réalise un atterrissage forcé sur l'aérodrome de Montélimar.

### Safety Recommendation FRAN-2012-057 (BEA)

The BEA recommends that EASA requires Thielert to improve the electrical part of the pressure fuel system control unit for the TAE 125 engine, in order to make it less vulnerable to electrical interruptions.

**Reply**

EASA in cooperation with the manufacturer have reviewed the safety recommendation and have concluded that the current fuel pressure regulating system works reliably when maintained in accordance with the existing maintenance procedures and instructions.

**Status:** Closed – **Category**: Disagreement

### Safety Recommendation FRAN-2012-058 (BEA)

The BEA recommends that EASA requires Thielert to develop specific checks following interventions on the line of the fuel pressure control unit, in order to detect possible failures.

**Reply**

Current maintenance instructions cover work on the high pressure fuel system and provide information about required checks. However, in lieu of developing further maintenance instructions to address in-service problems, a new Full Authority Digital Engine Control (FADEC) software version is under development; this shall detect spikes in the rail pressure measurement and trigger FADEC warnings.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| I-MLHT | FOKKER F27 | AD Paris Charles de Gaulle (95) | 20/09/2011 | Serious incident |

### Synopsis of the event

L'équipage décolle à 23 h 37 de l'aérodrome de Paris Charles de Gaulle à destination de Dôle Tavaux. A 23 h 46 alors que le Fokker 27 approche le niveau de vol 60 en montée, l'équipage constate l'allumage du voyant « feu moteur » droit avec le fonctionnement de l'alarme sonore. Il applique la procédure « feu moteur » et se déclare en détresse. Après avoir utilisé l'un des deux extincteurs et arrêté le moteur droit, il constate l'extinction du voyant « feu moteur ». Il fait demi-tour et atterrit sans autre incident à Paris-Charles-de-Gaulle.

### Safety Recommendation FRAN-2012-060 (BEA)

Le BEA recommande que l'EASA s'assure de la modification des Manuels de Maintenance des moteurs Rolls-Royce Dart RDa6, Dart RDa7 et Dart RDa10 pour qu'ils prennent en compte les particularités des opérations sur une seule chambre de combustion lorsque le moteur est monté sur avion, notamment celles relatives aux opérations de la chambre de combustion n° 3.

**Reply**

EASA has verified that Rolls-Royce has revised the Maintenance Manuals of RDa6, Dart RDa7 and Dart RDa10 engines.

**Status:** Closed – **Category**: Agreement

### Safety Recommendation FRAN-2012-061 (BEA)

Le BEA recommande que l'EASA s'assure de la modification des IPC relatifs à chacun des moteurs Rolls-Royce Dart RDa6, Dart RDa7 et Dart RDa10 pour que l'embout rapporté de la «prise 3 voies» du côté des parties froides soit indiqué.

**Reply**

EASA has verified that Rolls-Royce has revised the Illustrated Parts Catalogues (IPC) of RDa6, Dart RDa7 and Dart RDa10 engines.

**Status:** Closed – **Category**: Agreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| F-HAIR | DASSAULT FALCON50 | Aerodrome of Paris Le Bourget (93) | 13/08/2010 | Accident |

**Synopsis of the event:** De jour, l'équipage en provenance de Lyon Bron, effectue un vol sous le contrôle d'un pilote inspecteur de l'OCV. Ce vol est nécessaire à la délivrance par la DGAC d'un CTA au nouvel exploitant. Le copilote est PF. Lors de l'approche pour une finale en piste 27 de l'aérodrome de Paris Le Bourget, à la suite de l'essai qui indique une panne potentielle de l'anti-patinage, l'équipage positionne le sélecteur du système de freinage sur secours comme le demande la procédure. Lors du roulement à l'atterrissage, l'avion se déporte vers la droite. Le copilote corrige au palonnier. La trajectoire de l'avion s'infléchit vers la gauche. Le commandant de bord observe cette déviation et annonce au copilote qu'il prend les freins. Il agit sur le palonnier jusqu'à la butée. L'avion sort latéralement de piste à une vitesse d'environ 60 kt et roule environ 80 mètres sur l'herbe avant de retourner sur la piste et de s'immobiliser.

### Safety Recommendation FRAN-2012-072 (BEA)

The BEA recommends that EASA ensure that operators undertake, during taxiing for check flights, a test to ensure correct lateral braking in both normal and emergency modes.

**Reply**

EASA holds regular Continued Airworthiness reviews with the Type Certificate (TC) holders. In the frame of these discussions, it has been agreed that the TC holder will modify Aircraft Maintenance Manual task 05-50-00-910-801 "Aircraft check flight" to include the lateral braking test in the "taxiing" part.

**Status:** Closed – **Category**: Agreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| F-GLZU | AIRBUS A340 (300) | Paris Charles de Gaulle | 13/03/2012 | Serious incident |

## Synopsis of the event

L'équipage décolle de l'aérodrome de Bamako (Mali) le 12 mars 2012 à 23 h 59 à destination de l'aérodrome de Paris Charles de Gaulle (CDG). A leur arrivée, l'ATIS indique que la procédure de faible visibilité (LVP) est en vigueur. L'équipage se prépare à une approche de précision CAT III. L'avion est stable au FL90 à environ 30 NM du seuil de piste 08R. Le pilote automatique (AP) 1 est engagé en mode HDG et ALT. L'ATHR est engagée en mode SPEED. La vitesse est stable à 250 kt conformément à la demande du contrôleur. L'équipage est en contact avec l'approche de CDG. Il est autorisé à intercepter le localizer 08R. A 4 h 40 min 20, le contrôleur autorise l'équipage à descendre au FL80 et cinq secondes plus tard l'avion, stable au FL90, passe au-dessus du plan de descente de 3°. L'équipage est ensuite autorisé à descendre au FL60. Il sélectionne une altitude de 6 000 ft au FCU et l'AP passe en mode OP DES. L'AP capture le signal localizer 08R (LOC*) puis le mode LOC s'engage. Lorsque l'avion passe 7 220 ft, et qu'il est à 17,5 NM du seuil, soit environ 1 275 ft au-dessus du plan, le contrôleur demande le maintien d'une vitesse supérieure à 200 kt. La vitesse de l'avion est d'environ 250 kt. L'équipage collationne et demande s'il peut poursuivre la descente. Le contrôleur s'excuse de son oubli puis autorise l'équipage à descendre vers 3 000 ft pour intercepter l'ILS 08R. L'équipage sélectionne 220 kt et 3 000 ft. Le mode OP DES reste actif. La vitesse et le taux de descente de l'avion diminuent ce qui a pour conséquence d'augmenter l'écart par rapport au plan de descente. L'équipage sort les aérofreins. Lorsque la vitesse de l'avion atteint la vitesse cible de 220 kt, le taux de descente augmente à nouveau jusqu'à une valeur de - 1 840 ft/min. En mode OP DES, la diminution de la vitesse est prioritaire sur l'acquisition de l'altitude. A cet instant, il y a un vent de face de 10 kt. Le taux de descente pour un plan de descente de 3° à la vitesse de l'avion est d'environ 1 100 ft/min. A 10 NM du seuil de piste et à une altitude de 5 500 ft, le contrôleur d'approche demande à l'équipage de maintenir une vitesse supérieure à 160 kt et de contacter la tour. Il n'informe pas le contrôleur de la tour que l'avion est au-dessus du plan. L'équipage sélectionne une vitesse de 210 kt puis 183 kt et la configuration becs/volets 1. Une nouvelle fois, le taux de descente diminue et l'avion s'écarte du plan de descente à 3°. L'équipage contacte la tour et indique qu'il est à 9 NM. L'avion est à une altitude de 4 950 ft (soit 1 750 ft au-dessus du plan). Le contrôleur autorise initialement l'équipage à poursuivre l'approche. Ce dernier collationne « Autorisé atterrissage 08 droite... ». Le contrôleur indique qu'il vérifie alors que les servitudes CAT III sont dégagées puis confirme l'autorisation d'atterrir. L'équipage sélectionne la configuration becs/volets 2 et rentre les aérofreins. Environ une minute plus tard, il sort à nouveau les aérofreins, arme le mode G/S par appui sur le bouton APPR et engage l'AP 2. La déviation du glide affichée sur le PFD indique à l'équipage qu'il se rapproche d'un plan de descente par le dessus. L'avion est à 4 NM du seuil de piste, à environ 3 700 ft (soit 2 100 ft au-dessus du plan de descente à 3°) et se situe dans un lobe secondaire du signal ILS. Environ 30 secondes plus tard, l'équipage sort le train d'atterrissage. Le mode de capture du plan de descente (G/S*) s'active lorsque l'avion est à 2 NM du seuil de piste et à 2 850 ft (soit environ 1 600 ft au-dessus du plan de descente à 3°). L'ATHR passe en mode SPEED. L'assiette augmente de 1° à 26° en 12 secondes. Le PNF indique qu'il a annoncé l'écart d'assiette à l'apparition des chevrons. Lors de la prise d'assiette, la vitesse passe de 163 kt à 130 kt, la vitesse verticale passe de – 1 600 ft/min à + 3 300 ft/min. Lorsque l'assiette atteint 26°, l'équipage déconnecte les deux AP et le PF applique une action à piquer proche de la butée mécanique. L'assiette et la vitesse verticale diminuent. L'équipage rentre les aérofreins. Les manettes de poussée sont positionnées sur le cran IDLE. La vitesse est de 143 kt et l'ATHR se désengage. Environ 30 secondes plus tard, l'AP 1 est engagé, les manettes sont repositionnées sur le cran CL et l'ATHR est activée. Le PF explique qu'il engage l'AP 1 pour effectuer une remise des gaz en automatique. Les modes LOC et G/S sont actifs et l'ATHR est en mode SPEED. La vitesse est de 147 kt. L'avion est à la verticale du seuil de piste à une altitude d'environ 2 700 ft. L'assiette diminue alors de 2° à - 5° et l'avion descend. Le PF précise qu'il se rend compte que les modes affichés au FMA ne sont pas adaptés. Il désengage alors l'AP 8 secondes

après l'avoir activé puis affiche une assiette d'environ 6° et positionne les manettes de poussée dans le cran TOGA à une altitude d'environ 2 000 ft.

### Safety Recommendation FRAN-2013-005 (BEA)

The Air France procedure relating to intercepting the glide path from above does not define operational limits for its execution (deviation tolerated in relation to the flight path, meteorological conditions and position during the approach procedure). This lack of definition does not give crews adequate criteria to decide whether to continue an approach.

Consequently the BEA recommends that EASA ensure that the national authorities ensure that all operators define explicit operational limits in their documentation providing pilots with assistance in the decision before intercepting the glide path from above. [Recommendation FRAN-2013-005]

**Reply**

In order to raise awareness on the issue the EASA issued a Safety Information Bulletin (SIB 2014-07) on 25 March 2014 titled "Unexpected Autopilot Behaviour on Instrument Landing System (ILS) Approach" wherein a number of recommendations are made to the operators and the Air Navigation Service Providers (ANSP). Furthermore, the EASA will present the issue at the next Air Operations Standardisation meeting and workshop organised for authorities and industry in October 2014.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| F-OIXZ | CESSNA 208 | Anse-Bertrand (971) | 05/09/2010 | Accident |

### Synopsis of the event

Flight FWI 706, departing from Pointe-à-Pitre aerodrome (971) and bound for Saint-Barthélemy aerodrome (971) was undertaken in the framework of a public transport passenger flight. Eleven minutes after takeoff, the pilot stated that the aeroplane was climbing towards 7,000 ft, about 13 NM from the coast when the engine shut down. He broadcast a mayday message and turned back. Near the coast, the pilot noticed that he would not be able to reach the aerodrome and made a forced landing in a field. The aeroplane struck the ground and slid about 35 m before coming to a stop. The pilot and three passengers were slightly injured. The aeroplane was badly damaged. The accident was caused by the non-detection, during engine maintenance operations, of damage resulting from creep on the compressor turbine blades. This damage led to the failure of one or more of these blades then an in-flight engine shutdown.

### Safety Recommendation FRAN-2013-012 (BEA)

The BEA recommends that EASA extend the obligation to carry at least one flight recorder on board any aircraft operated for public transport.

**Reply**

The Agency's rulemaking tasks RMT.0271 and RMT.0272 'In-flight recording for light aircraft' were launched on 25 July 2014 with the publication of the associated Terms of Reference.

This safety recommendation is being considered within the framework of these tasks.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| F-GLPO | CESSNA F152 | Moisselles | 08/01/2012 | Accident |

### Synopsis of the event

The pilot took off at 17h04 for a local flight of about ten minutes from unsurfaced runway 25 of Moiselles aerodrome. Radar data showed that he followed the mandatory route as far as the CTR limit (see figure 1), then turned back and returned by the same route. The pilot was flying at an altitude of about 1,400 ft. He then began to enter the pattern for the right hand downwind leg to runway 25. The last recorded position at 17 h 13 was in crosswind at a height of about 700 ft. The wreckage was found close to this position in a field with no obstacles, about 1 NM west of the aerodrome.

Several witnesses located at various sites explained that they saw the aeroplane, flying straight with wings level, suddenly pitch nose down. They stated that the aeroplane's descent was fast.

### Safety Recommendation FRAN-2013-016 (BEA)

Translation from the Draft Report: EASA inform the European national civil aviation authorities of the potential risks on Cessna 150/152 of a passenger causing a pitch-down input, by inadvertently operating the elevator control system located close to the rudder bars.

**Reply**

EASA has reviewed the case, also in cooperation with FAA who is the primary certification authority for the type, and has identified no specific deficiency in the design of the aircraft control system that can lead to the risk of an inadvertent actuation of the control system. Considering the service history of the aircraft and applicable rules, no action is deemed necessary.

**Status:** Closed – **Category**: Disagreement

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

## Synopsis of the event

The BEA is responsible for investigating all public transport accidents that occur in France. It also participates in investigations conducted into accidents outside France involving aircraft of French design and manufacture, notably Airbus aircraft, as State of Design and Manufacture.

In 2009 and 2010, the BEA thus participated in investigations into the following events:

- the fatal accident to an Airbus A310 on 29 June 2009 at Moroni (Comoros);
- the fatal accident to an Airbus A300 B4 on 13 April 2010 at Monterrey (Mexico);
- the fatal accident to an Airbus A330-200 on 12 May 2010 at Tripoli (Libya).

The first accident occurred during final approach in full thrust configuration and with a high nose-up attitude. The two other accidents occurred during go-around.

Prompted by these three accidents, the BEA decided to launch an overall study into aeroplane state awareness during go around (ASAGA).

The purpose of the study was to:

- determine if the ASAGA issue was uniquely associated with Airbus aircraft;
- list and study the ASAGA-type events that have occurred in public transport over the last 25 years;
- determine and analyse the common factors in these events;
- suggest strategies to prevent their recurrence.

Initially, the BEA searched for ASAGA-type events in the database maintained by the International Civil Aviation Organisation (ICAO), and then in its own internal database. It then broadened its search to include data from American agencies.

## Safety Recommendation FRAN-2013-019 (BEA)

The BEA recommends that EASA study the additional technical and regulatory means required to mitigate the shortcomings of CRM in high workload and/or unusual conditions.

**Reply**

EASA's in consultation with the European Human Factors Advisory Group, have concluded that a dedicated study to review additional technical solutions to address high workload and/or unusual conditions would be of limited value considering that several initiatives in the scientific community are currently working in parallel on this topic. Some of the technical groups that are working on the subject include: the Flight Deck Automation Working Group, European Framework Program, Flight Safety Foundation.

The emphasis for improved crew performance in high workload and unusual conditions should be on improving the operational context, and developing improved Crew Resource Management (CRM) strategies for high workload and unusual conditions. Updates are on-going with respect to CRM training (RMT.0411) to address the issue.

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

### Safety Recommendation FRAN-2013-023 (BEA)

The BEA recommends that EASA review the regulatory requirements for the first CS-25 type rating in order to make mandatory the performance of a go-around with all engines operating.

**Reply**

The Agency replied in a letter dated 27 September 2013 that the existing provisions already require go-arounds to be performed in a full flight simulator (FFS) or an aeroplane. Therefore, no further regulatory action was considered necessary in this respect.

However, following further analysis of the issue, the Agency has decided to review the provisions regarding go-arounds to be performed specifically in an aeroplane. In light of this development, here follows a revised response.

Commission Regulation (EU) No 1178/2011 (Regulation Aircrew) and the associated acceptable means of compliance (AMC) and guidance material (GM) in Executive Director (ED) Decision 2011/016/R contain provisions for the performance of go-arounds with all engines operating. According to B.6. (multi-pilot aeroplanes) section 4 of appendix 9 of Regulation Aircrew, go-arounds shall be performed in a full flight simulator (FFS) or an aeroplane.

Subparagraph 17 of appendix 9 states: When the type rating course has included less than 2 hours flight training on the aircraft, the skill test may be conducted in an FFS and may be completed before the flight training on the aircraft. In that case, a certificate of completion of the type rating course including the flight training on the aircraft shall be forwarded to the competent authority before the new type rating is entered in the applicant's licence.

Furthermore, according to AMC2 ORA.ATO.125 of ED Decision 2012/007/R related to Annex VII of Commission Regulation (EU) No 290/2012 (Organisation Requirements for Aircrew), certain training exercises normally involving take-off and landing in various configurations should be completed in the aeroplane rather than an FFS, with the exception of courses approved for Zero Flight Time Training (ZFTT). Although this could apply to a go-around with all engines operating, it does not explicitly mandate it.

Therefore, this safety recommendation is being considered within the framework of rulemaking tasks RMT.0581 and RMT.0582 'Loss of Control Prevention and Recovery Training', which were launched by the Agency on 20 August 2013 with the publication of the associated Terms of Reference (ToR).

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

### Safety Recommendation FRAN-2013-031 (BEA)

The BEA recommends that EASA, in cooperation with the international certification authorities, introduce certification criteria to make mandatory the study of pilots' visual scan in developing procedures defined by manufacturers.

**Reply**

Certification Specifications CS-25 contains provisions to ensure that the design of the flight deck allows crews to perform their task properly, efficiently and in a timely manner in accordance with the intended function of the installed equipment and systems (CS 25.1301, 25.1302, 25.1321 and 25.777). Moreover, CS 25.1302(d) requires to demonstrate that installed equipment can be used so that design-related human errors that may occur in operation can be managed efficiently.

Human Factors (HF) related issues are taken into account by the Agency and the manufacturers for the certification of operational procedures and different methods can be deemed as acceptable, including the study of pilot's visual scan based on eye-tracking methods, but not limited to this. Other qualitative methods (based on observation of crew behaviour and crew errors) are commonly applied and accepted by the Agency.

It should also be noted that eye tracking devices may create representativeness issues due to the fact that pilots are equipped with intrusive experimental equipment. Furthermore, quantifying the time spent on each display only provides an additional element for the assessment of the procedure.

Therefore it is not deemed required to mandate this kind of method.

**Status:** Closed – **Category**: Disagreement

### 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**

As described in the accident report, the rationale behind this recommendation and FRAN-2013-033 highlights the importance of monitoring by the pilot monitoring (PM) during the go-around and other high workload procedures. The PM can have great difficulty in monitoring all the parameters required by the procedures.

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 can also be mitigated to some degree by teaching the flight crew about the risks associated with dispersion and/or channelized attention during application of procedures requiring high workload in a short time frame. One of the risks is the detrimental effect it could have on the effective monitoring of the primary flight parameters.

Initial training provisions are laid down in Annex I Part-FCL (Flight Crew Licensing) of Commission Regulation (EU) No 1178/2011 (Regulation Aircrew), as amended by Commission Regulation (EU) No 290/2012 which contains rules for Approved Training Organisations (ATOs) in Annex VII Part-ORA (Organisation Requirements Aircrew). The associated acceptable means of compliance (AMC) and guidance material (GM) is published in Executive Director (ED) Decision 2011/016/R and ED Decision 2012/007/R on the Agency's official publication site on the worldwide web.

However, instruction on the risks associated with dispersion and/or channelized attention during high workload procedures, is not explicitly mentioned in these provisions. This is already being considered for go-around procedures by the rulemaking group which is currently reviewing the FCL rules under rulemaking task RMT.0188 which was launched on 20 July 2011.

Recurrent flight crew training on the risks associated with dispersion and/or channelized attention during high workload procedures should be achieved through implementation of the Crew Resource Management (CRM) training by the operator. The related provisions are included in Commission Regulation (EU) No 965/2012 on Air Operations and the associated AMC and GM in ED Decision 2012/017/R on Organisation Requirements. According to ORO.GEN.200 of Annex III, Part-ORO (Organisation Requirements for Operators), it is the responsibility of the operator to evaluate, within the framework of their management system, the risks associated with the operation(s). Risks associated with high flight crew workload procedures should be identified by this process and mitigation should be provided through the operator's CRM training programme. This would be partly achieved by conducting a case study on risks associated with dispersion and/or channelized attention during high workload procedures to the detriment of the primary flight parameters. Table 1 of AMC1 ORO.FC.115&215 in the ED Decision refers to such case studies.

However, the need to explicitly include training on the risks associated with dispersion and/or channelized attention during high workload procedures in the rules will be considered during the Agency's rulemaking task RMT.0599 'Review of ORO.FC' which is on the Agency's rulemaking programme. Cooperation with manufacturers, operators and major non-European aviation authorities will be ensured through the Agency's rulemaking procedure.

**Status:** Open – **Category**:

### Safety Recommendation FRAN-2013-036 (BEA)

The BEA recommends that EASA ensure that national civil aviation authorities check, during inflight and simulator checks, that monitoring of the engagement modes of automated systems by pilots is correctly executed.

**Reply**

The EASA ensures regulations compliance by National Civil Aviation Authorities (NAAs) through its focused standardisation visits which also cover the concern in the safety recommendation. Moreover, a workshop will be coordinated by EASA with NAAs participation, focusing on best practises on monitoring of the engagement modes of automated systems.

**Status:** Open – **Category**:

### Safety Recommendation FRAN-2013-037 (BEA)

The BEA recommends that EASA, in coordination with the major non-European certification authorities, ensure that aircraft manufacturers modify ergonomics so as to simplify the interpretation of FMA modes, and facilitate detection of any changes to them.

**Reply**

Certification Specifications (CS) 25.1302 already addresses this recommendation (see also the related Acceptable Means of Compliance). In addition, EASA carried out a survey on Cockpit Automation Policy aiming at consolidating the Automation Policy developed by the EASA Internal Group on Personnel Training (IGPT) following the EASA International Conference on Pilot Training of November 2009 and the International Conference Staying in Control Loss of Control Prevention and Recovery of October 2011. The Policy addresses flight deck automation of complex aircraft and focuses on control automation.

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

### Safety Recommendation FRAN-2013-038 (BEA)

The BEA recommends that EASA, in coordination with the major non-European certification authorities, ensure that go-around procedures designed by manufacturers and taken up by operators are evaluated in a realistic operational environment.

**Reply**

The operating procedures defined in the Aircraft Flight Manual, which is an approved EASA document, includes procedures peculiar to the particular type in connection with routine operations. Instrument arrangements and visibility are covered by Certification Specifications (CS) 25.1321. All this process, including Go Around (G/A) procedures, are evaluated to ensure that the workload of the crew, in realistic operational environment, will comply with CS25.1302. For new types, this evaluation includes observation of the performance of a sample of pilots who have not been involved in the development process when carrying out the proposed procedures. In addition, if there are difficulties found in service with particular procedures, new evaluations can be made.

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

### Safety Recommendation FRAN-2013-039 (BEA)

The BEA recommends that EASA in coordination with national civil aviation authorities ensure that airlines under its oversight once again insist during training on the best practices for manipulating the FCU/MCP.

**Reply**

The EASA ensures regulations compliance by National Civil Aviation Authorities (NAAs) through its focused standardisation visits which also cover the concern in the Safety Recommendation. Moreover, a workshop will be coordinated by EASA with NAAs participation, focusing on best practises on operating the flight control unit (FCU) and/or the main control panel (MCP).

**Status:** Open – **Category**:

### Safety Recommendation FRAN-2013-040 (BEA)

The BEA recommends that EASA ensure that aircraft manufacturers improve for new aircraft, the design of the FCU/MCP and decrease the time required for its use during a go-around, while evaluating the impact of the time it is used during other phases of flight with high workloads.

**Reply**

Certification Specifications (CS) 25.1302 already addresses this recommendation (see also the related Acceptable Means of Compliance). In addition, EASA carried out a survey on Cockpit Automation Policy aiming at consolidating the Automation Policy developed by the EASA Internal Group on Personnel Training (IGPT) following the EASA International Conference on Pilot Training of November 2009 and the International Conference Staying in Control Loss of Control Prevention and Recovery of October 2011. The Policy addresses flight deck automation of complex aircraft and focuses on control automation.

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

### Safety Recommendation FRAN-2013-041 (BEA)

The BEA recommends that EASA, in cooperation with the national civil aviation authorities, major non-European certification authorities and manufacturers, ensure pilots have practical knowledge of the conduct required during a go-around at low speed with pitch trim in an unusual nose-up position, and that they make a competence assessment.

**Reply**

Flight crew licensing (initial) training provisions are laid down in Annex I (Part-FCL) to Commission Regulation (EU) No 1178/2011 ('The Aircrew Regulation'), as amended by Commission Regulation (EU) No 290/2012 which contains rules for Approved Training Organisations (ATOs) in Annex VII (Part-ORA). The associated acceptable means of compliance (AMC) and guidance material (GM) are published in Executive Director (ED) Decision 2011/016/R and ED Decision 2012/007/R on the Agency's official publication site on the worldwide web.

Training on go-arounds and missed approaches is addressed in the Part-FCL appendices and the AMC for LAPL (Light Aircraft Pilot Licence), PPL (Private Pilot Licence), CPL (Commercial Pilot Licence), MPL (Multi—Crew Pilot Licence), ATPL (Airline Transport Pilot Licence), MCC (Multi-crew Cooperation), IR (Instrument Rating) and type/class rating.

According to AMC2 ORA.ATO.125 in Part-ORA, the type rating courses should, as far as possible, provide for a continual process of ground, flight simulator training device (FSTD) and flight training to enable the student to assimilate the knowledge and skills required to operate a specific aircraft type safely and efficiently. Manufacturers, also referred to in the Safety Recommendation, have a role to play in so far as they should provide appropriate training material for the aeroplane type.

With regard to the recurrent training, Annex III (Part-ORO) to Commission Regulation (EU) No 965/2012 ('The Air Operations Regulations') and the associated ED Decision 2012/017/R contain provisions for operator flight crew training.

The wording 'practical instruction on the conduct required during a go-around at low speed with pitch trim in an unusual nose-up position' implies that this Safety Recommendation aims to provide pilots with the practical knowledge needed to ensure a safe go-around from a low speed state. This is being considered under rulemaking tasks RMT.0581 and RMT.0582 'Loss of Control Prevention and Recovery Training', which was launched by the Agency on 20 August 2013 with the publication of the associated Terms of Reference (ToR). The scope of the ToR includes a review of Part-FCL, Part-ORA and Part-ORO. Consequently, rules for initial and recurrent training instruction, exercises, techniques and assessment of competence relating to this issue are being considered within the framework of these tasks.

Cooperation with manufacturers, operators and non-European aviation authorities will be ensured through the Agency's rulemaking procedure.

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

### Safety Recommendation FRAN-2013-050 (BEA)

The BEA recommends that EASA, without waiting, in coordination with Eurocontrol, take the necessary steps to propagate the safety benefits from the above recommendations.

**Reply**

The Agency issued on 20 March 2014, Safety Information Bulletin (SIB) No 2014-06 which is addressed to Air Navigation Service Providers, Air Traffic Controller Training Organisations, as well as Competent Authorities.

In this SIB, the importance of ATC effective communication to the flight crew as well as the implications of the non-adherence to the published missed approach procedures are analysed and appropriate actions, in line with the other relevant BEA safety recommendations, are recommended.

**Status:** Closed – **Category**: Agreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| F-GZCG | AIRBUS A330 | Cruising at FL360 over Tanzania | 27/02/2012 | Serious incident |

### Synopsis of the event

The crew took off from Antananarivo airport (Madagascar) at 22 h 45 bound for Paris Charles de Gaulle. At 23 h 10, they received an ACARS message describing the 22 h 30 satellite images. They concluded from this message that they would encounter highly convective zones up to parallel 12°30'S, and that these zones would be more isolated up to the DV point and, after this point, that they would not encounter any turbulence until parallel 2°30'S. Several avoidance manoeuvres were performed when crossing highly convective zones.

Ten minutes after passing parallel 12°30 'S, the PF changed the range of his ND from 40 NM to 160 NM: the ranges of the 2 NDs were then setto 160 NM. The crew indicated that the sky was clear with stars visible. They stated that they selected a -1.5° tilt on the weather radar and regularly changed this setting as well as the gain 2 setting

in order to monitor the cells. While the aeroplane was cruising at FL360, the Dar es Salaam controller asked the crew twice to climb to FL380. The crew refused in order to maintain a sufficient margin in relation to the recommended maximum flight level (REC MAX). Autopilot and autothrust were connected. The flight directors were displayed. ALT and NAV modes were active and autothrust was in SPEED mode. Approximately 6 minutes after the DV point, the Mach was 0.81 and began to increase. The PF changed the range of the ND from 160 NM to 80 NMand said he selected a -1.5° tilt. He saw a flash and then a cloud on the right side of the aeroplane. He did not see any return on the weather radar screen.

The Mach reached 0.83. The crew selected Mach 0.8 and then 0.78 and extended the speedbrakes for about 15 seconds. The Mach went down 0.79 and then went back up to about 0.82. After that the crew saw a flash ahead and then encountered severe turbulence. The PNF indicated he was turning the seat-belt signs on requiring the passengers to fasten their seatbelts. In the turbulence, the angle of attack increased until it led to autopilot disconnection. The PF called out “AP OFF” and took over the controls. While passing through the convective zone, the aircraft climbed despite the PF’s mainly nose-down inputs. The autopilot was re-engaged but disconnected automatically. The autothrust disconnected automatically. The PNF, seeing that the PF was very-busy maintaining the flight path, decided to disconnect autothrust and selected an N1value of 90%. He was not aware that the autothrust was already disconnected.

The crew managed to stabilize the aeroplane at FL380, the maximum level reached during the turbulence and began to descend 10 s later. ThePF re-engaged the autopilot and the rest of the flight was uneventful. During the severe turbulence, which lasted about 40 seconds:

- the pitch attitude varied between -6° and +11°,
- the Mach varied between 0.77 and 0.83,
- the angle of attack was between -0.7 ° and +10.2 °,
- the roll angle was between -16° and +31°,
- the vertical speed reached a maximum value of about +8,500 ft/min,
- the vertical load factor was between +0.02 g and +2.28 g,
- the lateral load factor was between -0.16 g and +0.17 g,
- the flight director cross bars disappeared and reappeared several times,
- the PF mainly applied nose-down inputs (especiallyfor 10 consecutive seconds after the autopilot disconnection).

The manufacturer reports that the aeroplane remained within its flight envelope for the duration of the entire event.

### Safety Recommendation FRAN-2013-055 (BEA)

This incident showed that the installation of a technologically more advanced type of radar would probably have helped the crew detect the convective cell, without exempting them of a continuous monitoring of the weather situation.

Consequently, the BEA recommends that EASA, in association with national authorities, conducts studies prior to the potential deployment of latest generation equipment for detection of convective cells to the entire operators’ fleets.

**Reply**

EASA has carefully reviewed the research need, and determined that due to the numerous existing initiatives in the field of convective cell detection for aviation (e.g. FP7 project HAIC 2012-2016, Swiss ground networks, FP7 project FLYSAFE 2005-2009, etc.) a dedicated study on the topic was not warranted.

After an analysis of the safety topic, it has been determined that aviation technologies are sufficiently evolving so that flight crews are provided timely and relevant information. These technological advancements are evidenced in (research programmes, pilot projects, equipment manufacturer development). Due to these on-going initiatives, EASA does not endorse conducting further studies to compare newer vs. older generations of aircraft equipment.

**Status:** Closed – **Category**: Disagreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| HB-JZQ<br>F-GRHA | AIRBUS A319<br>AIRBUS A319 | Near Bâle-Mulhouse airport | 29/06/2010 | Serious incident |

### Synopsis of the event

The crew of the AF7343 flight takes off from Runway 15 of Basel-Mulhouse airport to Paris Orly. Soon after, they are is cleared to climb to FL110 by the approach ATC controller. About a minute later, the controller clears flight DS1058 approach to runway 15 from Palma, to descend to the same level. A traffic advisory is triggered onboard both aeroplanes followed by a succession of resolution advisories (TCAS RA) including reversal orders. During these maneuvers, the vertical load factor recorded on the flight DS1058 varies between - 0.19 g and 2.04 g. A member of the cabin crew is slightly injured. This loss of separation was a serious incident. The survey showed it resulted from a slip of a controller trainee who assigned the same flight level to two aeroplanes, one climbing and descending, without the Instructor controller detecting the error.

### Safety Recommendation FRAN-2013-061 (BEA)

The BEA recommends that EASA study setting a standard for aeroplanes' smooth vertical flight paths when approaching a level selected by the crew.

**Reply**

Certification Specifications for Large Aeroplanes (CS-25) already contains some provisions for the certification of Flight Guidance System aiming at ensuring a smooth capture of the selected altitude when using an altitude capture mode.

These provisions can be found in AMC N°1 to 25.1329 (FGS), paragraph 11.2.6 "Altitude Capture Mode" (introduced at CS-25 amendment 4 dated 27/12/2007).

In practice, this will be evaluated during the performance testing of the Flight Guidance System for certification.

Furthermore, in order to take into account the selected altitude in presence of converging or conflicting traffic, a link can be made with the Airborne Collision Avoidance System (ACAS). The future version of the current ACAS international standards (i.e. EUROCAE ED-143/RTCA DO-185) is being prepared and it will include a TCAS alert prevention functionality that will use the transmission of the selected level-off altitudes to the ACAS in view of avoiding nuisance Traffic Advisories (TA) and Resolution Advisories (RA). When traffic is confirmed in the nearby vicinity, the ACAS will be able to provide FGS inputs to limit the climb/descent rate and therefore reduce or eliminate undesired RAs.

The Agency believes that the existing CS-25 provisions for FGS and the on-going ACAS standards revision action fulfils the intent of this Safety Recommendation.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| CDG STUDY | | Paris Charles de Gaulle Airport | #Missing# | |

### Synopsis of the event

Due to the frequency of reporting of losses of separation, sometimes serious, observed in the approach areas of Paris Charles de Gaulle and Paris Le Bourget airports, the BEA conducted a preliminary study on the issue. It showed that the most common incidents occurred during approaches facing West between the south parallel runways of Paris Charles de Gaulle and the active runway at Paris Le Bourget, and between the two sets of parallel runways at Paris Charles de Gaulle. For this reason, the BEA decided to conduct a study on the risk of collision during triple approaches (facing west). This study was conducted in cooperation with the DSNA and was limited to the above-mentioned incidents; it focused on losses of separation, considered among the most significant, that occurred between 1 July 2010 and 15 July 2011. Twelve of these occurrences have been used to identify contributing factors in this type of event. This report presents the results and analyses from this study

### Safety Recommendation FRAN-2013-066 (BEA)

The BEA recommends that EASA, in coordination with national authorities, undertake studies on the implementation of a systematic analysis of radar data for ANSP's.

**Reply**

The systematic collection and analysis of safety data itself by Air Navigation Service Providers is promoted with Annex I Section 2 of the new Commission Implementing Regulation (EU) No 390/2013 "laying down a performance scheme for air navigation services and network functions", which establishes Safety Key Performance Indicators (in Chapter 1.1) and the related Performance Indicators (in Chapter 1.2). In particular, Chapter 1.2 addresses 'the use of automated safety data recording systems, where available, which shall include, as a minimum, monitoring of separation minima infringements and runway incursions'.

Moreover, the Agency is at the moment conducting a Rulemaking Task (RMT 0408) leading to the implementation of a set of Acceptable Means of Compliance and Guidance Material to this Regulation. In particular, draft 'AMC 2 SKPI - Measurement of Effectiveness of Safety Management KPI - State level', Component 3, Element 3.2 'Safety data collection, analysis and exchange' requires the establishment of mechanisms to ensure the capture and storage of data on hazards and safety risks and analysis of that data at ANSP and State level as well as its dissemination and exchange. The Agency published the related Notice of Proposed Amendment 2013-14 on 25 July 2013.

These provisions are developed under a rulemaking activity which is performed in accordance with EASA rulemaking procedures, thus ensuring the involvement of the relevant stakeholders' representatives.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| F-GRZE | BOMBARDIER CL600 2C10 | Lorient Lann Bihoue | 16/10/2012 | Accident |

### Synopsis of the event

The crew was cleared for an ILS RWY 25 approach. During the descent, the controller informed them of a wind from 160° at 17 kt with gusts up to 26 kt and a lasting, severe squall. Visibility was reduced to between 2,000 and 3,000 meters and the runway was wet with water puddles. The controller said that the previous aircraft had encountered difficulties during landing due to “aquaplaning”.

The crew made the approach in the flaps 30° configu ration due to suspected wind shear. The ILS 25 approach was stable at 1,000 ft. The autopilot was disengaged at around 500 feet.

The aeroplane’s main landing gear touched the runway about 1,100 m from its end.

The aeroplane overran the runway, its left wing striking the localizer antennae, before coming to rest in a grass field about 200 m from the threshold of runway 07.

The emergency evacuation order was given. The 53 passengers evacuated through the left front door and the over-wing exits.

The investigation showed that the accident was due to the crew’s decision to continue the landing when they did not know about the runway contamination and were unaware of the remaining length of runway available.

### Safety Recommendation FRAN-2013-070 (BEA)

The BEA recommends that EASA study, for aerodromes used by commercial civil aviation, the mandatory installation of additional ground facilities to improve night flight support systems for pilots on runways approved for Cat I precision approaches. [Recommendation FRAN-2013-070]

**Reply**

ICAO Annex 14 (6th edition, July 2013), paragraph 5.3.12.2 recommends the installation of runway centre line lights on a precision approach runway Category I. This provision has been included as GM ADR-DSN.M.690 into the draft Agency Book 1&2, Certification Specifications for aerodrome design.

The Agency will study the need and possibility to develop a Certification Specification based on the above ICAO recommended practice. In doing so, the Agency will consult its Advisory bodies (Thematic Advisory Group Aerodromes -TAG ADR - and sub Safety Standards Consultative Committee Aerodromes - SSCC ADR) and EU experts, and will further discuss the issue at the ICAO Visual Aids Working Group.

**Status:** Open – **Category**:

### Safety Recommendation FRAN-2013-073 (BEA)

The BEA recommends that EASA integrate TEM into RTC (recurrent training and checks) and into operational procedures by holders of an AOC. [Recommendation FRAN-2013-073]

**Reply**

In the Aircrew Regulation (Commission Regulation (EU) No 1178/2011) the term TEM (Threat and Error Management) is commonly used, while in the Air Operations Regulation (Commission Regulation (EU) No 965/2012) the term CRM (Crew Resource Management) is employed.

The explanation is that, on the one hand, the Aircrew Regulation mainly deals with pilot skills needed to identify and manage threats and errors. On the other hand, in the Air Operations Regulation, the emphasis is on the training of CRM behaviours as an important tool to deal with threats and errors.

The recurrent CRM training by operators is addressed under ORO.FC.230(e) in the Air Operations Regulation and the associated AMC1 ORO.FC.230 in ED Decision 2012/017/R. This includes the TEM elements referred to in the Air Crew Regulation.

Therefore, as the existing rules on recurrent training by operators already cover the TEM concept the Agency does not intend to take any further rulemaking action.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| G-LCYJ | EMBRAER<br>ERJ190 | Aérodrome de Chambéry Aix-les-bains | 21/01/2012 | Incident |

### Synopsis of the event

Ground handler injured by jet blast. The engines were still running even if the crew had switched off the anti-collision lights.

### Safety Recommendation FRAN-2013-083 (BEA)

Le BEA recommande que la DGAC et l'AESA s'assurent que les procédures d'arrivée au parking des exploitants et des sociétés d'assistance au sol garantissent que les agents au sol n'interviennent autour de l'avion que lorsque les moteurs sont effectivement arrêtés.

**Reply**

This is being considered within RMT.0485 and 0465 'Requirements for apron management services for aerodromes' for which the Terms of Reference were published on 20 July 2012. The Agency is preparing an NPA which will include paragraph (c) of "AMC1 ADR.OPS.D.60(a) Aircraft parking", addressing the issue of safe operations during aircraft parking.

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

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

### Synopsis of the event

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

In 2005, the BEA had recommended to the European Aviation Safety Agency (EASA) that Thielert TAE 125-01 engine certification be reviewed. This recommendation gave rise to several actions by EASA and Thielert in the areas of maintenance, operational documentation and training maintenance personnel and in relation to the design of one part.

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 received bears witness to the operators' specific concern about these engines. Several training organisations decided in particular to apply usage restrictions (no night flights or IFR in IMC in single-engine aircraft, no solo flights in 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 if safety recommendations were required.

### Safety Recommendation FRAN-2013-084 (BEA)

Le BEA recommande que l'AESA, en collaboration avec la FAA, adopte une définition de l'arrêt moteur pour les aéronefs certifiés selon le CS-23.

**Reply**

EASA rulemaking task RMT.0498 on the 'Reorganisation of Part 23 and CS-23' started with the publication of its Terms of Reference on 31 October 2013. One of the objectives of the task is to reorganise CS-23 in order to establish a single set of Certification Specifications for Aeroplanes in the range from CS-VLA up to CS-23, that:

- contain requirements based on proportionate performance, complexity, and type of operation;
- make Certification Specifications for Light Aeroplanes less susceptible to changes as a result of technological developments or new compliance-showing methods by defining design-independent safety objectives;
- are complemented by acceptable consensus standards (developed by ASTM F44 Committee) that contain the detailed technical requirements to meet the safety objectives set by the certification specifications.

This safety recommendation will be discussed within the EASA RMT.0498 Drafting group in charge of developing the new objective rules, in which FAA is represented.

Then, if necessary, means of compliance may have to be developed by the ASTM F44 committee.

An update will be provided based on the discussion held and the conclusions thereof.

**Status:** Open – **Category**:

### Safety Recommendation FRAN-2013-085 (BEA)

Le BEA recommande que l'AESA définisse les fréquences acceptables de survenue des diminutions de puissance, notamment celles ne permettant pas de maintenir le vol en palier, afin d'en établir une classification adaptée aux conditions d'exploitation.

**Reply**

EASA rulemaking task RMT.0498 on the 'Reorganisation of Part 23 and CS-23' started with the publication of its Terms of Reference on 31 October 2013. One of the objectives of the task is to reorganise CS-23 in order to establish a single set of Certification Specifications for Aeroplanes in the range from CS-VLA up to CS-23, that:

- contain requirements based on proportionate performance, complexity, and type of operation;
- make Certification Specifications for Light Aeroplanes less susceptible to changes as a result of technological developments or new compliance-showing methods by defining design-independent safety objectives;
- are complemented by acceptable consensus standards (developed by ASTM F44 Committee) that contain the detailed technical requirements to meet the safety objectives set by the certification specifications.

This safety recommendation will be discussed within the EASA RMT.0498 Drafting group in charge of developing the new objective rules, in which FAA is represented.

Then, if necessary, means of compliance may have to be developed by the ASTM F44 committee.

An update will be provided based on the discussion held and conclusions.

**Status:** Open – **Category**:

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| F-HEPE | AIRBUS<br>A320 | Tel-Aviv Ben Gurion Airport | 03/04/2012 | Serious incident |

### Synopsis of the event

The crew was performing a flight between Paris Charles de Gaulle and Tel-Aviv Ben Gurion airports. The meteorological conditions on arrival were CAVOK.

At 12 h 49, Tel-Aviv ATC cleared the crew to make an approach to runway 26 via KEREN point (see chart below), according to the RNAV VISUAL procedure.

At about 10 NM from DOVER point, the controller requested that the crew reduce speed to minimum manoeuvring speed in clean configuration. The aeroplane was stable at 4,000 ft.

The autopilot, auto-thrust and flight directors (AP, A/THR and FD) were engaged. The speed selected was 210 kt. ATC asked the crew to reduce speed to below 180 kt from DOVER point.

Shortly before this point, the crew displayed an altitude of 3 000 ft on its flight control unit (FCU). The descent was then carried out in DES/NAV mode.

At 12 h 53 min 56 s, the aeroplane flew past KEREN point at a speed of 180 kt, and at an altitude of 3,280 ft2. The PF indicated having the feeling of being “too high, too fast”: she did not share her doubts with the PNF who did not notice any particular difficulty. The aeroplane captured the 3,000 ft altitude.

At 12 h 54 min 30 s, from the middle of the downwind leg, the crew selected an altitude of 1,000 ft 3 and changed from DES to OPEN DESCENT vertical mode. Engine thrust decreased to idle. Ten seconds later, the crew engaged “managed speed” and then extended the landing gear and changed to configuration 3. Several seconds later, they changed to FULL configuration which led to a decrease in speed towards approach speed Vapp, which is 138 kt.

At 12 h 56 min 05 s, before the last turn, at 1,540 ft, the autopilot was disconnected manually; the A/THR and FD remained engaged. The PNF specified that he was focused on capturing the approach path and with the external monitoring of an aeroplane preceding them on final.

At 12 h 56 min 10 s, during the last turn with a bank of about 20°, the PF made a pitch-up input for about 10 seconds4. The recorded parameters indicated that during this phase the FD command bars gave a pitch-down order to maintain the target speed with the engines on idle. Pitch attitude increased from 0.7° à 10°, the angle of attack from 5.5° to 10.9° and the

The crew indicated having heard the “SPEED, SPEED, SPEED” aural warning during the turn. The PF then carried out a go-around without calling it out to the PNF. For two seconds, the PNF gave a pitch down order contradicting the PF’s inputs5, without pressing the “instinctive disconnect” stick switch. He indicated that he still had in mind to continue the approach.

Positioning the thrust levers on the TOGA detent disengaged the A/THR automatically. Two seconds later, the ALPHA FLOOR mode engaged, followed by the TOGA LOCK mode.

The crew selected configuration 3 and an altitude of 3,000 ft6. The speed was increasing.

The PF pulled back the throttle levers to CLIMB, without any effect on thrust: TOGA LOCK mode was still engaged but the crew had not identified it. The PNF mentioned that the PF had experienced difficulties in reducing thrust.

Approaching 2,000 ft, the crew selected an altitude of 2,000 ft, re-engaged the autopilot, retracted the landing gear and selected configuration 1. The crew then selected a speed of 188 kt. The speed was then 208 kt and continued to increase. As a result of its inertia, the aeroplane reached a maximum altitude of 2,500 ft.

Speed reached 223 kt. The VFE in configuration 1 was 215 kt. The crew heard the overspeed warning. The PF moved the thrust levers to IDLE, which disengaged the A/THR and the TOGA LOCK mode.

The crew reengaged the A/THR, carried out a second approach and landed without difficulty.

### Safety Recommendation FRAN-2013-086 (BEA)

The BEA recommends that EASA, in partnership with national civil aviation authorities, ensure that training and recurrent training programmes include instruction on the risks associated with the use of OPEN DESCENT mode on approach.

**Reply**

The current set of EU civil aviation safety regulations provides the framework for teaching and assessing basic airmanship skills through initial training, skill tests, proficiency checks, type training, line flying under supervision (LIFUS) and line oriented flight training (LOFT). This framework already addresses the required knowledge and skills with regard to managing flight modes, and should therefore ensure that any weaknesses related to the issue described in the safety recommendation are identified and corrected.

For type specific training areas of special emphasis, the Operational Suitability Data (OSD) process, in accordance with Commission Regulation (EU) No 748/2012 on initial airworthiness, as last amended, requires Approved Training Organisations (ATOs) to adapt their training programmes to include changes to training areas of special emphasis based on, among other items, incidents and accidents. The Agency's system, established to analyse relevant safety information received, will ensure that the relevant OSD is reviewed in light of this safety recommendation (Refer to ARO.GEN.135(b) in Annex II Part-ARO (Authority Requirements for Operators) in Commission Regulation (EU) No 965/2012 on air operations, as last amended).

Management system provisions for operators, including, among other elements, safety risk management requirements, are contained in Annex III Part-ORO (Organisation Requirements for Operators) of the air operations regulation (Refer to paragraph ORO.GEN.200). For ATOs, the management system provisions are contained in Annex VII Part-ORA (Organisation Requirements for Aircrew) in Commission Regulation (EU) No 1178/2011 (Aircrew Regulation), as last amended (Refer to paragraph ORA.GEN.200).

In addition, ORO.GEN.160(b) and ORA.GEN.160(b) in the above-mentioned regulations require operators and ATOs, respectively, to report to the competent authority and to the organisation responsible for the design of the aircraft any inaccurate, incomplete or ambiguous information contained in the OSD. This ensures that specific issues related to OSD and type rating are consistently addressed, including the involvement of the national civil aviation authorities (either the competent authority responsible for ensuring oversight of the ATOs or the competent authority responsible for ensuring oversight of the design).

These provisions ensure that any operational risks, including those addressed in the OSD are duly considered for determination of initial and recurrent training needs.

In addition, the inclusion of changes to the OSD calling for a modification of already approved training programmes is mandated through ORO.GEN.155, in the case of operator recurrent training, and ORA.GEN.155, in the case of ATOs initial training. Collaboration with the national civil aviation authorities is assured through ARO.GEN.135 and ARA.GEN.135.

The Agency has also published, on 10 June 2014, Safety Information Bulletin (SIB) No 2014-17 'Aeroplane Mode Awareness During Final Approach' to remind operators and training organisations to include training on the risks associated with the use of OPEN DESCENT mode.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| F-GTAN | AIRBUS A321 | Paris Charles de Gaulle Airport | 20/07/2012 | Incident |

### Synopsis of the event

Triggering of high angle of attack protection on Approach.

### Safety Recommendation FRAN-2014-001 (BEA)

The BEA recommends that EASA, in coordination with the other certification authorities, in particular the FAA, develop specifications aimed at making mandatory the systems intended to warn and protect crews from low speed situations in every phase of flight and aeroplane configuration.

**Reply**

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 an ARAC (ASHWG) report to the FAA, 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. The Agency continues to monitor in-service aeroplanes in close coordination with FAA and, should new elements become available in the future, this position may be re-considered by the Agency.

Note also that FAA published in January 2014 Policy Statement PS-ANM-16 entitled "Low Speed Alerting and/or Protection" providing guidance and explanations on existing regulatory and guidance material.

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

### Safety Recommendation FRAN-2014-002 (BEA)

The BEA recommends that EASA reinforce initial and recurrent training programmes in "low speed" flying situations by improving:

- monitoring of primary flight parameters;
- identification and understanding of high angle of attack protection, in particular in a mixed flying situation (AP ON A/THR OFF).

**Reply**

Low speed training exercises are covered under Annex I (Part-FCL) of Commission Regulation (EU) No 1178/2011 (aircrew regulation), as follows:

- CPL (commercial pilot licence) training – Appendix 4, skill test form section 2(b) 'Flight at critically low airspeed including recognition of and recovery from incipient and full stalls'.
- Type rating training - Appendix 9: Training, skill test, proficiency check for multi-pilot aeroplanes, item 3.8 'Early recognition and counter measures on approach to stall (up to activation of stall warning device) in take-off configuration, in cruising flight configuration and in landing configuration'.

Under Annex III (Part-ORO) of Commission Regulation (EU) No 965/2012 (air operations regulation), this recommendation is addressed through recurrent training programs (refer ORO.FC) in combination with management systems (refer ORO.GEN). The associated acceptable means of compliance and guidance material is published in ED Decision 2012/017/R.

However, as the scope of the terms of reference for rulemaking tasks RMT.0581 and RMT.0582 on 'Loss of control prevention and recovery training' already includes similar safety recommendations, this safety recommendation is also being addressed within the framework of these tasks, which were launched on 20 August 2013. It should be noted that the mentioned 'identification and understanding of high angle of attack protection' are considered to be more type specific and are therefore also expected to be addressed through the operational suitability data (OSD) process. During aircraft type certification, the OSD process will establish data on training areas of special emphasis for the type. Such data is to be used by training organisations and operators when establishing the specific training syllabus for the type.

In addition, EASA safety information bulletin SIB 2013-02 on 'Stall and Stick Pusher Training', published on 22 January 2013, provides further guidance on low speed training exercises.

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

### Safety Recommendation FRAN-2014-003 (BEA)

EASA, in coordination with the manufacturer, reconsider the operational logic or display on the flight director so that it disappears or displays relevant orders when the autopilot disengages inadvertently. [Recommendation FRAN-2014-003]

**Reply**

EASA has launched a review of flight director re-display and reconnection logic.

As a result, A320 and A330/340 will be modified. The Flight Director (FD) will be disconnected in case of stall warning.

Retrofit policy is under discussion.

**Status:** Open – **Category**:

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| F-GSPK | BOEING 777 | Cruise-Atlantic | 08/12/2010 | Serious incident |

### Synopsis of the event

The crew took off from Atlanta Hartsfield on a flight bound for Paris-CDG airport with 219 passengers on board. In cruise at FL 380, the cabin crew noticed a smell typical of an electrical fire at the level of seat 4F in Business Class. They cut off electrical power to the general video system, removed the seat covering and noticed the presence of flames. The cabin crew member explained that he had extinguished the fire by reflex by throwing water onto the flames.

The flight continued without further incident and a cabin crew member checked that the fire did not start again.

### Safety Recommendation FRAN-2014-004 (BEA)

EASA evaluate the risks associated with fires to batteries contained in mobile electronic devices transported in cabins by passengers and crew, and propose appropriate procedures in case of a fire on this type of equipment. [Recommendation FRAN-2014-004]

**Reply**

The initial Executive Director (ED) Decisions related to Commission Regulation (EU) No 965/2012 on air operations, already contained Guidance Material (GM) for handling fires caused by Portable Electronic Devices (PEDs) in the aircraft cabin. This material is applicable to Commercial Air Transport (CAT) operations, Non-Commercial operations with Complex motor-powered aircraft (NCC), Non-Commercial operations with Other-than complex motor-powered aircraft (NCO) and Specialised Operations (SPO).

However, in support of this safety recommendation, the Agency has reviewed the GM within the framework of rulemaking task RMT.0637 'Portable Electronic Devices II'.

The results of this rulemaking task are contained in ED Decisions 2014/029/R (Part-CAT), 2014/030/R (Part-NCC), 2014/031/R (Part-NCO) and 2014/032/R (Part-SPO), which were published on 26 September 2014.

The GM contains a reference to International Civil Aviation Organisation (ICAO) Doc 9481-AN/928 'Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods'.

The 2015-2016 edition of ICAO Doc 9481 provides, in sections 3.3 and 3.4, detailed cabin crew checklists for handling PED fires in the aircraft cabin.

With this action completed, the Agency considers that the operators now have access to all the necessary material to be able to establish comprehensive procedures, tailored to their operation, to mitigate the risks associated with fires to batteries contained in PEDs transported in cabins by passengers and crew.

**Status:** Closed – **Category**: 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

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 get out of 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.

### 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**

It is understood that this Safety Recommendation addresses non-commercial operations with complex motor-powered aircraft (NCC operations).

Within the planned rulemaking task RMT.0599 'Review of ORO.FC' (Organisation requirements for operations – flight crew), the Agency will, among other items, develop acceptable means of compliance (AMC) and possibly guidance material (GM) for the recurrent training of flight crew for NCC operations and specialised operations (SPO). Within this RMT, the Agency will also address this Safety Recommendation.

Nevertheless, it should also be noted that a number of provisions in Commission Regulation (EU) No 965/2012 on air operations, as amended, which are applicable to NCC operations, already address, directly or indirectly, the hazard of contaminants such as ice.

In accordance with NCC.OP.185, the operator shall provide ground procedures for the de-icing/anti-icing of the aircraft. Furthermore, this rule mandates that the pilot-in-command shall only commence take-off if the aircraft is clear of any deposit that might adversely affect the performance or controllability of the aircraft, except as permitted under the procedures provided by the operator and in accordance with the aircraft flight manual (AFM).

Moreover, ORO.FC.130 requires annual recurrent flight and ground training relevant to the type or variant of aircraft operated, including training on the location and use of all emergency and safety equipment carried. This implementing rule requires that de-icing/anti-icing needs also to be covered during the recurrent training.

**Status:** Open – **Category**:

### Safety Recommendation FRAN-2014-006 (BEA)

The BEA recommends that EASA, in coordination with the FAA and the other non-European civil aviation authorities, study the technical and regulatory means to put in place in order to install systems for the detection of frozen contaminants on the critical surfaces of aircraft.

**Reply**

Under the EASA regulatory system, the commander is responsible to ensure that the aircraft is clear of any contamination deposits that might adversely affect its performance or controllability. The Aeroplane Flight Manual must be used to determine the conditions under which any ice contamination could eventually be acceptable.

To address the sensitivity of some aeroplane designs to slight ground ice contamination which may be difficult to detect, the Agency provisioned rulemaking task RMT.0118 in the Rulemaking Program (RMP) 2014-2017. The objective is to amend CS-25 to require applicants to perform an assessment of the effect of on-ground contamination of aircraft aerodynamic surfaces on take-off performance and on aircraft manoeuvrability and controllability.

The applicant would have to demonstrate that prior to take-off, the aircraft aerodynamic surfaces cannot accumulate undetectable hazardous quantities of ice contamination. If hazardous undetected quantity of contamination may accumulate prior to take off, then the applicant would have to provide a means of protection against this hazard. Consideration of retroactive requirements for the most vulnerable aircraft has been recommended for this task (to be studied).

In any case, the installation of an on-board system for automatic detection of frozen contaminants would not eliminate the need for the pilot to assess the aerodynamic surfaces against the potential presence of any ice contamination. For cases where ice contamination is fairly visible, the Agency considers that such system would not introduce any additional safety barrier.

**Status:** Closed – **Category**: Disagreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| F-HDJH | CAMERON (Z750) | Feings (41) | 19/08/2012 | Accident |

### Synopsis of the event

The pilot planned a flight of about one hour with 32 passengers and an additional crew member. He explains that before takeoff, he felt the wind at about 10 knots from the west. He added that the safety instructions at landing were shown to passengers before the flight by a demonstrator.

After 50 minutes of flight, the pilot was seeking for a landing field and asked the additional crew member to repeat the safety instructions. The pilot estimated that the wind speed is about 8 kt. During the approach, he discerns that the vertical speed increased. Moments before touching the ground, he asked the passengers to take the landing position. At about two meters above the ground, it prevents passengers that a firm impact is imminent. He uses the rapid deflation system (RDS) in order to deflate the envelope and land.

Upon landing, the basket hits the ground once and then drags forward. It bounces and hits the ground again. Driven by the balloon, the basket drags on the ground for 25 meters.

One passenger was ejected and hit by the basket. It bounces once more before stopping 70 meters after the first contact with the ground.

### Safety Recommendation FRAN-2014-008 (BEA)

EASA to ensure that the risks identified in the SIB No. 2012-13 are duly taken into account in the future rules on air operations applicable to commercial balloon flights.

**Reply**

Commission Regulation (EU) No 379/204, amending Commission Regulation (EU) No 965/2012 on air operations, was published on 24 April 2014. It includes provisions for commercial air transport operations with balloons.

EASA Safety Information Bulletin No. 2012-13 on improved protection of balloon basket occupants during firm landings contains recommendations regarding passenger briefings and the wearing of suitable clothing and footwear. These recommendations have been taken into account in the amending Regulation.

Subparagraph CAT.OP.NMPA.120 requires the operator to ensure that passengers are given a safety briefing before or, where appropriate, during the flight.

Associated acceptable means of compliance are provided in ED (Executive Director) Decision 2014/015/R. According to AMC2 CAT.OP.NMPA.120 (b), the briefing/demonstration should contain, among other things, use of landing hand-holds, wearing of suitable clothing and landing positions to be assumed to minimise the effect of the impact upon an emergency landing.

The Agency therefore considers that the required action has been undertaken and that no further action is necessary.

**Status:** Closed – **Category**: Agreement

# Germany

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| | BAE<br>BAE146 | Initial climb after Frankfurt departure, Germany | 12/03/2005 | Serious incident |

## Synopsis of the event

On 12 March 2005 a SAe 146-300 experienced a slow pitch oscillation with increasing amplitude during climb from flight level (FL) 80 to FL100 with engaged autopilot. The airplane was on a cargo flight from Frankfurt to Stuttgart. Since the checklist for abnormal situations and emergencies did not contain a solution to the problem an immediate landing was intended. The flight was continued to Stuttgart because of the better weather situation. Until touchdown, the airplane was only controllable by means of the manual elevator trim.

The airplane was examined immediately after the landing and significant amounts of frozen and swollen up de-icing fluid residues were found in the gap between elevator and horizontal stabilizer and in the area of ailerons and rudder. The ice blocked the movement of the control surfaces. On 8 March 2005 the airplane had last been cleared of de-icing fluid residues. After that cleaning procedure the airplane had been de-iced three times with thickened de-icing fluids.

## Safety Recommendation GERF-2006-009 (BFU)

Aircraft de-icing to maintain the airworthiness of aircraft during winter operation should be accomplished by certified and approved companies under the supervision of civil aviation authorities. If aircraft de-icing is not accomplished by an operator or an approved maintenance organisation the ground service “aircraft de-icing” should be subject to appropriate aeronautical regulation. EASA should agree with the European National Authorities on establishing such regulations.

**Reply**

EASA is not in a position to regulate (eg. mandate certification) de-icing service providers directly, as ground handling services are outside the scope of Regulation (EC) No 216/2008 (The Basic Regulation).

However, to assess the areas where other actions, within EASA’s legal remit, could be taken in order to maximize the safety of operations related to ground de/anti-icing, EASA initiated a research project and the report was published in 2011 (EASA.2009/4 Regulation of ground de-icing and anti-icing services in the EASA Member States). As a follow-up, EASA organised a Ground De-icing Workshop which took place in 2012. In addition, a Safety Conference on de-icing and anti-icing issues (Icing conditions on ground and in flight) took place in Cologne on 15-16 October 2013 to promote awareness on the subject. The documentation related to the above mentioned study, workshop and conference are published on the EASA website.

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

# Hungary

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| HA-ECE | EUROCOPTER EC135 | Kiskunlacháza | 31/07/2008 | Accident |

## Synopsis of the event

The Air Ambulance helicopter (registration HA-ECE, call sign MEDIC-14) flew a patient transportation mission on 31 July 2008 from Paks to Budapest. The helicopter's mark disappeared from the radar screen at 13:43. Its last indicated position was 2.2 kms from Kiskunlacháza at 197°. The pilot of the helicopter could not be reached either by radio or cell phone afterwards. Minutes later, several passenger planes in the Ráckeve-Kiskunlacháza area reported to HungaroControl that they were receiving signals from an emergency locator transmitter. About the same time, the flight physician called the central dispatch of OMSZ with his cell phone, reported about the crash and requested urgent medical help. Another air ambulance helicopter, MEDIC-17 was the first one to find the crashed helicopter. The helicopter had overturned, the skids and the tail boom had broken off, the cabin had been severely damaged. Out of the five persons on board, one died on the scene, one suffered serious, life-threatening injuries, two were seriously injured, and one person suffered minor injuries. (The person who suffered life-threatening injuries died in the hospital three days later.)

## Safety Recommendation HUNG-2008-002 (TSB)

The IC recommends the EASA to promote the safety benefits of fitting, as a minimum, of an aircraft data recording system (ADRS) and a cockpit audio recording system (CARS) to all twin-engine helicopters flying Category A missions.

**Reply**

The Agency's rulemaking tasks RMT.0271 and RMT.0272 [former MDM.073 (a) and (b)] 'In-flight recording for light aircraft' were launched on 25 July 2014 with the publication of the associated Terms of Reference.

This safety recommendation is being considered within the framework of these tasks.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| YR-ATG | ATR<br>ATR42 | Budapest Airport (LHBP) | 17/06/2011 | Serious incident |

### Synopsis of the event

After take-off from runway 31L, at around 1200 ft AGL, the crew noticed what sounded like engine stall of engine 2. They set the affected engine to Flight Idle. Shortly thereafter the Engine Low Oil Pressure Warning came in, followed by Engine Fire Warning. The crew performed - from memory - the required emergency checklist actions (in-flight engine fire or severe mechanical damage). The propeller of the malfunctioned engine was set to feather. The crew declared an emergency by reporting MAYDAY and requested an immediate landing. The Tower secured runway 13L for the emergency landing. The captain took the aircraft into a tight right turn while the first officer initiated the fire extinguishing system by discharging first the agent No 1 then No 2. The fire inside the engine nacelle was successfully put out. The passengers saw the flames and the smoke coming out of the engine nacelle. Some smoke was visible inside the main cabin which caused panic among the passengers. A single engine landing was performed on runway 13L. Once the aircraft stopped on a taxiway, the passengers were evacuated on the captain's command. The aerodrome emergency services were waiting for the aircraft but there was no need for intervention because the fire had already been stopped. Based on the information received from the operator, the crew used a QRH issued by the manufacturer in December 2009.

### Safety Recommendation HUNG-2012-004 (TSB)

EASA to consider the need to harmonize the procedures, or to review the existing documentation as necessary, in order to establish in all cases a time limit within which to make effective in the AFM owned by operators the amendments approved by EASA.

**Reply**

The Agency understands that the intention of the Safety Recommendation is to establish a time limit for operators to apply changes in the aircraft flight manual (AFM) as provided to them by the manufacturers.

This Safety Recommendation is being considered within the framework of rulemaking tasks RMT.0516 and RMT.0517 'Updating Authority Requirements (Part-ARO) and Organisation Requirements (Part-ORO)', which were launched on 16 September 2013 with the publication of the associated Terms of Reference.

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

### Safety Recommendation HUNG-2012-005 (TSB)

EASA to promote an internal debate (e.g.: dedicated working group, workshop, etc.) to carefully evaluate the pros and cons of a continuously increasing of memory items introduced in the implementation or review of the emergency procedure, mainly when to be applied in a critical phase of flight.

**Reply**

EASA promoted an internal debate with reference to the main aspect of the safety recommendation and in addition a specific study was conducted called "Checklist Memory Items", which has been published on EASA research web page. As reported in such study, an assessment of the available literature, in combination with the views of EASA experts and in addition to the feedback received from members of the European Human Factors Advisory Group, would suggest that memory items are not increasing either in terms of the number of items within the checklist itself or the number of checklists themselves. The advent of new technologies has resulted in a reduction and in a better management of the memory items within checklists as compared to older aircraft. As example, with the introduction of Electronic Centralised Aircraft Monitor (ECAM) and Engine Indicating and Crew Alerting System (EICAS) the crew can easily monitor aircraft functions and system failures. In such systems messages detailing failures, lists of the procedures to correct the problem are provided to the crew which can instantly assess the situation and decide on the actions to be taken. They are designed to ease the crew workload in critical phase of flight, as well as in abnormal and emergency situations.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| HA-LOK | BOEING 737 | Budapest FIR | 23/11/2011 | Serious incident |

### Synopsis of the event

Having started the engine in Budapest, the personnel failed to turn on the "Pack" switches of the air conditioning system, thus air was not vented into the cockpit and into the cabin. During the climb after takeoff, approaching FL150, the cabin altitude horn went off as a result of excessive decrease in cabin pressure (reaching cabin altitude of 10 000 feet). In spite of this, the crew did neither turn on air conditioning nor did it carry out an emergency descent, thus cabin altitude kept on decreasing. Triggered by that, passing 14 000 feet cabin altitude, the oxygen masks were automatically deployed in the cabin. The crew turned around the aircraft and after a short wait above TPS1, landed in Budapest. There were no personal injuries, but during the turn around, descent, approach and landing, the crew committed several mistakes which might have been provoked by the prior oxygen deficient period. The IC has formulated recommendations to be able to prevent and handle such events more safely in the future.

### Safety Recommendation HUNG-2014-001 (TSB)

TSB recommends the Federal Aviation Administration and the European Aviation Safety Agency to consider using an annunciation on the Boeing 737 aircraft, which would indicate to the pilots that air conditioning is not on.

**Reply**

The B737 Classic and New Generation (NG) do not have a take-off procedure with PACK OFF. This is indeed part of the Flight Crew Operating Manual (FCOM) to check that the PACK are AUTO before take-off. Nevertheless, this is not an isolated case. EASA has opened the discussion with Boeing and Federal Aviation Administration (FAA) at the Continued Airworthiness meetings. The B737 team will review this accident together with the set of similar occurrences.

EASA will provide an update as soon as any significant progress is available.

**Status:** Open – **Category**:

### Safety Recommendation HUNG-2014-002 (TSB)

TSB recommends the Federal Aviation Administration and the European Aviation Safety Agency to consider altering the flight manual of the Boeing 737 aircrafts in such a way, that in case of the warning sound indicating a drop in the cabin pressure going off, it becomes possible to check whether air conditioning is turned on, and to switch it on, if necessary.

**Reply**

The B737 Classic and New Generation (NG) do not have a take-off procedure with PACK OFF. This is indeed part of the Flight Crew Operating Manual (FCOM) to check that the PACK are AUTO before take-off. Nevertheless, this is not an isolated case. EASA has opened the discussion with Boeing and Federal Aviation Administration (FAA) at the Continued Airworthiness meetings. The B737 team will review this accident together with the set of similar occurrences.

EASA will provide an update as soon as any significant progress is available.

**Status:** Open – **Category**:

# Iceland

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| TF-FIH | BOEING 757 | Keflavik Airport, at stand 20 on cargo apron | 30/01/2011 | Serious incident |

## Synopsis of the event

After the aircraft was parked, and in gusty wind conditions (Wind 282°/35, gusting 42 knots), the main cargo door was damaged and fell uncontrolled down to its closed position. Main cargo door and supporting structure severely damaged. No one was injured.

## Safety Recommendation ICLD-2014-001 (AIB)

The Icelandic Transportation Safety Board (ITSB) recommends EASA to require the STC holder of EASA STC #EASA.IM.A.S.01423 to review the structural design of the main cargo door with respect to the 45 knots maximum wind operation loading and make the necessary design changes in order to meet the requirements of EASA CS, subchapters 25.301(a) and 25.303.

**Reply**

The Federal Aviation Administration (FAA), as certification authority pertaining to FAA Supplemental Type Certificate (STC) ST01529SE, was contacted by EASA, as validating authority relating to STC EASA.IM.A.S.01423, to ensure coordination with regard to the safety recommendation. The FAA has primary responsibility in addressing the design issue by the amendment of FAA STC ST01529SE. EASA would then be able to address the issue through a validation project for the amendment of FAA STC ST01529SE (757-200 passenger-to-freighter conversion; EASA project # 0010024079).

**Status:** Open – **Category**:

# Ireland

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| EI-IHL | AEROSPATIALE AS350 | Ballynacally, Co. Clare | 12/07/2007 | Accident |

## Synopsis of the event

On 12 July 2007, the helicopter was undertaking a routine safety inspection of gas pipelines under contract to the National gas supplier. A crew of two were on board, a Pilot and an Observer. The inspection route took the helicopter south of Ennis and along the Shannon estuary towards Foynes. In the vicinity of Lisheen, a descent was made to facilitate closer inspection of works on the surface. A 360-degree inspection turn was carried out to the left before following the pipeline onwards. Shortly after the completion of the inspection turn, the engine stopped suddenly and without warning. The Pilot lowered the collective and attempted to enter autorotation from a low level and over difficult and undulating terrain. The helicopter impacted into farmland to the west of Ballynacally in rising terrain. The Observer was pronounced dead at the scene. The Pilot suffered serious impact injuries and was airlifted by Coast Guard helicopter to hospital in Galway. The Investigation determined that the engine stoppage was as a result of the 41-tooth Bevel Gear disintegrating due to fatigue. The 41-tooth Bevel Gear is a component of the engine accessory gearbox, and resulted in a loss of drive to the Fuel Control Unit (FCU) stopping the engine within seconds.

## Safety Recommendation IRLD-2009-006 (AAIU)

EASA review the suitability of single-engine helicopters engaged in Low Level Aerial Work operations.

**Reply**

New applicable provisions concerning the type of operation referred to in the safety recommendation are contained in Commission Regulation (EU) No 379/2014 of 7 April 2014, amending Commission Regulation (EU) No 965/2012 (hereafter referred to as the 'air operations regulation'). ED Decision 2014/018/R, as last amended, contains the associated Acceptable Means of Compliance (AMC) and Guidance Material (GM).

In the air operations regulation, the type of operation involved in the accident is defined as 'a high risk commercial specialised operation' (Refer to Article 2.7 and Article 2.8 of the air operations regulation). Annex VIII on Specialised Operations (Part-SPO) applies, as the scope thereof is defined as 'any specialised operation where the aircraft is used for specialised activities, such as agriculture, construction, photography, surveying, observation and patrol, aerial advertisement' (Refer to SPO.GEN.005). AMC1 SPO.GEN.005 provides specific criteria to determine whether an activity falls within the scope of specialised operations. In this case, the aircraft is flown close to the surface to fulfil the mission (refer to subparagraph (a)).

Of particular relevance to the safety recommendation, SPO.OP.230 in Annex VIII requires the operator to conduct a risk assessment, assessing the complexity of the activity to determine the hazards and associated risks inherent in the operation, and to establish mitigating measures. Based on the risk assessment, the operator shall establish standard operating procedures (SOP) appropriate to the specialised activity and aircraft used. The operator shall ensure that specialised operations are performed in accordance with SOP.

In addition, in the air operations regulation, parts of Annex II on Authority Requirements for Air Operations (Part-ARO) and Annex III on Organisation Requirements for Air Operations (Part-ORO) also apply. In particular, ARO.OPS.150 requires the competent authority to conduct specific tasks related to the authorisation of high risk commercial specialised operations. ORO.SPO.110 imposes additional requirements on operators intending to conduct these kinds of operations.

In summary, the suitability of single-engine helicopters engaged in low level aerial work operations will be established through implementation of the above-mentioned provisions, which are to be applied by all EASA Member States by 21 April 2017.

Furthermore, EASA has conducted a study on single-engine helicopter operations over a hostile environment (referenced EASA.2012.OP.09) which was published on 13 April 2014. The results of the study indicate that single-engine helicopter operations should have acceptable level of risks related to engine failure rate if the proper risk assessment has been conducted and appropriate mitigation measures have been established.

The Agency therefore considers that the safety recommendation has been appropriately addressed.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| EI-BHT | BEECH 77 | Kilmovee, Co. Mayo | 11/05/2008 | Accident |

### Synopsis of the event

The aircraft took-off from Ireland West Airport Knock (EIKN) with two persons on board. Shortly afterwards the Pilot reported engine problems to Air Traffic Control (ATC) and attempted to return to EIKN. Following power loss the engine subsequently failed. A forced landing was attempted in difficult terrain that resulted in the aircraft impacting the ground in a steep nose down attitude. The Pilot was fatally injured and the passenger was seriously injured. The engine failure was caused by a fatigue fracture of cylinder No. 2 inlet valve head, a segment of which transferred to and contaminated cylinder No. 4. This, combined with a resulting disturbed inlet manifold airflow, caused the engine to fail. Metallurgical testing determined that the initiating cause of the fatigue fracture in the No. 2 inlet valve head was overheating, but the cause of this could not be not conclusively determined.

### Safety Recommendation IRLD-2011-003 (AAIU)

The European Aviation Safety Agency (EASA) should review the certification requirements for light aircraft with a view to requiring four point harnesses to be fitted to cockpit seat in order to increase survivability.

**Reply**

Certification specifications already provide for protection of occupants in case of emergency landing. In the case of CS-23 for light aeroplanes certification:

CS 23.561 requires structural design precautions to minimise injuries under given static inertia loads, including turnover and landing gear retracted scenarios.

CS 23.562 requires dynamic tests of the seat/restraint systems and provides for a maximum head injury criteria to be considered when contact with adjacent components or structures can occur.

In addition, CS 23.785 provides specific design requirements for seats, berths, litters, safety belts and shoulder harnesses to protect the occupants, and it requires that areas surrounding each seat are free of injurious objects which may be impacted by the torso or the head.

The Agency, together with FAA and the industry, is currently working to prepare a re-organisation of CS-23, and this is being done in the frame of rulemaking task RMT.0498. New design standards are being developed by ASTM that will provide Acceptable Means of Compliance to new objective requirements.

In particular, a group has been initiated in the ASTM F44 Technical Committee as Work Item: WK41313 - New Specification for Emergency Conditions and Occupant Safety.

This task group will consolidate the current CS-23/FAR Part-23 Subparts C and D regulations pertaining to Emergency Conditions and Occupant Safety into a single standard. Once complete, the standard will be further developed and refined based on feedback to the committee from users, industry, and regulators. This is one of the priority area where it has been identified that safety improvements are needed and can be achieved with less burden by new standards that allow the introduction of safety enhancing features in aeroplanes. The Agency supports this approach which will permit the implementation of cost effective solutions meeting objective requirements using different possible technical solutions complying with international industry standards.

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

| 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 09.51 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.

## Safety Recommendation IRLD-2014-002 (AAIU)

The European Aviation Safety Agency should provide guidance to Operators concerning successive instrument approaches to an aerodrome in IMC or night VMC where a landing cannot be made due to weather reasons and incorporate such guidance in Commission Regulation (EU) No 965/2012 accordingly.

**Reply**

After review of the safety recommendation, the Agency has concluded that incorporating guidance concerning successive instrument approaches in Commission Regulation (EU) No 965/2012 (hereinafter referred to as the air operations regulation) would be challenging for all types of commercial air transport operations, all aircraft types, all cockpit layouts and instruments, as well as multiple runway types all under varying weather conditions. There are so many factors to be considered that it is more appropriate for each operator to define their own guidance tailored to suit the risks associated with their specific fleet and operations. ORO.GEN.200 of the air operations regulation requires operators to implement a hazard identification and risk mitigation process within the framework of their management system that should effectively manage the issue raised in this recommendation.

Furthermore, the operator has to address approaches in their standard operating procedures, as required by the air operations regulation. These procedures should be in compliance with all other provisions contained in the same regulation, including the rule which prohibits flight crew from continuing an approach operation below 1000 ft above the aerodrome if the runway visual range is below the aerodrome operating minima (CAT.OP.MPA.305 'approach ban').

In their assessment of the Agency's initial response, the AAIU further suggested that CAT.OP.MPA.305 should be amended to require operators to specify restrictions in their operations manual on the number of successive instrument approaches that may be conducted during commercial air transport operations.

The Agency has evaluated this more detailed proposal and has concluded that amending the provisions is not the optimal way forward, for reasons explained above.

Nevertheless, the Agency has decided to publish a Safety Information Bulletin (SIB) to remind operators to include instrument approaches in difficult meteorological conditions among the risks to be considered within the framework of their management system, with emphasis on successive approaches and appropriate mitigating measures.

**Status:** Open – **Category**:

### 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**

As of October 2014 Member States will apply the new Air OPS Regulation (EU) No 965/2012. The associated acceptable means of compliance (AMC) and guidance material (GM) is published in ED Decision 2012/017/R.

Paragraphs ORO.FC.105 (b) and (c) of the air operations regulation specify the conditions to be fulfilled by a flight crew member before he/she can be assigned as commander. Associated AMC contains details on the route/aerodrome competence. ORO.FC.205 lists the elements of the command course. The development of a detailed course syllabus is the responsibility of the operator and needs to be approved by the authority in accordance with ORO.FC.145.

The Agency agrees that further AMC/GM may be beneficial to operators regarding the establishment and content of the command course. The Agency will therefore consider this issue with rulemaking task RMT.0599 'Review of ORO.FC' which is on the Agency's rulemaking programme.

**Status:** Open – **Category**:

### Safety Recommendation IRLD-2014-007 (AAIU)

The European Aviation Safety Agency should review the process by which AOC variations are granted to ensure that the scope of any new operation is within the competence of the air carrier.

**Reply**

According to paragraph ORO.GEN.130 of Regulation (EU) No 965/2012 on air operations, any change affecting the scope of the air operator certificate (AOC) or the associated operations specifications, shall require prior approval by the competent authority, which includes the introduction of aircraft in the list of aircraft (types and registrations) operated by the operator. It is also stated that the operator shall apply for and obtain an approval issued by its competent authority before the change(s) takes place to enable the competent authority to determine compliance with Regulation (EC) No 216/2008 (the basic regulation) and its implementing rules.

Furthermore, it is stated in ARO.GEN.330 that upon receiving an application for a change that requires prior approval, the competent authority shall verify the organisation's compliance with the applicable requirements before issuing the approval.

Therefore, the Agency considers that the intent of this recommendation is already appropriately addressed by the existing regulation and that no further action is needed.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| G-COBS<br>G-FCSL | DIAMOND<br>DA42PIPER<br>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 six 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**

EASA current 2014-2017 rulemaking programme includes rulemaking task RMT.0376 'Carriage of ACAS II equipment on aircraft other than aeroplanes in excess of 5700kg or 19 Pax'. This task envisages amendments to regulation 1332/2011 and regulation 965/2012 as last amended, in particular Part-NCC (non-commercial operations with complex motor-powered aircraft), Part-NCO (non-commercial operations with other-than complex motor-powered aircraft) and Part-SPO (specialised operations). The intent of this safety recommendation will be considered within the framework of the above rulemaking task.

**Status:** Open – **Category**:

# Italy

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| OE-FAN | CESSNA 500 | Sinnai/Cagliari | 24/02/2004 | Accident |

## Synopsis of the event

L'incidente è occorso il 24 febbraio 2004, alle 04.49 UTC (05.49 ora locale). L'equipaggio del velivolo Cessna 500 Citation marche OE-FAN, operante il volo CIT 124, proveniente da Roma Ciampino (LIRA) e diretto a Cagliari Elmas (LIEE), in fase di discesa, a circa 28 nm (miglia nautiche) dall'aeroporto di destinazione, riportava il campo in vista e richiedeva, ottenendola, l'autorizzazione ad effettuare un avvicinamento a vista. Dopo pochi minuti il velivolo impattava la cima del monte Su Báccu Malu (3333 piedi), 18 nm circa ad Est dall'aeroporto di Cagliari Elmas (13 piedi). Le sei persone a bordo perdevano la vita, mentre il velivolo andava completamente distrutto nell'impatto.

## Safety Recommendation ITAL-2009-001 (ANSV)

L'ANSV raccomanda che l'ENAC, con l'EASA, riconsideri i requisiti di installatione di sistemi TAWS per velivoli a turbina fino a 5700kg di massa in grado di trasportare da sei a nove passeggeri allo scopo di ridurre il rischio di incidenti CFIT.

**Reply**

The Agency's interim response dated 27 September 2011 referred to rulemaking tasks RMT.0371 & RMT.0372 [former OPS.078 (a) & (b)] 'TAWS operation in IFR (instrument flight rules) and VFR (visual flight rules) and TAWS (terrain awareness and warning system) for turbine powered aeroplanes under 5700 kg MTOM able to carry 6 to 9 passengers'.

These tasks were launched on 31 January 2014 with the publication of the associated Terms of Reference. This safety recommendation is being considered within the framework of these tasks.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| EI-EDM | AIRBUS A319 | Palermo airport | 24/09/2010 | Accident |

## Synopsis of the event

At 18.08 UTC, during final approach for runway 07 with adverse meteorological conditions on Palermo airport, aircraft collided with terrain immediately before the beginning of the runway, hit the opposite RWY localiser antenna, slid on the wet runway with main gear collapsed for about 900 meters before stopping out of the left side of the runway. Passengers evacuation was performed. Aircraft was severely damaged, very minor injuries to persons onboard.

### Safety Recommendation ITAL-2011-018 (ANSV)

ANSV recommends EASA and FAA that the aim of such modification is to avoid to establish unsafe condition for passengers and for this reason the modification must be proposed as “mandatory” on all A320-family fleet now in operation (as prescribed by Part 21A.3B - «a document issued or adopted by EASA which mandates actions to be performed on an aircraft to restore an acceptable level of safety, when evidence shows that the safety level of this aircraft may be otherwise compromised»). (ANSV-18/1836-10/1/A/11)

**Reply**

The EASA, as the primary certification authority, intends to mandate the related modification (MOD 153724), which is currently under certification process.

Embodiment in production is expected by the end of year 2014.

**Status:** Open – **Category**:

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| I-ADCC | ATR<br>ATR72 | Firenze Airport-Peretola (LIRQ) | 03/10/2011 | Serious incident |

### Synopsis of the event

After a bleed-off aircraft configuration take-off from runway 23, at around 400 ft AGL, the cockpit Master Warning was triggered referring to Engine 1 low oil pressure, but shortly after any malfunction indication disappeared. Climb continued till acceleration altitude with one more short Engl oil LP indication. At 1570 ft, when climb sequence was completed and bleed valves switched on, oil LP indication popped up again while ITT value dropped to zero. In absence of additional abnormal parameters, the crew believed in a faulty indication, but soon visual and aural warnings notified an Engine 1 fire condition, together with smoke in the cabin. So, an in-flight engine fire emergency procedure was applied by shutting down the engine and attempting to discharge the extinguisher agent. An emergency call was made to Firenze APP and the crew stated his intention to come back to the airport to land on runway 05. Approach and landing took place uneventfully and the precautionary fire brigade assistance was provided when aircraft stopped on Taxiway P. Precautionary evacuation was carried out at that stage due to “HT brake warning light on”. The investigation highlighted that the “fire or severe mechanical damage” emergency procedures were revised by ATR at least three times in fourteen months (only the month is edited on the revised pages) and introduced with a consistent delay in the AFM owned by the operator, therefore being effective for the crew.

### Common Findings

During the joint meeting held at ANSV premises in Rome on 7-9 February 2012, the safety investigation authorities in charge of the three events verified the following main commonalities:

- All events occurred at initial climb;
- The events were all due to the initial distress of a Power Turbine 1st stage blade causing subsequent damages and heavy unbalance of the whole PT assembly, further unbalance of the LP rotor through No. 6 & 7 bearing housing, and final oil leakage due to breaking of No. 6 & 7 bearing compartment retaining bolts and distress of the radial transfer tubes. Fire was then originated by such a leakage in presence of hot parts;
- In all these serious incidents distress of the PT1 rotor blade was due to a crack propagated from an internal casting defect (shrinkage porosity) in the vicinity of the blade core pocket. Propagation is in accordance with a Low Cycle Fatigue mechanism.

### Safety Recommendation ITAL-2012-010 (ANSV)

EASA to promote an internal debate (e.g. dedicated working group, workshop, etc.) to carefully evaluate the pros and cons of a continuously increasing of memory items introduced in the implementation or review of the emergency procedure, mainly when to be applied in a critical phase of flight. (ANSV-10/1826-11/5/I/12)

**Reply**

EASA promoted an internal debate with reference to the main aspect of the safety recommendation and in addition a specific study was conducted called “Checklist Memory Items”, which has been published on EASA research web page. As reported in such study, an assessment of the available literature, in combination with the views of EASA experts and in addition to the feedback received from members of the European Human Factors Advisory Group, would suggest that memory items are not increasing either in terms of the number of items within the checklist itself or the number of checklists themselves. The advent of new technologies has resulted in a reduction and in a better management of the memory items within checklists as compared to older aircraft. As example, with the introduction of Electronic Centralised Aircraft Monitor (ECAM) and Engine Indicating and Crew Alerting System (EICAS) the crew can easily monitor aircraft functions and system failures. In such systems messages detailing failures, lists of the procedures to correct the problem are provided to the crew which can instantly assess the situation and decide on the actions to be taken. They are designed to ease the crew workload in critical phase of flight, as well as in abnormal and emergency situations.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| HA-LWM | AIRBUS A320 | Rome Fiumicino airport | 08/06/2013 | Accident |

## Synopsis of the event

On June 8th 2013, at 05.19 UTC, the aircraft A320-200, registration marks HA-LWM, flight WZZ7EK, while approaching the final destination of Ciampino airport at the end of an uneventful flight departed from Budapest airport with 165 pax and 6 crew on board, experienced a technical problem in getting the undercarriage downlocked. This circumstance was notified to the crew by the Master Warning and the triggering of the ECAM message "L/G GEAR NOT DOWNLOCKED".

During missed approach a standard procedure and following holding in Campagnano, the crew carried out a recycle and later on performed LG gravity extension as well as some g-force manoeuvres, but all measures were unsuccessful.

Consequentially, the crew requested to divert to Fiumicino airport (LIRF) declaring an emergency landing. Approaching Fiumicino airport RWY 34R the aircraft was instructed by TWR to go-around due to some incoherency in the information provided to the crew about the current position of the landing gear. A new approach to the RWY 34R was performed and the aircraft touched down on the runway at 06.09 UTC with the left LG only partially extracted. At landing, the mass of aircraft was estimated about 56500 kg. The fligthcrew shutoff the left engine just before touchdown and the right one few seconds later. The aircraft came to rest after scraping the left engine on the runway for about 1200 m; the subsequent evacuation was uneventful and no injuries were suffered. While on site, the investigators noticed the left door actuator only partially extended and the left LG not in the uplocked position, but stuck on the door also when the aircraft was lifted by airbags. At removal of the jammed actuator, the door fully opened and the gear correctly extended and locked. X-Ray carried out few days later the accident on the failed actuator P/N 114122012, S/N CH112258 revealed the presence of heavy debris in the damping housing when compared to a new one; this finding was accompanied by the absence of some internal parts in the same area, presumably retaining ring and spiralox.

## Safety Recommendation ITAL-2013-006 (ANSV)

EASA introduce a modification to the existing AOT A320-32A1390 and the related point of AD 2011-0069R1, requiring in addition to the threshold check of 30 seconds taken for the door to open to the point of actuator vertical, the actual measurement of the time taken to get the vertical position and add the task of reporting the trend. The part should then be removed for further investigation when a delay exceeding a specified time (to be established by the manufacturer; e.g.: 3 seconds) is observed with respect to the baseline of the curve. This kind of action would provide an absolute evaluation of the intrinsic performance of each single actuator and it is then expected to be much more effective than the current analysis of CFDS that only provides relative measurements.

**Reply**

EASA issued the Airworthiness Directive (AD) 2011-0069R1 to require an amendment of the applicable Airplane Flight Manual (AFM), repetitive checks of specific Centralized Fault Display System (CFDS) messages, and repetitive inspections of the opening sequence of the Main Landing Gear (MLG) door actuator and, depending on findings, corrective action.

The EASA Emergency Airworthiness Directive (AD) was issued on 25 June 2013 regarding the MLG door actuator to require identification of the affected aeroplanes to establish the configuration and, for those aeroplanes, repetitive inspections of the opening sequence of the MLG door actuator and, depending on findings, replacement of the MLG door actuator. The AD also provides optional terminating action by disconnection of the interlink for certain Landing Gear Control Interface Units (LGCIUs), or in-service modification of the aeroplane by installation of MLG actuator Part Number (P/N) 114122014 through Airbus Service Bulletin (SB) A320-32-1407 (Airbus production mod. 153655).

After that, the new proposal for the additional limit of 3 seconds was reviewed and considered not practical. Instead, the mandatory repeated inspection interval is reduced through the below mentioned AD.

On 25 September 2013, following analyses performed by the Type Certificate Holder (TCH), EASA issued the Proposed Airworthiness Directive (PAD) No. 13-125R1 to reduce the MLG door opening sequence inspection interval, and the threshold for the MLG door actuator modification or replacement.

After the consultation period, prompted by additional information received from the TCH, the PAD has been amended to reduce the compliance time for the modification or replacement of the MLG door actuator. The PAD 13-125R2 was published on 13 November 2013. The final AD 2013-0288 was published on 6 December 2013.

The actions address the concern of the Safety Recommendation that a deteriorated actuator can be identified by inspection.

**Status:** Closed – **Category**: Agreement

### Safety Recommendation ITAL-2013-007 (ANSV)

In order to have a better and clear traceability of the maintenance performed on the single aircraft part, it would be desirable to require a worksheet for each single S/N and not generically referred to the MLG door actuator. EASA is therefore recommended to review the maintenance practices/requirements regarding the above mentioned matter.

**Reply**

The Maintenance Review Board Report (MRBR) task is the highest level for the maintenance aspect under EASA remit. At this level, there is no differentiation between the left and right item (in this specific case the Main Landing Gear door actuator).

Based on the approved MRBR task; the Type Certificate Holder (TCH) issues an Aircraft Maintenance Manual (AMM) task describing in detail how to perform the task, as per its Design Organisation Approval (DOA).

Then the operator and /or maintenance organisation will develop a job or task card customized and based upon the AMM data. This is covered under Part M or Part 145 maintenance organisation responsibility which falls under the remit of the National Airworthiness Authority.

**Status:** Closed – **Category**: Not responsible

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| I-ITAV | AVIONS ROBIN DR400 | Aeroporto di Guidonia (RM) | 11/01/2011 | Accident |

### Synopsis of the event

L´incidente é occorso l' 11 gennaio 2011, alle ore 15.28 UTC (16.28 locali), sull' aeroporto militare di Guidonia (Roma), ed ha interessato il velivolo modello Robin DR 400/180R marche di identificazione I-ITAV, che stava trainando l'aliante modello ASK 21 marche di identificazione I-IVWJ, a bordo del quale erano presenti un istruttore di volo e un allievo.

Il velivolo marche I-ITAV, che si trovava nella fase iniziale del traino dell'aliante, veniva visto da testimoni cambiare improvvisamente assetto di volo e dopo pochi istanti impattare la pista da cui era appena decollato. Nel violento urto contro il suolo e nel susseguente incendio l'aeromobile andava distrutto. La squadra di soccorso dell'Aeronautica militare, intervenuta in tempi rapidissimi, riusciva a spegnere l'incendio in atto e ad estrarre dal relitto il pilota, che peró decedeva poco dopo. L'aliante rientrava sull'aeroporto; incolumi le due persone a bordo.

### Safety Recommendation ITAL-2013-011 (ANSV)

L´ANSV alla luce di quanto previsto dalla EASA CS-22 (Certification Specifications for Sailplanes and Powered Sailplanes) relativamente alle funi da utilizzare per il traino degli alianti ed alle "weak link" – raccomanda di fornire agli operatori del settore (in primis alle organizzazioni preposte all'addestramento al volo) specifici chiarimenti in materia di funi da utilizzare per il traino degli alianti e di relativi sistemi di sicurezza associati al fine di eliminare i dubbi attualmente esistenti e di prevenire valutazioni soggettive inadeguate da parte degli stessi operatori.

**Reply**

In the certification specifications, CS-22 appendix K and a special condition for CS-23, requirements are already in place according to which the specifications of the rope in terms of length, material and rated ultimate strength of the weak link must be defined by the manufacturer in the operational limitations section of the Aircraft Flight Manual (AFM) of the towing aircraft. Similar information must be provided by the manufacturer in the AFM of the towed aircraft to ensure that the rope is adequate for that specific sailplane.

Ultimately, it is up to the operator or the pilot to make sure that the rope meets the specifications in the AFM. In addition, during flight crew licensing training, pilots are instructed in airmanship skills which include ensuring that pilots adhere to the AFM and check that the aircraft and equipment is fit for purpose before commencing a flight. This is covered under paragraph NCO.GEN.105 in Commission Regulation (EU) No 965/2012 on Air Operations, as amended by Commission Regulation (EU) No 800/2013.

The Agency considers that the existing rules and procedures sufficiently address the safety concern as identified in the safety recommendation.

**Status:** Closed – **Category**: Disagreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| EI-EIB | AIRBUS A320 | Fiumicino airport, Rome | 29/09/2013 | Accident |

### Synopsis of the event

The crew, while approaching the final destination, experienced a problem in getting the undercarriage down and locked and declared an emergency. On landing on RWY 16L, the aircraft came to rest after scraping the right engine, the right winglet and lightly the tail due to the position of the right main landing gear (remained quite completely closed). An evacuation took place uneventfully. The initial inspection relvealed that the main landing gear door actuator failed ot work (found jammed). RX analysis on the failed actuator found it with internal elements broken and debris present.

### Safety Recommendation ITAL-2013-013 (ANSV)

ANSV recommends EASA to take into consideration the possibility to add X-Ray analysis (to be performed through portable tools for example) to the checks prescribed on the main landing gear door actuators (ANSV-13/2385-13/1/A/13).

**Reply**

EASA has taken into consideration the possibility to add X-Ray analysis to the checks prescribed on the main landing gear door actuators. It was decided that inspection intervals introduced by Airworthiness Directives (AD) 2013-0288 dated 6 December 2013 adequately address the concern.

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

### Safety Recommendation ITAL-2013-014 (ANSV)

ANSV considers necessary to issue to EASA the following safety recommendation: The installation of the std-14 is considered a terminating action for the checks prescribed by AD 2011-0069R1 (same as about the PAD 13-125R2). With reference to the lack of reliability data coming from the A320 family fleet operations on the new modified actuators std-14, ANSV recommends to avoid to completely delete the prescribed checks and inspections in the first part of the substitution campaign of the std-14 on the A320 family fleet (ANSV-14/2385-13/2/A/13).

**Reply**

The new standard-14 actuators of the A320 family fleet are qualified and tested. No regular inspection was introduced when the actuator was approved. The standard-14 actuator was introduced as terminating action by EASA AD 2013-0288 dated 06.12.2013 that superseded EASA AD 2011-0069R1 dated 11 April 2012.

EASA has contacted the manufacturer to further discuss this topic. Repetitive tests on the new modified actuators std-14 have not indicated any need for regular inspections.

**Status:** Closed – **Category**: Disagreement

### Safety Recommendation ITAL-2013-015 (ANSV)

ANSV considers necessary to issue to EASA the following safety recommendation: Recurrence of the event within such a very short period suggested ANSV to strongly recommends to launch a substitution campaign of the std-12 actuator in the shortest way possible. (ANSV-15/2385-13/3/A/13)

**Reply**

On 25 September 2013, following analyses performed by the Type Certificate Holder (TCH), EASA issued the Proposed Airworthiness Directive (PAD) No. 13-125R1 to reduce the MLG door opening sequence inspection interval, and the threshold for the MLG door actuator modification or replacement.

After the consultation period, prompted by additional information received from the TCH, the PAD 13-125R2 was amended to reduce the compliance time for the modification or replacement of the MLG door actuator, and dated on 13 November 2013.

The final AD 2013-0288 was published on 6 December 2013 including a shorter replacement requirement for standard -12 actuators.

**Status:** Closed – **Category**: Agreement

### Safety Recommendation ITAL-2013-016 (ANSV)

Recommendation to EASA: ANSV strongly recommends to ask for the proper technical actions to be carried out on the hydraulic system of the landing gear doors to be sure that contamination should not be present in case of a landing gear door actuator removal in consequence of the actions prescribed to identify an internal damage (ref AD 2011-0069R1 and PAD 13-125R2). (ANSV-16/2385-13/4/A/13)

**Reply**

On 30 September 2014 EASA issued the Airworthiness Directive EASA AD 2014-0221 which supersedes EASA AD 2013-0288.

It mandates actions on amending the Aircraft Flight Manual (AFM) with temporary revision (TR) 437 to incorporate the operational procedure on landing gear recycling; performing a Main Landing Gear (MLG) door actuator opening sequence inspection; the replacement/modification of the MLG door actuator; and related terminating/alternative actions as detailed in the AD.

The related service bulletin SB A320-32-1407 Rev.1 also introduced a hydraulic flushing procedure prior to any installation of a post-mod MLG door actuator. However, if that hydraulic flushing procedure was omitted prior to installation of a post-mod MLG, as it was not part of the original terminating action of the AD 2013-0288, it has been tested and confirmed that potential residual contamination would not result in a jamming of the post-mod door actuator.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| YR-SBJ | SAAB 2000 | Aeroporto di Firenze Peretola | 28/05/2012 | Accident |

## Synopsis of the event

Il 28 maggio 2012, l'aeromobile Saab 2000 marche di identificazione YR-SBJ era programmato per effettuare il volo V30444 FLR-TSR (Firenze-Timisoara), con 45 passeggeri e 4 membri di equipaggio.

Alle ore 09.57 UTC, durante il rullaggio per la pista 23, sul raccordo denominato Mike, si aveva in cabina di pilotaggio l'accensione dell'avviso incendio al motore sinistro, con attivazione della "Master Warning" contemporaneamente all'avviso acustico e all'accensione sull'EICAS del relativo avviso luminoso. Il comandante dell'aeromobile sospendeva il rullaggio e inseriva il freno parcheggio. Attuava quindi quanto previsto dalle SOP dell'operatore, applicando prima i memory item e successivamente la prevista checklist di emergenza. Il comandante ha dichiarato che durante l'applicazione della procedura prevista aveva guardato più volte il motore sinistro attraverso il finestrino della cabina di pilotaggio, per accertarsi della presenza di fuoco e/o fumo: dai riscontri in questione non emergeva alcun indizio che supportasse tale presenza, nonostante una comunicazione radio, probabilmente effettuata dall'equipaggio di un altro aeromobile presente sull'aeroporto, che segnalava invece la presenza di fumo (o fuoco) sul motore sinistro.

Gli avvisi di incendio terminavano una volta effettuata la prima scarica di estinguente prevista dalla procedura di emergenza. Il comandante decideva a questo punto di evacuare i passeggeri attraverso tutte le uscite di emergenza, assistiti a terra dal copilota, che nel frattempo era saltato fuori dall'aeromobile utilizzando l'uscita anteriore sinistra. L'aeromobile in questione non è infatti dotato di scivoli di emergenza per l'evacuazione delle persone a bordo.

La completa evacuazione dei passeggeri, come dichiarato dal comandante, avveniva in circa 40 secondi, utilizzando la porta anteriore sinistra, la porta posteriore destra e l'uscita alare sinistra.

### Safety Recommendation ITAL-2014-001 (ANSV)

ANSV recommends to EASA and FAA to evaluate the possibility to modify the actual rules with reference to the emergency egress assisting means and escape routes, in order to prescribe the installation of evacuation slides on aircrafts similar to the Saab 2000 (with a distance lesser than 1,83 m between the pax cabin floor and the ground with landing gear down), to avoid injuries to the passengers if a rapid aircraft disembarkation is required.

**Reply**

The current 1.83m (or 6ft) threshold provided by Certification Specifications CS 25.810 and Federal Aviation Administration Regulations FAR 25.810 has been in effect since the early time of FAR Part 25 (initially in FAR §25.809). A study was performed on behalf of EASA and reviewed Certification Specifications for Large Aeroplanes (CS-25) cabin safety requirements (reference EASA.2008.C18 on the EASA website). The final report, published at the end of 2009, included in its review of available accidents between 1998 and 2007 the situations where aircraft occupants had to jump out of exits or off of wings, as well as an analysis of pertinent research studies.

Having reviewed the study EASA consider that there is insufficient justification for a rulemaking action. As the study concluded that research should be carried out to further investigate the appropriateness of the 1.83m, EASA will consider results of any such research and would decide on CS amendments accordingly.

**Status:** Closed – **Category**: Agreement

# Japan

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| JA6522 | AEROSPATIALE AS350 | Kagawa Prefecture | 22/09/2011 | Accident |

## Synopsis of the event

Forced landing due to fire in the rear hold.

## Safety Recommendation JAPN-2013-001 (ARAIC)

The EASA should make it mandatory to modify the rear hold of the Eurocopter AS350 series so that electrical equipment and its wiring are fully protected.

**Reply**

EASA's Emergency Airworthiness Directive 2011-0244-E required, as an interim action, deactivation of the position strobe light system or repetitive inspections of the position strobe light power supply installation and, depending on findings, applicable corrective actions. Eurocopter developed the modification 07 4611 consisting in installing, in the rear cargo compartment, a guard cover for the strobe light power supply unit and wiring of the optional strobe lights installation OP-0811. This modification was approved by the issuance of EASA Major Change 10043337 and validated in Japan by the JCAB Letter reference KOKU-KI-KI-1259.

On 27 November 2013 EASA issued the Airworthiness Directive 2013-0281 which supersedes the Airworthiness Directive 2011-0244-E and requires the installation of the protector assembly on the wiring and on the power supply unit of the position strobe light installation, thus providing a terminating action of the repetitive inspections and allowing any deactivated systems to be activated again.

**Status:** Closed – **Category**: Agreement

# Myanmar

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| F-HJCS | SIKORSKY S76 | Yetagun in the Andaman Sea | 11/07/2011 | Accident |

## Synopsis of the event

On 11 July 2011 the helicopter Sikorsky S76 C++ registered F-HJCS operated by Heli-Union took-off from Kanbauk Airfield with 7 passengers and 2 flight crews bound for the Yetagun Floating Storage Offloading (FSO). After landing on the FSO, one passenger disembarked and three passengers boarded. During this phase, the rotor was still turning. Then the crew intended to take-off to Yetagun platform. The captain (pilot flying) climbed vertically. At 25 feet above the platform, the pilot initiated a cyclic input, then the aural warning sounded and ENGINE OUT warning light illuminated on the instrument panel. The captain noticed, the left engine T5 temperature increasing to the red zone (up to 9830C) and heard a clanking noise. He decided to ditch the helicopter. He initiated the floating devices deployment. The contact with the sea surface was rather hard and the helicopter then capsized onto its left side. Flight crew and passengers managed to get out of the helicopter. All the crew and passengers were rescued after approximately one hour. Three occupants (including co-pilot) drowned to death and two other passengers suffered serious injuries. 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 MYAN-2012-004 (AIB)

MAIB and BEA recommend that EASA study a method for release of information to the national authorities regarding sudden power loss rates of which it is aware and as soon as these rates get close to acceptable limits or show significant evolution.

**Reply**

The European legislation, Regulation (EU) No 965/2012 Annex IV, places responsibility on the operator for obtaining an approval from the competent authority for such Performance Class 2 operations. See CAT.POL.H.305. To obtain and maintain the required approval, the mentioned CAT.POL.H.305 defines that a risk assessment has to be conducted and certain conditions have to be met. Among these, the subparagraph (b)(2)(v) condition is; “provide a system for reporting to the manufacturer loss of power, engine shut down or engine failure events”. Also, AMC1 CAT.POL.H.305(b) refers to engine reliability statistics. Subparagraph (e) describes the interface between helicopter and engine type certificate holders and the operator’s competent authorities.

In addition to the above, Regulation (EU) No 965/2012 Annex III requires occurrence reporting to the competent authority according to ORO.GEN.160 for accidents, serious incidents and occurrences as defined in Regulation (EU) No 996/2010. This is further detailed in AMC1 ORO.GEN.160. In itself this paragraph and associated AMC ensure that the competent authority is informed about incidents of sudden power loss. Also the operator is required by ORO.GEN.200 (a)(3) to identify safety hazards and also to manage and mitigate the associated risks with appropriate notification to the competent authority.

The Agency considers that the existing rules sufficiently address the safety concern as identified in the Safety Recommendation.

**Status:** Closed – **Category**: Disagreement

# Netherlands

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| | BOEING 737 | a field 1,5 km away of the runway threshold of Amsterdam Schiphol Airport | 25/02/2009 | Accident |

## Synopsis of the event

A Boeing 737-800 (flight TK1951) operated by Turkish Airlines was flying from Istanbul Atatürk Airport in Turkey to Amsterdam Schiphol Airport, on 25 February 2009. As this was a 'Line Flight Under Supervision', there were three crew members in the cockpit, namely the captain, who was also acting as instructor, the first officer who had to gain experience on the route of the flight and who was accordingly flying under supervision, and a safety pilot who was observing the flight. There were also four cabin crew members and 128 passengers on board. During the approach to runway 18 Right (18R) at Schiphol airport, the aircraft crashed into a field at a distance of about 1.5 kilometres from the threshold of the runway. This accident cost the lives of four crew members, including the three pilots, and five passengers, with a further three crew members and 117 passengers sustaining injuries. Shortly after the accident, the initial investigation results indicated that the left radio altimeter system had passed on an erroneous altitude reading of -8 feet to the automatic throttle control system (the autothrottle). In response to this, the Board had a warning sent to Boeing on 4 March 2009. This asked for extra attention to be paid to the 'Dispatch Deviation Guide' for the Boeing 737- 800, which is a manual of additional procedures and warnings for maintenance crews and pilots to consult before the aircraft is flown. This warning, which was added in 2004, states that with radio altimeter(s) inoperative, the associated autopilot or autothrottle must not be used for the approach and landing. The Board asked Boeing to investigate whether this procedure should also apply during the flight itself. With regard to the content of the Dispatch Deviation Guide, Boeing has answered that a provision such as this did not lend itself for inclusion in a defects checklist in the Quick Reference Handbook - the handbook containing the checklists for normal and abnormal procedures during the flight. On the one hand because a non-normal checklist must be based on a readily identifiable failure that is identified by an alert or a fault-warning, which was not the case with this radio altimeter failure. On the other hand because of the complexity of the fault, it is not practical to develop a non-normal checklist that would address all possible situations. Furthermore incorporating the procedure in the Quick Reference Handbook would unnecessarily remove airplane system functionality. This means that as an aircraft has two identical systems, one system is also a back-up for the other system. When one of these systems does not work prior to dispatch no back-up system is available and the flight should not be dispatched or the systems should not be used. If however during the flight one of the systems should fail the other system, the back-up, will take over and that is what it is meant for. Not using a system anymore at that moment should be too big a restriction for the operations. On the same date, 4 March 2009, following consultation with the Dutch Safety Board, Boeing did sent a notice to all companies flying with the Boeing 737 regarding the facts of the accident flight, as they were known at that point. The Quick Reference Handbook may not be the correct medium for the inclusion of such a procedure. The Board still considers that relevant information ought to have been communicated in 2004 when the warning was added to the Dispatch Deviation Guide, to the operators and especially to the pilots. A response from Boeing might, for instance, have been by means of an 'Operations Manual Bulletin'. This is normal in cases where aircraft systems operate in some way contrary to what might be anticipated. This information could subsequently have been included in the Flight Crew Operation Manual. During the investigation, Boeing was not able to clarify why they did not proceed with issuing such a warning in 2004.

### Safety Recommendation NETH-2010-004 (DSB)

The FAA and EASA should ensure that the undesirable response of the autothrottle and flight management computer caused by incorrect radio altimeter values is evaluated and that the autothrottle and flight management computer is improved in accordance with the design specifications.

**Reply**

EASA, in coordination with the Federal Aviation Administration (FAA), has mandated corrective actions through Airworthiness Directives (AD).

For Boeing 737 aeroplanes equipped with a Rockwell Collins Enhanced Digital Flight Control System (ED-FCS), the Federal Aviation Administration (FAA) issued AD 2012-21-08 on 27 November 2012, which was adopted by EASA.

For Boeing 737 aeroplanes equipped with Honeywell FCS and General Electric (GE) auto-throttle computer, GE developed a new auto- throttle computer. EASA issued AD 2014-0093 on 22 April 2014.

The corrective measures cover all 737 Next Generation (NG) aircraft. Retrofit is expected to be completed by May 2017 for all 737 NG aircraft registered in Europe.

**Status:** Closed – **Category**: Agreement

### Safety Recommendation NETH-2010-005 (DSB)

Boeing, FAA and EASA should assess the use of an auditory low-speed warning signal as a means of warning the crew and - if such a warning signal proves effective - mandate its use.

**Reply**

EASA, in cooperation with Boeing and the Federal Aviation Administration (FAA), conducted a review of the Boeing 737 low speed alerting function.

This review concluded that the Boeing 737 low speed alerting function, as implemented on the event aeroplane, complies with the applicable certification specifications and no unsafe condition was identified.

A change to the Enhanced Ground Proximity Warning System (EGPWS) implementing a low speed aural alert has been certified by the FAA, the Primary Certification Authority. This introduces an additional audio callout “Airspeed Low – Airspeed Low” when the airspeed dips into more than 70 percent of the amber airspeed band (this is co-incident with the airspeed digits flashing, which already occurs in the existing design). The corresponding Service Bulletin has the status “recommended”.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| | AVIONS ROBIN DR400 | Lekkerkerk | 12/07/2008 | Serious incident |

### Synopsis of the event

During a training flight the instructor and student pilot practised an emergency landing exercise. During reduction of the engine power, both engine control system warning lights started to flash, and the engine stopped. Subsequently the instructor took over control of the aircraft and executed an emergency landing on a meadow. The aircraft was seriously damaged however the occupants suffered no injuries.

### Safety Recommendation NETH-2011-014 (DSB)

The European Aviation Safety Agency (EASA) is recommended to revise the certification requirements for the TAE-125-01 diesel engine design, with the emphasis being put on the fail-safe principle being applied to an individual engine component, as well as to the complete power plant system including its electronic failure mode.

**Reply**

The TAE-125-01 engine has been certified with a certification basis established at time of application. The certification basis on a certified product can only be revised in case of significant changes resulting from corrective actions to address an Unsafe Conditions (per Part21). The absence of Unsafe Condition and absence of non-compliances in this case do not justify to revise the certification basis of the anticipated corrective actions.

Notwithstanding the above, the lessons learnt from the in-service experience of this specific case are implemented during certification process using the existing requirements, that are in principle sufficiently robust for certification purposes of the piston engines. However EASA concludes that guidance material can be improved.

Certification Specifications CS-E 210 (a) requires to perform a failure analysis and prevent single fault or double fault if one of the fault is dormant, leading to unsafe engine conditions. The associated Acceptable Means of Compliance (AMC) CS-E 210 does not further detail what the unsafe engine conditions for piston engines are contrary to CS-E 510 / AMC CS-E 510 for turbine engines, that provide guidance and some examples. A generic CS-E Certification Review Item (CRI) is currently applied on new products and design changes to provide further guidance and promote use of fail-safe principles.

CS 23.1309 is setting requirements for engine installation safety assessment with the basis of engine being compliant with the CS-E rules, which will include the generic CS-E CRI.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| | PILATUS PC12 | Weert | 16/10/2009 | Accident |

### Synopsis of the event

After taking off from Runway 21 at Budel Airport (Kempen Airport, EHBD), the Netherlands, PH-RUL turned left and started to climb. Shortly afterwards the aircraft turned right followed by a steep descent. Approximately two minutes after take -off the aircraft crashed near a farm. The two occupants did not survive the crash and the aircraft was completely destroyed.

### Safety Recommendation NETH-2012-001 (DSB)

It is recommended to EASA to make flight recorder equipment mandatory for High Performance Aircraft, designed for carrying persons and/or cargo for the purpose of accident investigation.

**Reply**

The Agency's rulemaking tasks RMT.0271 and RMT.0272 [former MDM.073 (a) and (b)] 'In-flight recording for light aircraft' were launched on 25 July 2014 with the publication of the associated Terms of Reference.

This safety recommendation is being considered within the framework of these tasks.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| STUDY ILS GS | | | #Missing# | |

### Synopsis of the event

On 31 May 2013, upon approaching Eindhoven Airport a Boeing 737-800 was radar vectored to runway 21 for a landing using the instrument landing system (ILS). During the approach, clouds obstructed the view of the runway in instrument meteorological conditions. The ILS is a ground-based radio wave system used by airports providing both horizontal and vertical guidance to aircraft, under all weather conditions, guiding them to the runway along the 3 degree glide slope.

The aircraft was flying above the normal altitude that is customary for this type of approach, and the autopilot1 and autothrottle2 were engaged. Within two kilometres' distance from the runway, at an altitude of approximately 1,060 feet (330 metres), a 'false glide slope' was captured. To ensure a stable approach and safe landing, regulations prescribe the 3 degree glide slope; in aviation the term 'false glide slope' is used to denote the 6 and 9 degree glide slopes that aircraft are not supposed to follow. The moment the aircraft crossed the false 9 degree glide slope, a pitch-up upset occurred, causing the airspeed of the aircraft to drop despite the autothrottle selecting increased engine thrust. This drop in speed triggered a brief stick shaker warning, after which the flight crew decided

The incident at Eindhoven Airport was not an isolated event. Four similar incidents occurred: two in 2011, one in 2012 and another one in 2013, after the Eindhoven incident. These incidents involved different types of aircraft operated by different airlines during

the approach of several different European airports. The investigation into the Eindhoven incident revealed characteristics of the ILS signal in the area above the 3 degree glide slope that were previously not generally known. According to the existing theory, false glide slopes appear in fixed intervals above the normal 3 degree glide slope; the general view is that a false glide slope, like the 3 degree.

The Dutch Safety Board conducted various measurements, in the Netherlands and the United States, of ILS glide slope signals of an antenna system commonly used all over the world. Those measurements have shown that signal reversal with the ILS sometimes occurs at the 6 degree glide slope and always occurs at the 9 degree glide slope. As a result, when the aircraft crosses a reversed signal, instead of the required 'fly down' command to the runway, the aircraft systems actually do the opposite and give a 'fly up' command that causes the aircraft to suddenly pitch up. This may cause the aircraft to (an approach to) stall, which is a dangerous situation during the landing phase. Flight crews are assuming they are aware of the characteristics of false glide slopes by which they are surprised by the effects of signal reversal. During the measurements in the area of the false glide slopes, the instruments in the cockpit gave no warnings. This, too, is contrary to the general view in the sector.

On the basis of these findings, the Dutch Safety Board concluded that unknown ILS signal characteristics in the area above the 3 degree glide slope constitute a significant threat to aviation safety. This is because those characteristics may cause unexpected autopilot behaviour, thus potentially compromising the safety of passengers and crew members.

### Safety Recommendation NETH-2014-001 (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.

1. Information and awareness

Ensure that the established False Glide Slope characteristics and the possible associated consequences for aircraft are made widely known and are modified accordingly in the published manuals and training material used in the aviation sector. This specifically refers to:

a. the area above and below the published or nominated ILS Glide Path;

b. the absence of warnings in the cockpit when flying with the automatic flight systems engaged in the area above the published or nominal ILS Glide Path.

**Reply**

As an initial step, the Agency issued on 25 March 2014 the Safety Information Bulletin (SIB) 2014-07 "Unexpected Autopilot Behaviour on Instrument Landing System (ILS) Approach" advising owners and operators of aeroplanes and Air Navigation Service Providers (ANSPs) to take appropriate mitigating actions.

**Status:** Open – **Category**:

### Safety Recommendation NETH-2014-002 (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.

2. Short term measures

Ensure with oversight that aviation operators, manufacturers, and Air Navigation Service Providers take mitigating actions to prevent pitch-up upsets due to aircraft exposure to False Glide Slope Reversal as a result of flying with the automatic flight systems engaged in the area above the published or nominated ILS Glide Path. This can be achieved by means of:

a. operational measures;

- raising the interception of the ILS Glide Slope from below to a Standard, or in the event of an interception from above,
- developing additional operating procedures.

b. technical measures;

automated on-board systems when in use should not cause a pitch-up upset, at least not without a preceding clearly recognizable warning and with ample time for flight crew intervention.

**Reply**

As an initial step, the Agency issued on 25 March 2014 the Safety Information Bulletin (SIB) 2014-07 "Unexpected Autopilot Behaviour on Instrument Landing System (ILS) Approach" advising owners and operators of aeroplanes and Air Navigation Service Providers (ANSPs) to take appropriate mitigating actions.

**Status:** Open – **Category**:

### Safety Recommendation NETH-2014-003 (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.

3. Long term measures

Stimulate that aircraft manufacturers in the long term develop new landing systems to accommodate new approaches for aircraft with automatic flight systems engaged and ensure that airports are equipped with these landing systems.

**Reply**

EASA is promoting the development of new landing systems under the umbrella of the Ground Based Augmentation System (GBAS) CAT III which is being developed, under Single European Sky ATM Research (SESAR) activities. EASA is involved in the recognition process for that technology. Specifically, the operational requirements for GBAS CAT III will be considered in RMT.0379 'All weather operations'. Additionally, from an AIR OPS perspective, EASA enabled a safe use of such landing systems through Regulation (EU) 965/2012.

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

### Safety Recommendation NETH-2014-004 (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.

4. Occurrence reporting and analyses

Assess the aviation Safety Management System occurrence reporting and analyses methodology, including the use of the existing ECCAIRS databases on the levels (operator, Air Navigation Service Provider, manufacturer, national-international level) whether measures are required to achieve the goal of the system to identify potential safety deficiencies in a timely manner. The review should also take into account:

(a) the possibility to add internal investigation results into the ECCAIRS databases (feedback-loop), (b) the necessity to exchange investigation information with the manufacturer.

**Reply**

Following a review of the European Directive 2003/42 on occurrence reporting, the new Commission Regulation (EU) No 376/2014 of the European Parliament and of the Council of 3 April 2014 on the reporting, analysis and follow-up of occurrences in civil aviation set new requirements for the reporting scheme in Europe.

Subsequent to a notification of an occurrence, any organisation established in a Member State shall report to the competent authority of that State. Additionally, each organisation established in a Member State, which is certified or approved by the Agency, shall report to the Agency. Furthermore, the Regulation introduces the requirement for organisations to provide follow up analysis of individual occurrences or specific safety risks within 30 days of the occurrence. It will provide the feedback loop from internal investigations into the European Central Repository (ECCAIRS database).

Member States and the Agency shall participate in an exchange of information by making the content of their respective reporting databases available to the competent authorities of the other Member States, the Agency and the Commission, through the European Central Repository in ECAIRS/ADREP compatible format. This exchange also includes all occurrence reports collected by the Agency under Regulation (EC) No 216/2008 and its implementing rules which covers the exchange of information with manufacturers as recommended.

Where an organisation established in a Member State or certified or approved by the Agency identifies an actual or potential aviation safety risk as a result of its analysis of occurrences or group of occurrences reported, it shall transmit to the agency or competent authority the results of the analysis performed and any action to be taken. Where available, information relating to the analysis and the follow-up of individual occurrences or groups of occurrences shall be stored in the European Central Repository providing the recommended feed-back loop.

EASA is working in cooperation with the European Commission, Member States and reporting organisations in the implementation of this Regulation and its implementing act that shall apply from 15 November 2015.

**Status:** Closed – **Category**: Agreement

### 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**

The current set of EU civil aviation safety regulations provides the framework for teaching and assessing basic airmanship skills through initial training, skill tests, proficiency checks, type training, operator's recurrent training, line flying under supervision (LIFUS) and line oriented flight training (LOFT). This should ensure that any weaknesses related to the issue described in the safety recommendation are identified and corrected.

However, the trend towards increased automation in aircraft design calls for a review of the rules to consider training on the potential degradation of situational awareness and flight path management due to increased reliance on automation by flight crews.

The Agency is currently reviewing the initial and recurrent flight crew training requirements in the context of rulemaking tasks RMT.0581 and RMT.0582 'Loss of Control Prevention and Recovery Training'. This safety recommendation is therefore being considered during this review.

In addition, provisions for Crew Resource Management (CRM) training on automation management are currently being considered within the framework of RMT.0411 'Crew resource management training', including training on the recognition of systems and human limitations associated with the use of automation. The associated Notice of Proposed Amendment NPA-2014-017 was published on the Agency's web site on 26 June 2014.

Furthermore, the Agency has published the following Safety Information Bulletins (SIBs) to improve awareness of the risks associated with increased reliance on aircraft automation by flight crews:

- SIB 2010-033 'Flight Deck Automation Policy - Mode Awareness and Energy State Management';
- SIB 2014-07 'Unexpected Autopilot Behaviour on Instrument Landing System (ILS) Approach';
- SIB 2014-17 'Aeroplane Mode Awareness During Final Approach'.

**Status:** Open – **Category**:

# Norway

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| OY-RJC | BOMBARDIER CL600 2B19 | Oslo Airport Gardermoen | 31/01/2008 | Serious incident |

## Synopsis of the event

On 31 January 2008, at 1721 hours, a serious aircraft incident took place during take-off from runway 19L at Oslo Airport Gardermoen (ENGM). A Bombardier CL-600-2B19 (CRJ200) aircraft with two pilots and two cabin crew members onboard suddenly lost lift on the right wing, causing the wing to drop and sending the aircraft into an uncontrolled 40-degree bank immediately after lift-off. The stall protection system activated, and the crew regained control and continued as scheduled to Copenhagen. The investigation has shown that satisfactory de-icing took place 15 minutes prior to departure, and that the wings were not cold-soaked in advance. Weather conditions were temperature at freezing, 15 kt wind and continuous precipitation in the form of aggregated, wet snowflakes. The runway was covered by slush and wet snow which had fallen after the runway had been cleared of snow and sanded 30 minutes earlier. Unintentionally, due to distraction, the system for heating the leading edge of the wing was not switched on prior to take-off. The nose wheel was lifted from the ground at the correct speed, but at a higher rotation rate than recommended. This incident is one in a number of similar cases. From 2002 to 2008, six CL-600 series aircraft crashed in winter conditions. The wing of the aircraft has proven to be especially sensitive to contamination on the leading edge. After the crashes, a number of measures have been implemented to ensure that the wing is clean during take-off, and to ensure that the pilots use the correct take-off technique. On take-off from contaminated runways, spray from the nose wheel will envelop the aircraft's wing root. This source of contamination hits an aerodynamically critical area on the wing, and comes in addition to the precipitation which can adhere to the wing and disturb the airflow. When the de-icing fluid flows off during take-off, it is essential that the leading edge of the wing is heated. The AIBN believes that it is not sufficient to use only "soft" safety barriers such as check lists and memory when one switch position (Wing Anti-Ice ON) can be critical to avoid a crash during take-off. Technical or physical safety barriers in the form of design changes, automatic systems or automatic warning systems are, in the opinion of the accident Investigation Board, necessary to reduce the risk of accidents. Alternatively, greater limitations for winter operations with the affected aircraft models must be introduced.

## Safety Recommendation NORW-2011-003 (AAIB)

To increase safety margins, the AIBN recommends that Transport Canada and EASA require the type certificate holder (Bombardier) to introduce non-procedural safety barriers (for instance take-off warning or automatic activation) to ensure that the wing anti-icing system on affected CL-600 series aircraft is activated on take-off in certain winter conditions. (SL no. 2011/03T)

**Reply**

EASA supports the primary certification authority´s (Transport Canada Civil Aviation, TCCA) request made to Bombardier to develop corrective action that would further mitigate the safety risk beyond the Take-off Safety Enhancement program (TOSE). The Agency is following the development of this technical solution that will be submitted to EASA validation after TCCA approval.

EASA will provide an update to the Accident Investigation Board Norway (AIBN) when final action has been defined by the Type Certificate holder and agreed by authorities.

**Status:** Open – **Category**:

### Safety Recommendation NORW-2011-004 (AAIB)

Until satisfactory technical/physical safety barriers have been introduced to ensure that the wing anti-icing system on CL-600 series aircraft is activated on take-off when this is critical to safety (see Safety recommendation 2011/03T, EASA reference NORW-2011-003), the AIBN recommends that Transport Canada and EASA impose more severe restrictions on winter operations on the affected aircraft. The restrictions should in effect entail that flying is only permitted if the conditions make it safe to take off without Wing Anti-Ice being activated.

**Reply**

This recommendation has been addressed mainly through "Take-Off Safety Enhancement (TOSE)" campaign, by the publication in 2008 by the primary certification authority (Transport Canada Civil Aviation, TCCA) of the two Airworthiness Directives (AD) CF-2008-15R1 and CF-2008-16R1. These two ADs endorsed by EASA, mandate additional limitations and procedures in the Airplane Flight Manual (AFM) and require specific pilot training with regard to enhanced take-off procedures and winter operations.

In addition EASA publication in 2011 of the Safety Information Bulletin SIB 2011-29, further raise awareness regarding the operation of affected aircraft in cold weather or icing conditions during Take-off.

**Status:** Closed – **Category**: Agreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| LN-NEX | DIAMOND DA40 | 2-3 Nm North of Rygge | 02/07/2005 | Serious incident |

### Synopsis of the event

The commander had practiced landing circuits at Rygge Air Force Base and was heading back to Kjeller Airport when the engine suddenly stopped with a bang. At the time the aircraft was approximately 2 - 3 NM north of the runway and the commander headed for the runway 12 threshold. As it turned out, the aircraft did not have sufficient altitude, but the commander managed to make a successful landing on a taxiway which traversed the runway. There was no personal injury or additional damage to the aircraft. It emerged from the engine investigation that a connecting rod had split in the small end bearing. The loose end of the connecting rod then made a hole in the crankcase before pushing its way up the cylinder wall and out through the water jacket. It was further established that on 19 April the same year the engine had been run with insufficient oil level and low engine oil pressure for a short period of time. According to the engine manufacturer, this had caused overheating of the pistons and the gudgeon pin. It is likely that such overheating could have impaired the connecting rod and the small end bearing, causing a split in the connecting rod just after departure from Rygge. It was pure coincidence that the incident occurred when it did. It was not affected by the commander's operation of the aircraft. The DA40-D aircraft type, which received its type certificate from JAA, belongs to a new generation of aircraft with anticipated low operating costs. However, experience by the operator Oslo Flyveklubb has shown that their individuals of this aircraft type have had unacceptably low operational reliability. Repeated technical errors and frequent replacements of components have represented considerable challenges for the operator.

### Safety Recommendation NORW-2011-016 (AAIB)

The Accident Investigation Board recommends that Thielert Aircraft Engines GmbH reassess the limit values in the operating instructions with regard to minimum oil pressure. (No. 2010/16T).

**Reply**

A change of logic in oil pressure indication has been implemented. The threshold for triggering a red warning light has been increased from 1 bar to 2.3 bar at 1600 RPM.

**Status:** Closed – **Category**: Agreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| LN-BCD | CIRRUS SR20 | Sirdal | 28/05/2010 | Accident |

### Synopsis of the event

The private aircraft was en route from Stavanger airport Sola to Tønsberg airport Jarlsberg when clouds made it necessary to turn back to maintain visual references. When turning, the aircraft entered clouds with severe icing and turbulence. Control was lost as the pilot in command, who had no experience with instrument flying, suffered from vertigo and as ice built up on the wing and most likely made the aircraft stall prematurely. A probable total loss with a fatal outcome was prevented by the pilot's activation of the aircraft's rescue parachute. The aircraft came down in rough terrain north of Ådneram in Sirdal with significant structural damage, but none of the four occupants sustained injury.

The opinion of the Accident Investigation Board Norway is that insufficient planning ahead of departure and too little distance to rapidly growing clouds (towering cumulus) were contributing factors to the accident. This report makes one safety recommendation.

### Safety Recommendation NORW-2012-001 (AAIB)

Safety recommendation No. 2012/01T

If the rescue parachute is deployed during the flight, the aircraft is in a serious emergency. The probability of the emergency and position being noticed by the alarm and rescue services increases if the emergency locator transmitter (ELT) is triggered automatically at the same time.

The AIBN recommends that Cirrus Aircraft develops an automatic system that ensures that the ELT is triggered when the Cirrus Aircraft Parachute System (CAPS) is engaged.

**Reply**

EASA acknowledges the recommendation to Cirrus Aircraft. EASA has been informed that Cirrus Aircraft intends to develop such a system and will be involved in the corresponding approval.

**Status:** Open – **Category**:

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| LN-OXC | AEROSPATIALE AS350 | Dalamot in Ullensvang Municipality, Hordaland county | 04/07/2011 | Accident |

### Synopsis of the event

The helicopter was used to transport people to a cabin site in the mountains. The weather was good with fine flying conditions. The first flight with five passengers had been completed. There were four passengers on board during the second flight. As the helicopter started the descent towards the cabin site, the passengers of the first flight witnessed the helicopter initiating an abrupt, descending turn to the right. The witnesses have explained that during the turn, control of the helicopter appeared to be lost. At the end, it seemed as if a recovery was close, but the helicopter hit the ground hard about 500 metres from the planned landing site and caught fire immediately. All five persons on board were killed. The helicopter was a total loss.

### Safety Recommendation NORW-2012-010 (AAIB)

The Accident Investigation Board Norway (AIBN) recommends that EASA considers introducing requirements regarding flight recorders on more aircraft than are covered by the current regulations.

**Reply**

The Agency's rulemaking tasks RMT.0271 and RMT.0272 'In-flight recording for light aircraft' were launched on 25 July 2014 with the publication of the associated Terms of Reference.

This safety recommendation is being considered within the framework of these tasks.

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

# Russian Federation

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| RA-1018G | CESSNA 182 | 11 km to the north-west of Perm airport, (Bolshoye Savino) | 29/11/2009 | Accident |

## Synopsis of the event

On November 29, 2009 an amateur pilot was conducting en-route flight on an S-182TD RA-1018G aircraft (single aircraft) from Yoshkar-Ola to Omsk-Novokuznetsk. After entering the terminal area of Perm Airport the engine failed. During the emergency landing beyond the airdrome, due to hard landing, the Aircraft was significantly damaged. There was no fire on board. The pilot and 3 (three) passengers on board have suffered injuries of various severity; 12 days later one passenger died in a hospital. There was no cargo on board.

## Safety Recommendation RUSF-2012-001 (AIB)

FAA, EASA: together with the Type Certificates holders (SMA, Cessna) review the evidences that support the published data of the best glide speed and corresponding distance subject to flight altitude. If necessary to make the corresponding changes into the operational documentation.

**Reply**

EASA in coordination with the Federal Aviation Administration has come to the following conclusion. EASA recognizes that there can be differences between the best glide speeds and corresponding distances calculated for the two Cessna 182 models (with SMA and Lycoming) but does not deem that further investigation of the issue is needed.

The published data for glide speeds and gliding distances have been determined and accepted during certification. The aim of providing the maximum gliding distance is only to give a reference information to the pilot. This distance is calculated on the basis of the glider polar graph data which can vary due to even small aerodynamic differences between aircraft of the same model. As a consequence, caution should be taken when used for determining the distance to land in case of an emergency landing considering the fact that different certificate holders might be more or less conservative in their published performance data.

**Status:** Closed – **Category**: Disagreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| VP-BYZ | ATR<br>ATR72 | Roschino (Tyumen) airport | 02/04/2012 | Accident |

### Synopsis of the event

On 02.04.2012, at 01:35 UTC1 (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. 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. 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. On board there were 4 crew members (PIC, F/O and two flight attendants) and 39 passengers, all RF citizens.Out of the 43 persons on board, 4 crew members and 29 passengers were killed. Others received serious injuries.

### Safety Recommendation RUSF-2013-001 (AIB)

IAC recommends the certification authorities of States of Design to review the current procedural approach to checking aircraft surfaces on contaminants accretion before the flight and to monitoring aircraft state after de/anti-icing treatment and to consider the introduction of a requirements to mandatory equip at least those A/C types whose aerodynamic performance is very sensitive to ground icing with an on-board system for automatic detection of ground icing conditions and notifying flight crews.

**Reply**

Under the EASA regulatory system, the commander is responsible to ensure that the aircraft is clear of any contamination deposits that might adversely affect its performance or controllability. The Aeroplane Flight Manual must be used to determine the conditions under which any ice contamination could eventually be acceptable.

To address the sensitivity of some aeroplane designs to slight ground ice contamination which may be difficult to detect, the Agency provisioned rulemaking task RMT.0118 in the Rulemaking Programme 2014-2017. The objective would be to amend CS-25 to require applicants performing an assessment of the effect of aircraft aerodynamic surfaces on-ground contamination on take-off performance and on aircraft manoeuvrability and controllability.

The applicant would have to demonstrate that prior to take-off, the aircraft aerodynamic surfaces cannot accumulate undetectable hazardous quantities of ice contamination. If hazardous undetected quantity of contamination may accumulate prior to take off, then the applicant would have to provide a means of protection against this hazard. Consideration of retroactive requirements for the most vulnerable aircraft has been recommended for this task (to be studied).

In any case, the installation of an on-board system for automatic detection of ground icing conditions would only be of an advisory nature, and this would not eliminate the need for the pilot to assess the aerodynamic surfaces against the potential presence of any ice contamination. For cases where ice contamination is fairly visible, the Agency considers that such system would not introduce any additional safety barrier.

**Status:** Closed – **Category**: Disagreement

### Safety Recommendation RUSF-2013-002 (AIB)

IAC 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**

The Agency intends to consider this safety recommendation within the context of rulemaking tasks RMT.0196 and RMT.0197 [former FCL.007 (a) and (b)] 'Flight Simulation Training Devices (FSTDs)'.

The launching of these rulemaking tasks has been postponed pending publication of amendments to ICAO Doc. 9625 'Manual of Criteria for the Qualification of Flight Simulation Training Devices'. These amendments are needed in order to take into account the latest amendments to ICAO Annex 1 and ICAO Doc. 9868 'Procedures for Air Navigation Services – training (PANS-TRG)' regarding upset recovery and prevention training (UPRT).

In addition, the Agency has launched rulemaking tasks RMT.0581 and RMT.0582 'Loss of control prevention and recovery training'. The outcome is expected to affect the aircrew training regulations as well as the related FSTD provisions. Therefore, the rulemaking tasks on FSTDs will not be launched until the results of RMT.0581 and RMT.0582 are known. The tasks are ongoing and the associated Notice of Proposed Amendment (NPA) is expected to be published in 2015.

**Status:** Open – **Category**:

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| RA-04049 | EUROCOPTER EC120 | Murmansk | 21/07/2013 | Accident |

### Synopsis of the event

Eurocopter EC120 Colibri B RA-04049 s/n 1341 built 2003 and operated by Alliance Avia has crashed in Lovozero District, Murmansk, Russia July 21. Its understood that the helicopter had just lifted off after disembarking its three passengers when it tilted to one side due to a gust of wind, resulting in the main rotors striking the ground and flipping over on its side killing its previous occupants. The pilot suffered unknown injuries.

### Safety Recommendation RUSF-2014-003 (AIB)

5.3.1. EASA: To study the reasonability of the development and installation of the system that would inform a pilot of the vertical speed and G load values overlimit at hard landing

**Reply**

EASA will examine the relevant issues surrounding the development and installation of the recommended system, taking also into account human factors issues related to the type and amount of additional information provided to the pilot. Depending on our conclusions, the Agency may proceed to encourage the industry to develop such a system.

**Status:** Open – **Category**:

### Safety Recommendation RUSF-2014-004 (AIB)

5.4.1. To study the reasonability of the bulletin issue on the compulsory change of the landing gear aft attachment clamp to the reinforced one.

**Reply**

EASA, in coordination with Airbus Helicopters (AH), has examined the pertinence of mandating the replacement of the landing gear aft attachment clamp to the reinforced one (Service Bulletin No EC120-32-006), and concluded that this will not be an appropriate action in terms of safety enhancement.

The results of the simulations and analyses carried out by AH agreed with the conclusions of the investigation report that the accident was due to the overload failure of the skid caused by a landing at a very high descent rate, in conjunction with a high yaw rotation, and that this circumstance eventually led to the rollover of the helicopter. However, for this reason it is considered that the application of the reinforced clamp will not prevent the rollover from happening in similar situations, since the skid landing gear itself is not designed to sustain the loads generated from such a landing.

**Status:** Closed – **Category**: Disagreement

# Saudi Arabia

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| TC-OAG | AIRBUS A300 | Jeddah | 05/01/2012 | Accident |

## Synopsis of the event

A Turkish registered aircraft, TC-OAG was performing a commercial flight for Saudi Arabian Airlines as SVA 2865. SVA 2865 was on a positioning flight from Madinah to Jeddah, KSA. During the initial approach to Jeddah, the nose landing gear did not extend. After many attempts at lowering the nose landing gear without success, fuel was burned and the aircraft landed with the nose gear retracted. The landing was executed safely. There was no fire, nor injuries.

## Safety Recommendation SAUD-2013-001 (AIB)

The AIB recommends that the European Aviation Safety Agency (EASA) evaluate, revise and modify the certification requirements of CF-25 certified aircraft related to the Emergency Exit arrangements; by specifying the portion of the slide that should be self-supporting on the ground for its useful and safe use.

**Reply**

CS 25.810(a)(1)(iii) and CS 25.810(d)(2) require that assisting means, i.e. slides, are self-supporting with one or more landing gear legs collapsed and under a 46km/h(25knots) wind directed from the most critical angle.

In addition, for non-overwing slides, CS 25.810(a)(1)(iv) requires these assisting means remain deployable and usable when combining the wind condition mentioned above and any engine(s) running at ground idle; but one person may provide assistance on the ground during the evacuation process.

To demonstrate compliance to these rules, FAA AC 25-17A is used by applicants and accepted by EASA (this AC will also be soon added by reference in CS-25 in a new AMC). The following is provided by the AC regarding Part 25.810 (harmonized with CS 25.810):

- Paragraph (a)(1)(ii) and (d). Collapse of any one or more landing gear legs will cause the slide angle to vary from the normal angle. At these various angles, it may be acceptable if the assisting means is safely usable by normal, healthy passengers. If this is not obvious by inspection, it should be demonstrated by test. The evacuation rate need not be the same as that with a normal angle. The adverse attitude also should be evaluated for the cockpit emergency egress provisions. (Amendment 25-15)
- Paragraph (a)(1)(iii) and (d). To be self-supporting, the bottom end of the slide should rest on the ground. If it does not rest on the ground, the slide must be usable and look usable to passengers. When the passenger uses the slide, the bottom end should rest on the ground and allow the passenger to egress, the slide readily. (Amendment 25-15)
- Paragraph (a)(1)(iii), (iv) and (d). In order to meet the 25 knot wind requirement, the escape slide presses against the fuselage and the end of the unoccupied slide may not be in physical contact with the ground, especially in the most adverse attitude (gear collapse). This condition has been found to be acceptable provided the slide is self-supporting on the ground shortly after an evacuee has entered the slide and prior to the evacuee reaching the end of the slide. The unoccupied slide, when viewed from the exit, should not give the visual impression that the slide is unsafe for use. (Amendment 25-47)
- Paragraph (a)(1)(iv) and (d). (Amendment 25-46)

(i) The person who assists should come from the airplane. This capability should be demonstrated by test. (Amendment 25-46)

Therefore, the certification rules and the available guidance material ensures that the applicant demonstrates a safe evacuation in case of one or more gear collapse.

Similar requirements were present in the Type Certification basis of the A300-600, although based on the then relevant FAR Part 25.809 paragraph, as paragraph 25.810 was created in 1990 under Amendment 25-72.

As a result of the above, specifying a portion of the slide that should be self-supporting, as is the intent of the recommendation, is not deemed necessary. This value would vary depending on the scenario considered, and as explained above, it has been found acceptable that in some cases the slide may not be in physical contact with the ground before an evacuee has entered the slide.

Finally, it is reminded that for the evacuation demonstration, CS-25 requires that not more than 50% of the emergency exits in the sides of the fuselage are used (Appendix J to CS-25, paragraph (p)), which provides a safety margin against cases where some slides are not usable.

Therefore, the Agency does not find a justification to amend the current certification specifications for emergency egress assisting means.

**Status:** Closed – **Category**: Disagreement

# Singapore

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| B-HLM | AIRBUS A330 | South-East of Singapore | 16/05/2011 | Serious incident |

## Synopsis of the event

At about 0112 hours (Singapore Time) on 16 May 2011, an Airbus A330 passenger aircraft experienced a No.2 engine fan blade failure while climbing through 33,000 feet after departure from Singapore Changi Airport. The engine was shut down but experienced a subsequent engine fire event as the aircraft returned to Changi Airport. The aircraft landed safely and there were no injuries.

## Safety Recommendation SING-2014-011 (AAIB)

The European Aviation Safety Agency require the engine manufacturer, as holder of the type certificate, to review the design of the engine to comply with the EASA requirement CS-E 810 (Compressor and Turbine Blade Failure) requirements such that no hazardous engine effect can arise as a result of other engine damage likely to occur before engine shut down following a blade failure. [AAIB Recommendation R-2014-011]

**Reply**

EASA has examined the Singapore investigation report AIB/AAI/CAS.074 and reviewed the manufacturers findings concerning the partial fan blade failure in this event and concur with the analysis described in the investigation report. The partial fan blade failure at a local peak stress location is attributed by the engine manufacturer to be the use of an incorrect gas during manufacturing, resulting in a diffused beat-denuded layer microstructure at the surface of the internal cavity with reduced material properties.

Fan blades with a manufacturing signature indicative of this issue have subsequently been withdrawn from service and the manufacturer has also implemented measures in production to prevent the release to service of fan blades which may exhibit similar characteristics. In addition EASA AD 2014-0031 requires repetitive inspections of Trent 700 fan blades and, depending on findings, replacement.

The Trent 700 certification basis as identified in the EASA Type Certificate Datasheet EASA.E.042 is JAR-E change 8 incorporating Orange Paper E/91/1. The intent of the certification specification JAR E 810 – Compressor and Turbine Blade Failure are consistent with those of CS-E 810.

Following the partial fan blade release in this occurrence, a full reassessment of the fuse system behaviour has been undertaken by the engine Type Certificate Holder (TC Holder). That assessment has determined that under partial fan blade release conditions the current fuse system does not behave to design intent and may result in excessive bending of the fan shaft.

A study by the manufacturer has shown that during a partial fan blade failure the out-of-balance rotating loads, although below the intended fuse failure loads, were sufficient to enable unwinding of the low pressure carrier bolts, which ultimately fail as a result of cyclic loading which secure the low pressure bearing carrier of the front bearing housing overcoming fuse 1. This behaviour was not envisaged during initial engine certification, where a full blade release was performed in accordance with the requirements of JAR E810 as it was assessed as the most critical case.

It is considered that the unwind of the Low Pressure (LP) carrier bolt (number 1 fuse joint) during this fan blade off (FBO) event ultimately led to the scenario as described by the AAIB. The function of one of the two fuses at relatively high rotor speeds (i.e. within a few seconds of FBO) resulted in heavier than normal contact between the LP shaft and stub shaft. The heat generated from this contact caused greater deformation of the LP shaft than other events. This bending of the fan shaft would result in an increased fan orbit enabling trepanning of the fan case and retention panels, permitting forward movement of the intake/fan case structure creating a gap between the thrust reverser and fan cowl door. The increased fan orbit will also have led to additional loading of engine components resulting in the fuel pipe cracking and pylon secondary cracking. The heat and sparks caused by the fan blades trepanning through the full thickness of the fan case caused ignition and burn through of the Kevlar containment wrap. The burning Kevlar ignited leaking fuel from the cracked fuel pipe. Air fed through the trepanned hole in the fan case would have prevented the burning Kevlar from being extinguished and therefore the burning Kevlar most likely acted as a continued ignition source after the fire extinguishers had been discharged. As identified by the AAIB, the gap developed between the thrust reverser and fan cowl door may have compromised the effectiveness of the fire extinguishing agent in suppressing the fire resulting from the ignited leaking fuel.

The engine TC Holder is currently pursuing a design solution that prevents the outcome as observed in this occurrence by preventing the unwind of the number 1 fuse bolts during this type of fan blade event. The design solutions under evaluation by the engine TC Holder are intended to remove the observed risk of shaft bend in 1/3 blade aerofoil release events such that the fuse will remain intact at these lower load conditions, preventing contact between the fan shaft and stub shaft. These actions will return the fuse behaviour to design intent and restore compliance with EASA certification specifications. This design change will be the subject of an EASA approval. At this time the continued airworthiness of the Trent 700 fleet is being reviewed and monitored in accordance with EASA Part 21 A 3.

**Status:** Open – **Category**:

# Spain

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| EC-HFP | DOUGLAS DC9 | Madrid-Barajas Airport | 20/08/2008 | Accident |

## Synopsis of the event

On 20 August 2008, the McDonnell Douglas DC-9-82 (MD-82) aircraft, registration EC-HFP, arrived from Barcelona at Madrid-Barajas Airport at 10:13 to conclude what was the first flight programmed for that day. The aircraft was then scheduled to continue on to Las Palmas with the same crew that had flown the previous leg. The estimated departure time was 13:00. Once the aircraft was on the runway threshold ready for takeoff, the crew noted an abnormally high temperature of the RAT (Ram Air Temperature) probe and returned to the stand to attempt to solve the problem. After maintenance work performed by the airline's own maintenance technicians, it was proposed and accepted that the airplane be dispatched once more. At 14:08, the aircraft was again cleared for engine start-up. At 14:23, with the airplane at the threshold of runway 36L, it was cleared for takeoff once more. The airplane started the takeoff run only to descend and impact the terrain immediately after lifting off the ground. The aircraft was destroyed as a result of the impact with the ground and the subsequent fire. Onboard the airplane were 172 people, of whom a total of 148 passengers and all 6 crew perished. Eighteen passengers, including three minors, were seriously injured. The investigation has so far determined that the takeoff was attempted while in an inappropriate configuration, since neither the flaps nor slats were deployed. The system outfitted on the airplane to warn of an inadequate takeoff configuration (TOWS) also failed to function. The investigation has determined that the accident occurred because: Flight crew lost control over the plane as a consequence of the stall that appeared immediately after the take-off, having not configured the plane correctly, as they had not executed the action of deploying flaps/slats after a chain of mistakes and omissions, and not having any warning about the incorrect take off configuration. Flight crew did not identified the stall cues neither corrected that situation after the take-off - they pulled back, for a moment, the engine power levers, increased the pitch angle and didn´t correct the bank angle - getting the stall flight condition deteriorated. Flight crew did not detect, while performing pre-flight tasks, the erroneous plane configuration, not making a proper use of the checklists where the items for selection and checking of the flaps/slats position are contained, specifically: - They did not perform, while executing the "After Start" checklist, the action consisting of selecting flaps/slats using the corresponding control lever; - They did not cross-check, while executing the "After Start" checklist, the flaps/slats control lever position and the flaps and slats indicator lights status; - They omitted the flaps and slats check requested in point "Take Off Briefing" of the taxi checklist; - While performing the visual check, in execution of the point "Final Items" of the "Take Off Imminent" checklist, no real confirmation of flaps and slats position, as shown by cockpit instruments, was sought. The investigation has determined that the following factors contributed to the accident occurrence: - The absence of warnings on the incorrect take off configuration due to the malfunction of the Take Off Warning System (TOWS) that did not alert the flight crew that the plane configuration was not appropriate for taking off. It has not been possible to determine, irrefutably, what caused the TOWS malfunctioned; - A non-adequate Crew Resources Management (CRM) that did not prevent deviation from procedures following non-programmed interruptions of the pre-flight sequence.

### 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**

The Agency intends to consider this safety recommendation within the context of rulemaking tasks RMT.0196 and RMT.0197 [former FCL.007 (a) and (b)] 'Flight Simulation Training Devices (FSTDs)'.

The launching of these rulemaking tasks has been postponed pending publication of amendments to ICAO Doc. 9625 'Manual of Criteria for the Qualification of Flight Simulation Training Devices'. These amendments are needed in order to take into account the latest amendments to ICAO Annex 1 and ICAO Doc. 9868 'Procedures for Air Navigation Services – training (PANS-TRG)' regarding upset recovery and prevention training (UPRT).

In addition, the Agency has launched rulemaking tasks RMT.0581 and RMT.0582 'Loss of control prevention and recovery training'. The outcome is expected to affect the aircrew training regulations as well as the related FSTD provisions. Therefore, the rulemaking tasks on FSTDs will not be launched until the results of RMT.0581 and RMT.0582 are known. The tasks are ongoing and the associated Notice of Proposed Amendment (NPA) is expected to be published in 2015.

**Status:** Open – **Category**:

### 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**

EASA discussed, in cooperation with 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 Agency has decided, for now, not to amend the long standing and harmonised definition as a clearer improved text, acceptable to all authorities, could not be readily identified.

**Status:** Closed – **Category**: Disagreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| EC-GDG | SWEARINGEN SA226 | Gavá | 18/02/1998 | Accident |

## Synopsis of the event

La aeronave matrícula EC-GDG, identificador de vuelo IBT-595A, despegó del Aeropuerto de Barcelona a las 22:38 h (23:38 h local) del miércoles día 18 de Febrero de 1998, en un vuelo de transporte de carga con destino a Bruselas. A bordo iban la comandante y la copiloto y, según el manifiesto de carga, ésta consistía en 625 kg de paquetería. Durante ese día la tripulación había efectuado otros cuatro vuelos con el mismo avión, con un total 3 h y 55 m de vuelo. Los tramos de estos vuelos habían sido Barcelona-Palma de Mallorca-Alicante-Valencia-Barcelona. El aterrizaje del último tramo Valencia-Barcelona se produjo a las 21:05 h. Las condiciones meteorológicas en el Aeropuerto de Barcelona a las 22:30 h eran viento 2 kt 270°, visibilidad 2000 m, con neblina, cubierto entre 5 y 7 octas a 400 pies, temperatura 10°, punto de rocío 9o, y QNH 1035. La aeronave fue autorizada a proceder en curso hasta Bagur y a ascender a FL180. A las 22:47:15 h, cuando se encontraba controlada por el Sector Central del Centro de Control de Barcelona, a 8400 ft de altitud, a 23 NM y en el radial 060° del VOR de Barcelona (QUV), y con una velocidad respecto a tierra de 250 kt, la tripulación solicitó regresar al aeropuerto, con la frase "Requeriríamos volver al campo." Se le autorizó a regresar y a las 22:48:32 se le indicó que contactase con el Control de Aproximación de Barcelona, el cual, después de darle instrucciones para viraje y nuevo código de transponder, de informarle que le seguía otra aeronave, y confirmarle que la pista para aproximación era la 07, preguntó a la tripulación si necesitaban alguna ayuda en tierra. La tripulación respondió: "Negativo. De momento no, gracias" a las 22:51:25 h. El control les instruyó que redujesen velocidad hasta 180 KIAS. Después, les autorizó a descender a 3000 ft. A las 22:59:35, según la grabación de comunicaciones de la torre, la tripulación contactó con el Control de la Torre de Barcelona, indicando que estaban establecidos en final, y la torre les autorizó a aterrizar en la pista 07 con viento 240/05. En ese momento se encontraban a unas 7 NM en final, librando 2400 ft y con unos 190 kt de velocidad respecto a tierra. A las 22:59:46 h, la tripulación colacionó, con voz serena en todo momento, autorizado a aterrizar en la pista 07. La aeronave pasó la baliza exterior QA a las 23:00:15 h (según comunicaciones con torre), a 1500 ft y con una velocidad respecto a tierra de 170 kt. Según los datos meteorológicos, el viento a esa altitud era en esos momentos de 215° y 15 kt. Cuando se encontraba a 3.7 NM del VOR QUV, a 700 ft y con velocidad respecto al suelo de 150 kt, empezó a desplazarse a la izquierda del localizador. La última señal radar que se recibió de la aeronave fue a las 23:01:13 h (según el reloj de torre), a unas 2.8 NM de QUV, a 0.3 NM al norte del localizador de la pista 07, con indicación de 0 ft de altitud y 130 kt de velocidad respecto a tierra. La torre, tras comunicar con otra aeronave que se estaba aproximando a la pista 07 a unas 7.5 NM de distancia e indicarle que ya le llamaría para autorizarle a aterrizar, intentó contactar con la EC-GDG pidiendo su posición a las 23:03:35 h sin obtener respuesta. Volvió a intentarlo repetidamente y, tras un último intento a las 23:04:18 h, comprobó que la pista estaba libre y autorizó a aterrizar a la segunda aeronave. A las 23:04:48 la torre vio fuego a unas 2 NM de distancia de la cabecera de la pista 07, y tomó la decisión inmediata de declarar emergencia mediante el pulsador de alarma. Los equipos de rescate se dirigieron rápidamente al lugar. La aeronave se había precipitado sobre los terrenos de un vivero situado en el Camino de la Mutra en el término municipal de Gavá. Ambas tripulantes fallecieron como consecuencia del impacto y posterior incendio.

## Safety Recommendation SPAN-2012-010 (CIAIAC)

It is recommended that the European Aviation Safety Agency (EASA) study the viability of introducing a requirement into the operational regulations that ground proximity warning systems be installed on turboprop aircraft authorized for IFR flights and used for the public transport or passengers or cargo, regardless of their weight or maximum number of seats.

**Reply**

A terrain awareness and warning system (TAWS) aims to prevent "Controlled Flight Into Terrain" (CFIT) accidents. The actual systems in current use are known as ground proximity warning system (GPWS) and enhanced GPWS.

The Agency's interim response dated 18 December 2012 referred to rulemaking tasks RMT.0371 and RMT.0372 [former OPS.078 (a) and (b)] 'TAWS operation in IFR (instrument flight rules) and VFR (visual flight rules) and TAWS for turbine powered aeroplanes under 5700 kg MTOM (maximum take-off mass) able to carry 6 to 9 passengers''.

These tasks were launched on 31 January 2014 with the publication of the associated Terms of Reference. This safety recommendation is being considered within the framework of these tasks.

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

### Safety Recommendation SPAN-2012-011 (CIAIAC)

It is recommended that the European Aviation Safety Agency (EASA) study the viability of introducing a requirement into the operational regulations that cockpit voice and flight data recorders of given specifications be installed on turboprop aircraft authorized for IFR flights and used for the public transport or passengers or cargo, regardless of their weight or maximum number of seats.

**Reply**

The Agency's rulemaking tasks RMT.0271 and RMT.0272 'In-flight recording for light aircraft' were launched on 25 July 2014 with the publication of the associated Terms of Reference.

This safety recommendation is being considered within the framework of these tasks.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| EC-KYR | AGUSTA BELL AB139 | the coast of Almeria | 21/01/2010 | Accident |

### Synopsis of the event

On Thursday, 21 January 2010 at 20:16:02, an AgustaWestland AW139 helicopter, registration EC-KYR, crashed in a controlled flight into the water, inadvertently by the crew, 4.5 nautical miles (NM) south of the Almeria coast. The aircraft had started operations at 18:00 from the Almeria Airport, where it was based. It had been on a scheduled nighttime search and rescue (SAR) training flight for over two hours. At the completion of the training at 20:13:52, the aircraft started the return trip to the airport. Two minutes and ten seconds later, at 20:16:02, the helicopter impacted the water at a ground speed (GS) of 110 knots on a course of 081º with a 3.5º positive pitch angle and at a 1º right bank angle. The helicopter was destroyed by the impact and sank to the bottom in 91 meters of water. The entire flight took place under nighttime conditions with no adverse weather. Of the four persons onboard (pilot, copilot, rescue swimmer and winch operator), only the winch operator survived the accident.

### Safety Recommendation SPAN-2012-037 (CIAIAC)

It is recommended that the EASA, as the certifying authority, review the proof of compliance involved with the certification standards for the HR Smith 503 emergency locator transmitters installed on the AgustaWestland AW139 helicopter.

**Reply**

EASA has reviewed the European Technical Standard Order/Joint Technical Standard Order (ETSO/JTSO) compliance of the Crash Position Indicator (CPI) 503. Identified issues have been addressed through the Continuing Airworthiness process with the issuance of Service Information Bulletin (SIB) 2011-18 and 2010-22 and Airworthiness Directive (AD) 2014-0019.

**Status:** Closed – **Category**: Agreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| EC-CUD<br>EC-EKR | PIPER<br>PA36PIPER<br>PA36 | Santa Amalia | 07/08/2007 | Accident |

### Synopsis of the event

The two aircraft were being used to spray rice fields on farms in the town of Santa Amalia (Badajoz).

At around 10:30, after having completed 8 or 9 spraying flights between the fields and the temporary landing strips that were being used as operational bases, aircraft EC-CUD was returning from the field it had been spraying to the strip, and aircraft EC-EKR had just taken off from its base to return to the field it had been working on, when the two collided in mid-air.

The collision took place over a point located about 1000 meters west of the landing strips.

The investigation has concluded that the most likely cause of the accident was the failure of each pilot to detect the other aircraft, or having done so too late to avoid the collision, perhaps because the pilots were focused on other flight duties and did not notice the presence of the other aircraft.

The factors contributing to this accident were the absence of any coordination between the operators, who were working simultaneously in the same area, and the lack of communications between the aircraft, particularly important while approaching and departing from their respective bases, caused by the fact that neither one had radio equipment installed.

### Safety Recommendation SPAN-2013-057 (CIAIAC)

It is recommended that the European Aviation Safety Agency (EASA) require the installation and use of radio communication equipment onboard aircraft used for agricultural aerial work when they are operating simultaneously in the same area as other aircraft.

**Reply**

Operational rules for specialised operations are expected to be adopted by the European Parliament in the first quarter of 2014. They will include a requirement (in SPO.OP.230) for operators to 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 this risk assessment the operator shall establish standard operating procedures (SOP) appropriate to the specialised activity and aircraft used. The SOP shall be part of the operations manual or a separate document. SOP shall be regularly reviewed and updated, as appropriate. Furthermore the operator shall ensure that specialised operations are performed in accordance with SOP.

An Executive Director's Decision will be published as soon as the rules are adopted, containing associated acceptable means of compliance and guidance material. AMC1 SPO.OP.230 and AMC2 SPO.OP.230 will further specify the content of the SOP and specifically recommend to cover, among other factors, the nature of the flight and the risk exposure, the operational environment, operating procedures and all the equipment required for the activity.

It is believed that such requirements in Part-SPO will address the issues described in the safety recommendation and therefore no further rulemaking action is considered necessary.

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

# Sweden

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| SE-IVF | CASA C212 | the Northern basin of Falsterbo canal, Skåne County | 26/10/2006 | Accident |

## Synopsis of the event

One of the Swedish Coastguard aircraft, of type CASA C-212 with call sign KBV 585, took off at 11:09 from Ronneby airport for a routine maritime surveillance flight. The crew consisted of two pilots and two system operators. During the flight the crew received a message from the co-ordination centre concerning a request that had been received for a fly by over the Falsterbo canal, where the Swedish Coastguard has a base. The pilots accepted this and revised the final part of their flight plan so that a demonstration of the aircraft could be performed. At 13:23 KBV 585 came in over the coast at Falsterbonäset on a north-northwesterly course along the canal. The aircraft then continued out over the sea and after a left turn returned to approach the base. The aircraft then performed another fly by at low speed over the base and along the canal in the opposite direction. Beyond the end of the canal the aircraft turned back to the left and flew for the last time towards the base. As the aircraft neared the base once more it made some wing tipping. After tipping its wings two or three times a loud bang was heard, and the entire left wing separated from the aircraft. The aircraft then rolled over on to its back and fell, along with the left wing, into the harbour basin, where it disintegrated on impact. All on board were killed. The technical examination showed that the cause of the wing separation was a fatigue fracture, about 84 cm long, which was present in the wing lower skin, where the wing was attached to the aircraft fuselage. The crack in the wing lower skin, which forms part of the wing's load-bearing structure, meant that the strength of the wing was severely compromised. In connection with the wing tipping that was performed, momentary lift and mass forces were applied to the wing, which resulted in a final fracture in the left wing that bent upwards and separated from the aircraft fuselage. The same type of fatigue crack was found in a similar location in the right wing, but this was far less developed. The initiation and development of these left and right wing cracks were similar. The metallurgical examination showed that they had been initiated at an early stage, and that the fatigue cracks had grown for a long time without having been detected. The location of the cracks under doublers meant at they were not visible from the outside of the wing.

## Safety Recommendation SWED-2010-001 (AIB)

It is recommended that EASA takes the necessary measures to ensure that fatigue cracks of the type that caused the wing fracture on the accident aircraft cannot occur in any CASA C-212 aircraft that is in service. (RL 2010:01 R1)

**Reply**

By issuing Airworthiness Directive (AD) 2007-0108-E, EASA has taken measures that will ensure this type of fatigue cracking, or similar cracking, will be detected well before it becomes critical, should it occur in another CASA C-212.

Should significant further findings occur, EASA will consider further actions as part of its normal continued airworthiness process.

**Status:** Closed – **Category**: Agreement

### Safety Recommendation SWED-2010-002 (AIB)

It is recommended that EASA evaluates the need for modification to the wing attachment to the fuselage so that the material stress situation along the critical row of rivets will be conclusively defined for all in-flight cases. (RL 2010:01 R2)

**Reply**

EASA has evaluated the need for modification and established that the stress levels within the current design are well understood by the Type Certificate Holder (TCH) and that the design and associated instructions for continued airworthiness are acceptable, without a modification being required at this time.

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

| 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 (AIB)

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**

This safety recommendation is being considered within the framework of rulemaking tasks RMT.0516 and RMT.0517 'Updating Authority Requirements (Part-ARO) and Organisation Requirements (Part-ORO)', as indicated in issue 2 of the associated Terms of Reference, which were published on 06 October 2014.

**Status:** Open – **Category**:

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| SE-MAP | BAE<br>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 (AIB)

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**

The Agency has launched several actions taking into account the subject of this safety recommendation, which are summarized below:

1) A Ground De-icing Workshop was organised on 19 April 2012 in Cologne. Potential improvements of the ground de-icing activity were discussed with industry and national aviation authorities; the discussion included the review of the safety recommendations addressed to EASA by Safety Investigation Authorities.
2) The EASA Annual Safety Conference 2013, held in Cologne on 15-16 October 2013, was dedicated to icing topics. The ground icing part of the conference included the subject "non-desired effects of the anti-icing fluids on the performance of the aircraft and other effects". The Agency presented a synthesis of the issues reported, safety recommendations, and actions launched by EASA in the domains of research and rulemaking.
3) The Agency signed in November 2013 a contract with National Research Council of Canada for a research project (ref. EASA.2013.OP.08). The primary objective is to understand the effects of anti-icing fluids on the horizontal stabiliser during take-off rotation. To achieve this objective, several tests shall simulate different take-off runs inside a wind tunnel containing a model representative of a horizontal stabiliser with anti-icing fluids applied to it. The outcome of this research project will be available beginning of 2015.
4) The issue highlighted by this safety recommendation has also been added to the scope of rulemaking task RMT.0118 (entitled «Analysis of on-ground ice contamination effect on take-off performance») which is part of the EASA 2014-2017 rulemaking programme.

This reply will be updated when additional information is available from on-going actions.

**Status:** Open – **Category**:

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| EI-DAD | BOEING 737 | Skavsta Airport, Södermanland county | 25/04/2011 | Serious incident |

## Synopsis of the event

On 29 April 2011, shortly after take-off, a Ryanair Boeing 737-800 received an indication that one of the aircraft's two electrical systems had lost electrical power. This had been preceded by one of the two generators that supply electrical power to the aircraft being disconnected, upon which a redistribution took place so that the other generator supplied power to both electrical systems. An electronic monitoring and control unit automatically ensured that this took place. The pilots followed the checklist and attempted to reconnect the generator. They also attempted to connect the generator from the Auxiliary Power Unit (APU). Either during the attempt to reconnect the disconnected generator or the connection of the auxiliary power unit's generator, the connection between the two systems was broken, with the consequence that one of the systems lost electrical power. The pilots made a further attempt to reconnect a power source but were un-successful. The decision was therefore made to return and land at Skavsta Airport. Flying with one of the electrical systems not having power meant losing the display of flight instruments on the affected side. Flap indication and pitot heating were among the systems which stopped working during the incident. The electronic monitoring and control units are intended to ensure that both electrical systems are always supplied with power as long as there is at least one power source available. They are also intended to prevent electrical interconnection of the electrical systems as these each have their own power source. The control units' commands are based on status signals from relays, among

other things. The incident was caused by the system logic for the Generator Control Unit (GCU) and the Bus Power Control Unit (BPCU) enabling erroneous status signals from the contactor (Generator Control Breaker, GCB) to lead to a transfer bus losing power. A contributing factor was that contactors in certain affected units had no inspection interval.

### Safety Recommendation SWED-2012-001 (AIB)

The FAA/EASA are recommended to ensure that Boeing introduces measures so that the logic in the electrical system prevents an X-bus from losing power as a result of an erroneous status signal from GCB. (RL 2012:20 R1)

**Reply**

EASA, in conjunction with the Federal Aviation Administration (FAA), is working with Boeing who are conducting tests to reproduce and simulate the electrical system failure conditions reported on this serious incident.

An update will be provided as soon as any significant progress is available.

**Status:** Open – **Category**:

### Safety Recommendation SWED-2012-002 (AIB)

The FAA/EASA are recommended to ensure that Boeing investigates whether a revision of the procedure in QRH for reconnecting IDG can rectify erroneous status signals from GCB. (RL 2012:20 R2)

**Reply**

EASA, in conjunction with the Federal Aviation Administration (FAA), is working with Boeing who are conducting tests to reproduce and simulate the electrical system failure conditions reported on this serious incident.

An update will be provided as soon as any significant progress is available.

**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

Engine flame out during take off roll (possible turbine explosion). Aircraft veered off the runway to the left and stopped in the snow covered grass area. Nosewheel made a deep ditch in the ground. Damages to left engine, nosewheel, left main landing gear, landing lights.

### Safety Recommendation SWED-2012-005 (AIB)

EASA is recommended to investigate, in consultation with the FAA, the prerequisites for introducing requirements concerning yaw stability in large aircraft in the event of sudden loss of engine thrust below VMCg under the anticipated operating conditions. (RL 2012: 21 R5)

**Reply**

In the event of an engine failure, Certification Specifications (CS) 25.143 (a)(1) and (b)(1) require that the aircraft must remain safely controllable.

Concerning control on ground during take-off, EASA considers that the Minimum Control Speed on the Ground (VMCg) test, as per CS and Acceptable Means of Compliance 25.149, is a sufficiently stringent test to certify yaw stability on ground in the event of sudden loss of engine.

Nevertheless, EASA, in consultation with the Federal Aviation Administration, continue to monitor the number of lateral runways excursions after an engine failure below VMCg. For the time being, there is low service history of this type of incident.

**Status:** Closed – **Category**: Disagreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| SE-FMU | CESSNA U206 | Kumla, Örebro county | 28/08/2011 | Accident |

### Synopsis of the event

The purpose of the flight was to drop parachutists from 3000 metres altitude. He had made five flights earlier in the day in which he had dropped parachutists. The flight took off from Örebro airport at 17.55. Six minutes later, during the climb, the pilot heard an explosion, which he described as an impact and then a decompression. Then the cabin filled with smoke, the engine lost thrust and the engine speed changed. The pilot immediately pulled the throttle to the idle position, and told the parachutists to leave the aircraft. The parachutists jumped immediately after the pilot's order. When the aircraft's sliding door was opened the smoke dispersed in the cabin. The aircraft was then at 1000 m altitude and began to fall. During this time the pilot declared an emergency via the radio to air traffic control at Örebro airport. Shortly before the incident he had read the instruments, which all indicated normal values. After the last parachutist had jumped the pilot started to search for a suitable landing site. The pilot told air traffic control that he planned to turn southwards against the wind and then land on a suitable field. The engine was running at idle speed until shortly before ground contact and therefore provided no thrust. The pilot turned 180° to land south against the wind, chose a field and held course towards this all the way down. The landing took place in a ploughed field. After rolling for 30 metres, the aircraft turned over. The pilot, who suf-fered minor injuries, was able to leave the aircraft himself.

### Safety Recommendation SWED-2012-007 (AIB)

EASA is recommended to act to change the maintenance programme for the engine type in question and other engines with similar fuel injection systems, such as Continental IO-520, so that an internal inspection of the oil pan is conducted in connection with oil changes, with the purpose of checking for the accumulation of waste products. (RL 2012:14 R2)

**Reply**

Following a review of Continental Motors' relevant maintenance manuals and procedures and also taking into account the Federal Aviation Administration's position on this safety recommendation, EASA has concluded that the current maintenance program constitutes an acceptable basis for the safe operation of the engine type in question.

**Status:** Closed – **Category**: Disagreement

### Safety Recommendation SWED-2012-008 (AIB)

EASA is also recommended to issue an Airworthiness Directive to this effect, pending a change in the maintenance programme. (RL 2012:14 R3)

**Reply**

Following a review of Continental Motors' maintenance manuals and procedures regarding the issue in question and having also reviewed Federal Aviation Administration's position on this safety recommendation, EASA has concluded that current documentation, when followed appropriately, is adequate to ensure the safe operation of the engine type related to this safety recommendation.

**Status:** Closed – **Category**: Disagreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| LN-RPS | BOEING 737 | Gävle, Gävleborg county | 04/04/2012 | Serious incident |

### Synopsis of the event

The aircraft performed a scheduled flight from Stockholm/Arlanda Airport to Skellefteå. An alternate landing site in the event of weather deterioration was Luleå/Kallax. While climbing through Flight Level 370, corresponding to an altitude of 11,300 m, the left "Bleed Trip Off" warning was activated. This system controls the engine bleed air for pressurisation of the cabin. The pilots took measures in accordance with QRH point 2:6 in the event of "Bleed Trip Off" and continued the flight. About a minute later, the warning returned and the crew did not reset the warning, but shut off the system in accordance with QRH.The aircraft continued to climb to Flight Level 410, during which time the pilots discussed the need to be able to descend quickly in the event that the remaining system also ceased to pressurise the cabin. Soon after the aircraft levelled out at the predetermined altitude, the right-side system activated a "Bleed Trip Off" warning. The crew declared an emergency and were given clearance to descend to Flight Level 100. Oxygen masks were put on in the cockpit and the aircraft reduced its altitude at a rapid rate of descent. The wings' speed brakes were deployed. The commander initiated manual deployment of oxygen masks in the cabin. While the aircraft descended, the cabin altitude decreased and the two met at 14,000 feet. During the rapid descent, the audible warning signal for the cabin altitude sounded, which is triggered when this exceeds 10,000 feet.

The weather en route was good and the crew initially decided based on fuel levels to land at the airport in Sundsvall, but as it was closed they instead chose the nearest open airport, which was Umeå. Following consultation

with the cabin crew, who reported that all was well, the commander cancelled the emergency situation. The flight continued to the alternate destination at an altitude of 10,000 feet or 3,050 metres. Approach and landing at Umeå Airport were normal. After landing, the commander and other crew members carried out a debriefing with the passengers in the terminal building.

### Safety Recommendation SWED-2013-002 (AIB)

EASA and the FAA are recommended to act to change the Boeing B737 QRH – NNC "Bleed Trip Off" so that a limitation of the flight altitude should be taken into consideration in the event of failure of one pressurisation system during flight in the same way as when this is identified before dispatch (Cf. MMEL point 21-01). [RL 2013:03 R1]

**Reply**

EASA, in conjunction with the Federal Aviation Administration (FAA) and Boeing, has evaluated the safety recommendation and concurs that limiting the flight altitude after failure of a single pressurization system introduces operational factors, such as greater exposure to weather or increased fuel consumption, that offset the potential safety benefit.

When the dispatch is done under the provision of the Master Minimum Equipment List (MMEL) with an altitude limitation, the risk is mitigated by the dispatch preparation.

Boeing has confirmed that after loss of one pressurisation system, the aircraft is capable to maintain a cabin altitude of 8000 ft. In addition, there is low probability to have multiple pressurization failure.

As a result, EASA position is not to modify the flight altitude limitations in case of failure of one pressurization system in flight.

**Status:** Closed – **Category**: Disagreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| SE-HVI | BELL 206 | Aitik, Norrbotten County | 15/08/2011 | Accident |

### Synopsis of the event

The pilot was in Ritsem, where the operator had a summer base. During the morning, a request was received from Aitikgruvan AB, which required help in binding the dust on the tailings dam. This was a task that the aviation company normally performed for the mining company. The dry spell and prevailing winds caused great quantities of dust in the air, and dousing with water from a helicopter would reduce the spread of dust. The pilot took off by helicopter SE-HVI from Ritsem for the journey to Porjus in order to pick up the water container. After a run-through of the opening mechanism, the pilot continued towards Aitik mine, where two other helicopters from the company were also emptying water on the tailings dam. All of the helicopters were performing the task with the use of "Heli buckets", in this case of the brand Bambi Bucket.

Initially, the south-easternmost part of the dam was being watered by all helicopters. They were then retrieving water from lakes just south of the mine's tailings dam. Towards the end of the day, when the north part of the tailings dam was to be watered, the two faster helicopters continued to retrieve water south of the dam, while SE-HVI flew to a smaller tarn north of the dam, see Figure 1, and thus gained a considerably shorter flight distance to the part of the dam that was to be doused with water.

SE-HVI had returned to the smaller tarn many times when the crash occurred. When the pilot had lowered the container into the water to fill it and subsequently climbed, the helicopter banked suddenly to the left. The pilot applied full cyclic stick to the right and simultaneously lowered the collective lever in order to correct the rolling movement to the left. The pilot experienced something clatter on the roof, upon which the helicopter rotated to the left at a high roll speed and with the nose high. Shortly thereafter, the helicopter came down into the partially buoyant, flowing and layered portion of the tarn. Just before impact, the pilot heard a loud bang originating from the transmission. During the rotation, the pilot became spatially disoriented.

The pilot in one of the other helicopters that was engaged in dousing water noted the absence of SE-HVI. He flew towards the tarn and landed there about 10 minutes after the crash.

### Safety Recommendation SWED-2014-001 (AIB)

EASA is recommended to ensure that: EASA Member States in their supervision check that operators have established operational limitations, which take into consideration risks entailed by the helicopter's design during operations with a suspended load. (RL 2014:02 R2)

**Reply**

Under the EU regulatory framework, the operations referred to in the safety recommendation are categorised as specialised operations (SPO).

They are governed by Commission Regulation (EU) No 965/2012 on air operations, as amended by Commission Regulation (EU) No 379/2014 of 7 April 2014 (containing Part-SPO).

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 (SOP) appropriate to the specialised activity and aircraft used. 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 limitations as mitigation, also taking into account any limitations prescribed in the manufacturer's operating manual.

Also, according to ARO.GEN.300, the competent authority shall verify continued compliance with the applicable requirements by operators for whom they have oversight responsibilities.

In turn, EASA has a role in monitoring the application of the rules through standardisation inspections of the competent authorities, and indirectly, their undertakings.

However, according to the derogation clause in Commission Regulation (EU) No 379/2014, Member States may decide not to apply Part-SPO until 21 April 2017.

In these cases, national legislation shall apply in the meantime and it is the responsibility of the authorities in those States to check that operators under their responsibility comply with the applicable national legislation.

Once Part-SPO is applied by an EASA Member State (by 21 April 2017 at the latest), the applicable rules should ensure that competent authorities check that operators under their oversight responsibility have established operational limitations, which take into consideration risks entailed by the helicopter's design during operations with a suspended load. In addition, EASA shall monitor the application of the rules through standardisation inspections of the competent authorities, and indirectly, their undertakings.

The Agency is of the opinion that, within their legal remit, the recommendation is addressed through the above-mentioned regulations, so no further action is required by the Agency.

**Status:** Closed – **Category**: Agreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| ES-PJR | BAE JETSTREAM3100 | Sveg Airport | 03/05/2013 | Incident |

### Synopsis of the event

The aircraft departed from Sveg airport for a scheduled flight to Stockholm/Arlanda airport. Shortly after take-off, at an altitude of about 500 feet, engine problems occurred on both engines with substantial fluctuations in power (torque) and engine speed (RPM). The commander stated that during the time that the disturbances lasted it was hard to keep the aircraft flying and that an emergency landing in the terrain could be necessary. The disturbances ceased however after about a minute and the aircraft could return to Sveg airport and perform a normal landing. After the incident the airplane's FDR (flight data recorder) and CVR (cockpit voice recorder) was cared for by the SHK. The recorded parameters from the FDR however showed unrealistic values depending on the fact that the operator did not have the required documentation to convert the recorded values into useful units. The cockpit voice recorder had not been shut down after the incident which meant that the records in connection with the incident had been recorded over. SHK carried out a correction and analysis of recorded data from the flight data recorder. Together with a sound analysis from a private film taken at the time, it was found that the take-off was most likely performed with a too low RPM. The dialogue with the airplane manufacturer revealed that it was a previously known problem that a start with a too low RPM in some cases could cause engine problems. There has previously been a serious accident in which a too low RPM setting was found to be the root cause. The operational documentation of the operator did not contain a requisite level of information on potential risks when starting with too low RPM. The aircraft type has no warning system to identify a faulty engine configuration and the checklist does not contain a "memory item" procedure for immediate action by the crew. At the examination carried out in connection with the incident, technical deficiencies were also found. Corrosion damage and temporary repairs in some of the aircraft systems were noted at the technical investigation. Furthermore, it was found that there where technical remarks that had not been entered in the aircraft logbook. The incident was likely caused by a too low RPM during take-off. A contributing factor was that the aircraft type has no warning system for take-off with an incorrect engine configuration.

### Safety Recommendation SWED-2014-002 (AIB)

EASA is recommended to investigate the conditions for installation of a warning system on the aircraft type in question which notifies the pilots of an incorrect engine configuration in connection with take-off. (RL 2014:07 R1)

**Reply**

The certification of the Jetstream 3200 type design is based on the British Civil Airworthiness Requirements, which does not require a take-off warning system that notifies pilots of an incorrect engine configuration. Furthermore, such a requirement is not included in the current EASA certification requirements (CS-23) for this class of small transport aircraft.

According to BAe Systems records and the occurrences history of the Jetstream 3100 and 3200 aircraft fleet, the Agency has determined that no unsafe condition exists that would warrant a mandatory design change.

Nonetheless, the Agency will ask BAe Systems to investigate the conditions for installation of a warning system on the aircraft type in question.

**Status:** Open – **Category**:

### Safety Recommendation SWED-2014-003 (AIB)

EASA is recommended to endeavour to revise the emergency checklist for this aircraft type so that measures in the event of engine oscillations in connection with take-off are changed so as to be included as “memory items”. (RL 2014:07 R2)

**Reply**

British Aerospace (BAe) Systems is in the process of revising the emergency checklist to make the existing checklist card (Erratic Engine Torque/EGT/RPM Indications), a memory item. EASA will continue to monitor progress through the Continuing Airworthiness (CAW) process under Part 21.

**Status:** Open – **Category**:

### Safety Recommendation SWED-2014-004 (AIB)

EASA is recommended to take measures to ensure that initial and recurrent training on this aircraft type are supplemented with information and training regarding the risks of incorrect engine configurations during take-off. (RL 2014:07 R3)

**Reply**

EASA is considering the issue in question. The decision will depend on the emergency check-list revision, which is on-going.

**Status:** Open – **Category**:

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| SE-HOM | BELL 206 | Porjus, Norrbotten County | 08/11/2012 | Accident |

### Synopsis of the event

During an Operational Proficiency Check, in the final phase of a third autorotation at touchdown and while on the ground, a heavy scraping sound was heard accompanied by vibrations of a frequency corresponding to the rotor speed. The vibrations continued when the main rotor speed decreased and they then increased sharply. The instructor shut off the engine. At the same time, a "schoff", "schoff" sound was heard, after which the entire main rotor separated from the helicopter and remained lying about 10 metres to the left of the helicopter. The two crew members were able to exit the helicopter unassisted and uninjured.

### Safety Recommendation SWED-2014-005 (AIB)

EASA is recommended to act for a reduction in the oil system's sensitivity to contaminants. (RL 2014:09 R1)

**Reply**

EASA, in cooperation with Transport Canada Civil Aviation (TCCA) that is working with the type certificate holder (Bell Helicopter Textron Canada), is examining the recommended action and will also examine the issue from a maintenance point of view as related to lubricant contamination.

**Status:** Open – **Category**:

### Safety Recommendation SWED-2014-006 (AIB)

EASA is recommended to act so that operators of the helicopter type are provided with information and suggestions for preventive measures regarding the risk of contamination of the free wheel's lubrication system. (RL 2014:09 R2)

**Reply**

EASA, in cooperation with Transport Canada Civil Aviation (TCCA) that is working with the type certificate holder (Bell Helicopter Textron Canada), is examining the recommended action and will also examine the issue from a maintenance point of view as related to lubricant contamination.

**Status:** Open – **Category**:

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| SE-FLS | ROCKWELL 112 | Bromma Stockholm Airport | 04/11/2013 | Accident |

### Synopsis of the event

On 4 November 2014, at the second attempt to fly to Bromma Stockholm Airport, the approach to runway 12 at Bromma was normal. During landing when the nose wheel was set down, the aircraft swerved and the pilot had difficulties holding the aircraft on a steady course. The aircraft swerved along the runway centre line and finally left the runway to the left, knocking down a sign with the right wing. The aircraft stopped on the ramp with fuel leaking from the right wing. Having informed the tower, the pilot then shut down the engine, cut the power supply and left the aircraft. Damage to the aircraft was significant.

### Safety Recommendation SWED-2014-007 (AIB)

EASA is recommended to provide information on the connection between an imbalance in the nose wheel and nose wheel shimmying.

**Reply**

EASA is of the opinion that the shimmying of the nose wheel can be influenced by many factors and the imbalance of the nose wheel is only one of them. On the specific type there is a damper installed to prevent the shimmying from occurring and furthermore the proper behaviour of the whole system has been checked during the certification of the aircraft. EASA will review the existing documentation and investigate, together with the Federal Aviation Administration and the aircraft manufacturer, whether there exist relevant events in the continued airworthiness history of the type that might warrant further actions.

**Status:** Open – **Category**:

# United Kingdom

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| OHO STUDY | | | #Missing# | |

**Synopsis of the event:**

### Safety Recommendation UK.CAA-2014-001 (CAA)

It is recommended that EASA leads the development of a management system that provides a structured review of all accident and serious incident reports and recommendations of helicopters operating offshore or events which could have led to a ditching if the helicopter had been over water. This should be done in collaboration with other North Sea NAAs and the CAA to ensure a cohesive assessment of both accident causes (looking for trends) and remedies (looking for suitability and effectiveness) in order to prevent the segregated nature of accident reviews and ensure there is continuity to the safety reviews [R1].

**Reply**

In 2013, the Agency established the Helicopter Accident Data Classification Group (HADCG) to perform a classification of the Occurrence Categories of all Helicopter Accidents in the EASA Member States. Following this recommendation from the UK CAA, the Agency will establish a sub-group of the HADCG that will review accidents and serious incidents in offshore operations in accordance with the recommendation. An initial review covering the last 5 years will be carried out in Autumn 2014 for publication by the end of 2014. This review will become an annual activity.

**Status:** Open – **Category**:

### Safety Recommendation UK.CAA-2014-002 (CAA)

It is recommended that EASA involve NAAs annually in a forum to agree and exchange information on the performance of safety actions taken in line with accident and serious incident investigation recommendations and potential other improvements that could be adopted, where appropriate [R2].

**Reply**

Information on the assessment of all Safety Recommendations addressed to the Agency is published in the EASA Annual Safety Recommendations Review. This report presents general statistical data as well as individual replies to investigation recommendations. All National Aviation Authorities (NAAs) and other stakeholders are welcome to review this report and ask for additional information.

The Agency receives a significant number of Safety Recommendations from Safety Investigation Authorities (SIA) worldwide every year. Some of these Safety Recommendations have joint addressees, and in such cases the Agency routinely coordinates the follow-up with other stakeholders, including NAAs. The Agency will welcome any request coming from the NAAs on an ad-hoc basis and share information on the performance of safety actions taken in a specific case.

In addition, the Agency will hold, on a periodic basis a Continuing Airworthiness (CAW) telephone conference with National Aviation Authorities (NAAs) to coordinate and discuss feedback on corrective actions. Thus, the Agency will inform NAAs of relevant information concerning CAW on specific types of aircraft.

It should also be noted that the Member States' SIA are obliged to record all Safety Recommendations issued as well as the responses thereto in a European Central Repository (ECR). NAAs can request access, ref. Article 3 in Commission Decision of 5 December 2012 on access rights to the European Central Repository of Safety Recommendations and their responses.

**Status:** Closed – **Category**: Agreement

### Safety Recommendation UK.CAA-2014-003 (CAA)

It is recommended that EASA introduces procedures to monitor and track the efficiency and reliability of maintenance interventions when these are used during the certification activity to assure the safety target of the rotorcraft [R3].

**Reply**

The subject matter of the recommendation is being considered as part of the Agency´s internal review process. The complexity of the subject is such that detailed coordination is needed between several technical disciplines.

In the meantime, EASA is encouraging Rotorcraft Type Certificate Holders (TCH) to apply to the Maintenance Review Board (MRB) or Maintenance Type Board (MTB) process (with Maintenance Steering Group MSG3 as a tool) for new rotorcraft and is in a process to formalise it (MRB for rotorcraft above 9000 kg or more than 9 passengers / MTB for rotorcraft between 3175 kg and 9000kg or multi-engine rotorcraft of less than 3175 kg certified as Category A) through the rulemaking task MDM.056.

The Agency believes this provides an input to the aspect of "monitor and track the efficiency and reliability of maintenance" as indicated in the UKCAA report (Annex F, para 8.2.2).

After entry into service, the MRB and MTB process ensure a regular review by the TCH of the applicability and effectiveness of the TCH scheduled maintenance requirement through an "annual review".

In assessing the practicality of other approaches to monitor and track the efficiency and reliability of maintenance tasks, EASA will review the existing methods such as that defined in Vibration Health Monitoring (VHM) Acceptable Means of Compliance (AMC) 29.1465, which defines a process for the development and optimization of the performance of the VHM system during a "controlled service introduction" phase.

In addition, current Continuing Airworthiness (CAW) procedures require causes of occurrences to be reviewed and the efficiency and reliability of maintenance interventions is one element of that process.

**Status:** Open – **Category**:

### Safety Recommendation UK.CAA-2014-004 (CAA)

It is recommended that EASA ensures that the Type Certificate Holder completes a design review following a failure or malfunction of a component or system on any other similar feature on that aircraft type or any other type in their product line and defines appropriate corrective actions as deemed necessary [R4].

**Reply**

Existing Continues Airworthiness processes and procedures provide for the case where it is deemed necessary for a design review to be conducted. Generally an occurrence of significant severity or series of occurrences that indicate a trend may indicate the need for a design review.

Clearly applying a performance based approach, the scope of the design review will be based upon an assessment of safety risk.

**Status:** Closed – **Category**: Agreement

### Safety Recommendation UK.CAA-2014-006 (CAA)

It is recommended that the EASA Helicopter Ditching and Survivability RMT.0120 consider making safety and survival training for offshore passengers a requirement [R6].

**Reply**

EASA Rulemaking Task RMT.0120 is primarily focused on helicopter design and aims to propose changes to the Certification Standards CS-27/29. It has been recognised, however, that the nature of the safety risks can only be fully understood and mitigated by taking a broad and holistic approach to helicopter ditching and survivability, including operations and training. Discussions that have already taken place within the RMT have highlighted some issues regarding training where improvements may be warranted e.g. frequency of refresher training, use of equipment, etc. The rulemaking group will assess the safety benefits of passenger training as part of its on-going work programme and will make recommendations for change, where appropriate, to the relevant body.

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

### Safety Recommendation UK.CAA-2014-012 (CAA)

It is recommended that EASA require helicopter manufacturers, in conjunction with the major operators of the type and NAAs, to review their recommended training material so that pilots are better prepared for operating modern highly complex helicopters [R12].

**Reply**

The Agency is working in close cooperation with manufacturers, National Aviation Authorities (NAAs) and the industry to enhance the effectiveness of pilot training for new rotorcraft and existing complex helicopters. The Agency will manage this through the Operational Suitability Data (OSD) process, including retroactive actions as applicable.

The OSD was recently introduced by European Union (EU) Regulations No 69/2014 (Part-21), No 70/2014 (Aircrew) and No 71/2014 (Air Operations) being effective as of 17th February 2014 with the objective that the aircraft manufacturers are required to establish certain data that is considered important for safe operation of the type. This data will be approved by the Agency under the type certificate and shall be used by operators and training organisations.

NAAs have oversight obligations and should ensure compliance.

**Status:** Closed – **Category**: Agreement

### Safety Recommendation UK.CAA-2014-020 (CAA)

It is recommended that EASA / Type Certificate Holder confirm the number of false engine fire warnings on off-shore helicopters, investigate the reasons for them and determine what actions to take to address this important safety issue [R20].

**Reply**

In conjunction with the National Aviation Authorities, EASA will conduct an analysis of known engine fire warning occurrences on Public Transport Large Helicopter Operations.

**Status:** Open – **Category**:

### Safety Recommendation UK.CAA-2014-022 (CAA)

It is recommended that EASA initiate a rulemaking task to adopt the critical parts life monitoring and assessment requirements of Certification Specifications for Engines (CS-E) for large transport rotorcraft, currently subject to CS-29, including retrospective application. This should cover at least for the following areas:

i. Residual stress assessments

ii. Vibratory stress measurements

iii. Manufacturing plan

iv. Laboratory examination of time expired part

**Reply**

The existing guidance material related to Certification Specifications-Engines (CS-E) and Instructions for Continuing Airworthiness (ICA) of critical parts will be reviewed to determine if additional guidance on critical parts would be beneficial, in particular the control throughout the life cycle. If so, either a Certification Memorandum (CM) or a revision to the AMC will be considered.

**Status:** Open – **Category**:

### Safety Recommendation UK.CAA-2014-023 (CAA)

It is recommended that EASA revise CS-29.602 for large transport rotorcraft intended to operate over hostile sea conditions for extended periods of time, to ensure the failure mode effects and criticality analysis process used to identify critical parts recognises that a safe ditching may not always be possible [R23].

**Reply**

Under the applicable Certification Specification (CS 29.602) and guidance material (FAA AC 29-2C, 29.602(a)(3)), the definitions of 'critical part' and 'catastrophic' are not related to the type of operation, and it is clearly stated that the operational environment need not be considered. Expanding the definitions to cover failures that could prevent continued safe flight would entail a huge expansion of the critical parts list. This could be expected to have a negative safety impact as the 'special' nature attributed to these parts would then be lost. Furthermore, evidence suggests that increasing the critical parts list may have limited benefits, as many of the previous ditching/water impact events could be traced to the failure of a critical part as the root cause.

**Status:** Closed – **Category**: Disagreement

### Safety Recommendation UK.CAA-2014-024 (CAA)

It is recommended that EASA provide additional guidance material to improve standardisation in approach to the classification of critical parts to minimise inconsistencies in the instructions for continuing airworthiness and where appropriate to require revisions to existing Instructions for Continued Airworthiness [R24].

**Reply**

The existing guidance material related to Instructions for Continuing Airworthiness (ICA) of critical parts will be reviewed, to determine if additional guidance on ICA for Critical Parts would be beneficial. If so, either a Certification Memorandum (CM) or, if necessary, a revision to the AMC will be considered.

**Status:** Open – **Category**:

### Safety Recommendation UK.CAA-2014-025 (CAA)

It is recommended that EASA consider developing requirements that could be applied to helicopters which carry out Offshore Operations in hazardous environments in a similar fashion to those used for aeroplane Extended Operations and All Weather Operations [R25].

**Reply**

The Agency will evaluate whether further rulemaking is justified in order to increase the reliability of Public Transport Helicopter Operations and their systems when used in offshore hostile environments. The agency will advise the UK CAA on the result of this evaluation.

**Status:** Open – **Category**:

### Safety Recommendation UK.CAA-2014-026 (CAA)

It is recommended that EASA establish a forum for discussion for best practice and developments on Vibration Health Monitoring (VHM). This forum should include NAAs, operators and VHM manufacturers. The CAA expects that this could be achieved by the end of 2014 [R26].

**Reply**

EASA will continue to be active in exploring the benefits of Vibration Health Monitoring (VHM). Furthermore, several groups e.g. Society of Automotive Engineers (SAE) HM-1 Integrated Vehicle Health Management Committee in which EASA is involved, and other initiatives by Type Certificate Holders (TCHs), already exist.

EASA believes that the forum would be best sponsored by the manufacturers, operators and in association with the European Helicopter Safety Team (EHEST), and major highlights could be presented for a wider audience during the Rotorcraft Symposium.

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

### Safety Recommendation UK.CAA-2014-027 (CAA)

It is recommended that EASA review AMC 29.1465 to clarify alert generation and management, to ensure it is consistent and a system of amber/red warning thresholds is established to allow maintenance staff to identify the severity of the alert [R27].

**Reply**

EASA will review the Acceptable Means of Compliance (AMC) to establish if further clarification is necessary, practical and possible. However, for Vibration Health Monitoring, it should be highlighted that the severity of the alert cannot be determined in advance for many cases and the effectiveness of the AMC will not be known until the Agency has gained sufficient experience with its implementation; at which point a further review is planned and amendments will be made as necessary.

**Status:** Open – **Category**:

### Safety Recommendation UK.CAA-2014-029 (CAA)

It is recommended that the offshore oil and gas industry, helicopter operators, helicopter manufacturers and regulators:

- continue to support the helicopter safety research programme
- establish a less labour intensive, more regularised arrangement between participating organisations for the funding of research projects
- establish, via Oil & Gas UK, a faster and more focused approach to implementation of successful research projects. This should be in addition to and in advance of the enhancement of the aviation rules and guidance material [R29].

**Reply**

Within the context of Article 26 of the Basic Regulation (EC) No 216/2008, in particular Nr. 2 thereof, EASA will continue to coordinate with the HSRMC (Helicopter Safety Research Management Committee) through the exchange of views, opinions, and status updates on the various research projects; both on-going and completed. In addition, EASA will explore in a coordinated manner, conducting further research on emerging issues and maximise the safety benefit with the early implementation of results as they apply to helicopter operations in general, and in particular offshore operations.

**Status:** Closed – **Category**: Agreement

| 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**

This safety recommendation is being considered within the framework of rulemaking tasks RMT.0516 and RMT.0517 'Updating Authority Requirements (Part-ARO) and Organisation Requirements (Part-ORO)', as indicated in issue 2 of the associated Terms of Reference, which were published on 06 October 2014.

**Status:** Open – **Category**:

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| G-BXLI | BELL 206 | Priors Park Wood, 5 nm south of Taunton, Somerset | 22/01/2005 | Accident |

### Synopsis of the event

The pilot had planned to fly with some friends from Staverton Airport, near Gloucester, to a private landing site in the Torbay area but, due to deteriorating weather, landed at Topsham to the south of Exeter Airport. After a period of several hours, the weather had not improved so the pilot decided to return to Staverton. Although on the outbound trip he had routed south via the Bristol Channel and the M5 corridor, an area of low lying terrain, he elected to return to Staverton via Sidmouth, and communicated this to Exeter ATC, advising them that he would be flying at an altitude of 900 ft. As he approached Sidmouth, he then informed Exeter that he was going to go north towards Wellington and Taunton. This route would take the helicopter over the Blackdown Hills, which rise to a height of some 1,000 ft amsl. Witnesses in an area approximately 5 nm south of Taunton generally heard, but did not clearly see, a low flying helicopter and one heard a 'bang'. A subsequent search and rescue effort failed to locate the helicopter, due to very poor weather conditions, and it was found by a dog walker the following morning. All four occupants had received fatal injuries in the accident. No pre-accident defects were found during the wreckage examination.

### Safety Recommendation UNKG-2005-101 (AAIB)

The EASA should promote the safety benefits of fitting, as a minimum, CVR equipment to all aircraft operated for the purpose of commercial air transport, regardless of weight or age.

**Reply**

The Agency's rulemaking tasks RMT.0271 and RMT.0272 [former MDM.073 (a) and (b)] 'In-flight recording for light aircraft' were launched on 25 July 2014 with the publication of the associated Terms of Reference.

This safety recommendation is being considered within the framework of these tasks.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| G-BWDA | ATR<br>ATR72 | Guernsey Airport | 23/05/2006 | Incident |

### Synopsis of the event

The aircraft bounced on touchdown due to insufficient landing flare being applied. In an attempt to cushion the second touchdown the co-pilot, who was the handling pilot, over pitched the aircraft, resulting in the tail bumper making contact with the runway surface. The co-pilot was relatively inexperienced and could not recall ever having received formal instruction in recovery techniques for bounced landings.

### Safety Recommendation UNKG-2006-124 (AAIB)

The UK Civil Aviation Authority should require UK aircraft manufacturers, operators and training providers to issue appropriate guidance to pilots in the techniques for recovering from bounced landings.

**Reply**

This Safety Recommendation was primary replied by the UK Civil Aviation Authority which partially accepted it within its remit.

After that reply, and due to the legal competence of EASA for airworthiness since september 2003, the Agency accepted the recommendation.

EASA has published a Safety Information Bulletin (SIB) entitled "Bounced Landing Recognition and Recovery Training", dated 19 November 2013. The Agency considers this SIB covers the purpose of this Safety Recommendation.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| EI-SLD | ATR<br>ATR42 | Stansted Airport | 18/01/2007 | Serious incident |

### Synopsis of the event

Soon after takeoff from London Stansted Airport the aircraft developed a yawing motion which persisted as a yawing/rolling motion of varying severity. The yaw damper could not be engaged. An emergency was declared and the aircraft returned to Stansted. No mechanical fault was found which would have caused the motion, although an undetected and intermittent fault affecting components within the rudder control system could have degraded the aircraft's handling characteristics with the yaw damper not engaged, as could a takeoff with the rudder control system incorrectly configured. The nature of the motion and observed control deflections were such that an inadvertent and inappropriate rudder input by a pilot would have been required for the oscillations to persist.

### Safety Recommendation UNKG-2008-020 (AAIB)

The European Aviation Safety Agency should require that, prior to the first flight of the day, the built-in test features on the flight deck for the Cockpit Voice Recorder, Flight Data Recorder and Flight Data Acquisition Unit, when installed, should be monitored to ensure correct operation.

**Reply**

The Agency's interim response dated 28 May 2010 referred to rulemaking task OPS.063(a) 'Before first flight of the day require the built-in test features of any installed Cockpit Voice Recorder (CVR)/Flight Data Recorder (FDR)/Flight Data Acquisition Unit (FDAU) to be monitored for correct operation'.

Rulemaking task OPS.063(a) has now been merged with rulemaking tasks RMT.0400 and 0401, which were launched on 26 September 2012 with the publication of the associated Terms of Reference. This safety recommendation is being considered within the framework of these tasks. The associated Notice of Proposed Amendment (NPA 2013-026) was published on the Agency's web site on 20 December 2013.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| VP-CRC | BOMBARDIER BD700 1A10 | London Luton Airport | 29/01/2008 | Accident |

### Synopsis of the event

Following an extended period of heavy rain, VP-CRC took off from a dry runway for a long-range flight to London Luton Airport. During the subsequent landing roll, the left inboard main landing gear tyre suffered a slide-through failure resulting from an initially locked wheel. This tyre failure caused extensive damage to the flight control system. Although the aircraft landed safely, the investigation revealed a significant flight safety risk and four Safety Recommendations are made.

### Safety Recommendation UNKG-2008-074 (AAIB)

It is recommended that the Federal Aviation Administration and the European Aviation Safety Agency review the certification requirements for automatically stopping flight recorders within 10 minutes after a crash impact, with a view to including a specific reference prohibiting the use of `g` switches as a means of compliance as recommended in ED112 issued by EUROCAE Working Group 50.

**Reply**

EUROCAE Document 112 revision A (entitled "Minimum Operational Performance Specification for Crash Protected Airborne Recorder Systems") was published in September 2013. The provisions of this standard regarding the use of "g" switches to stop a recorder after an accident have been updated. Instead of completely banning its use, ED-112A recommends that this type of sensor shall not be used as sole means of detection. EASA intends to propose amending the applicable regulations accordingly.

Concerning new designs, EASA rulemaking task RMT.0249, entitled "Recorders installation and maintenance thereof - certification aspects", will propose new or revised Certification Specifications. The Terms of Reference of RMT.0249 were published on 18 September 2014 on the EASA website, and refer to this safety recommendation. The general objective of this rulemaking task is to improve the availability and quality of data recorded by flight recorders in order to better support safety investigation authorities in the investigation of accidents and incidents. One of the specific objectives is to "prevent premature termination of recording due to the triggering of a negative acceleration sensor".

**Status:** Open – **Category**:

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| G-IIEX | EXTRA<br>EA400 | Hastingleigh near Ashford Kent | 26/05/2008 | Accident |

**Synopsis of the event:**

The aircraft was en-route from a flying display at Southend Airport, to its home base at Shoreham. Due to inclement weather, with a low cloudbase and poor visibility, the pilot planned to fly around the Kent coast, but having encountered better weather than expected when airborne, he set off across the county. Unfortunately the visibility deteriorated and the cloudbase lowered so he decided to abandon his route and re-trace his path. Instead of reversing his course, however, he turned through approximately 270°, and found he was flying up a valley. He elected to carry out a precautionary landing into a field, but lost control of the aircraft on final approach. The aircraft struck the ground at low speed while rolling and banked to the right. Although the airframe remained relatively intact and no ground fire occurred, both occupants were injured, one seriously.

**Safety Recommendation UNKG-2009-014 (AAIB)**

It is recommended that the European Aviation Safety Agency revise their certification requirements applicable to light aircraft crash survivability, with the aim of reducing occupant injury in otherwise survivable accidents. Detailed consideration should be given, for example, to requiring energy absorption provisions for seats, improved padding of aircraft components that might be impacted by an occupant and the fitment of air bag systems for both crew and passengers.

**Reply**

Certification specifications already provide for protection of occupants in case of emergency landing. In the case of CS-23 for light aeroplanes certification:

CS 23.561 requires structural design precautions to minimise injuries under given static inertia loads, including turnover and landing gear retracted scenarios.

CS 23.562 requires dynamic tests of the seat/restraint systems and provides for a maximum head injury criteria to be considered when contact with adjacent components or structures can occur.

In addition, CS 23.785 provides specific design requirements for seats, berths, litters, safety belts and shoulder harnesses to protect the occupants, and it requires that areas surrounding each seat are free of injurious objects which may be impacted by the torso or the head.

The Agency, together with FAA and the industry, is currently working to prepare a re-organisation of CS-23, and this is being done in the frame of rulemaking task RMT.0498. New design standards are being developed by ASTM that will provide Acceptable Means of Compliance to new objective requirements.

In particular, a group has been initiated in the ASTM F44 Technical Committee as Work Item: WK41313 - New Specification for Emergency Conditions and Occupant Safety.

This task group will consolidate the current CS-23/FAR Part-23 Subparts C and D regulations pertaining to Emergency Conditions and Occupant Safety into a single standard. Once complete, the standard will be further developed and refined based on feedback to the committee from users, industry, and regulators. This is one of the priority area where it has been identified that safety improvements are needed and can be achieved with less burden by new standards that allow the introduction of safety enhancing features in aeroplanes. The Agency supports this approach which will permit the implementation of cost effective solutions meeting objective requirements using different possible technical solutions complying with international industry standards.

**Status:** Closed – **Category**: Agreement

### Safety Recommendation UNKG-2009-015 (AAIB)

It is recommended that the European Aviation Safety Agency consider requiring the modification of light aircraft types for which they have airworthiness responsibility, where the extant restraint systems are unlikely to prevent contact of the occupants with hard parts of the aircraft, with the aim of reducing the likelihood and severity of occupant injury in an otherwise survivable accident. Detailed consideration should be given, for example, to requiring energy absorption provisions for seats, improved padding of aircraft components that might be impacted by an occupant, and the fitment of air bag systems for both crew and passengers.

**Reply**

EASA and the European Commission have defined a European General Aviation Safety Strategy and Road Map. One of the key elements is to better tailor the safety requirements commensurate to the risk involved, while also encouraging the development of standards permitting more cost effective implementation of safety enhancement devices.

The Agency is conducting a rulemaking task RMT.0245 (MDM.048) which will provide certification specifications for standard changes in support to the related provisions introduced in Part-21 (Annex to regulation (EU) 748/2012). This will encourage the implementation of standard changes to improve survivability like the installation of energy absorbing seat cushions, airbag systems or headrests.

As the safety benefit gained from the measure proposed by this Safety Recommendation would not balance the economic impact, the Agency decided not to mandate these cabin safety enhancements for already certified light aircraft, and the rulemaking task (reference MDM.090 in the inventory list of EASA Rulemaking Programme) has been cancelled.

**Status:** Closed – **Category**: Disagreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| G-OJMC | AIRBUS<br>A330 | Sangster International Airport, Montego Bay, Jamaica | 28/10/2008 | Serious incident |

### Synopsis of the event

Due to an error in the takeoff performance calculations, incorrect takeoff speeds were used on departure. On rotation, the aircraft initially failed to become airborne as expected, causing the commander to select TOGA power. The aircraft then became airborne and climbed away safely. Whilst the investigation could not identify the exact source of the error, deficiencies were revealed in the operator's procedures for calculating performance using their computerised performance tool. A study of previous takeoff performance events showed that the number and potential severity is sufficient to warrant additional safeguards to be identified by industry and to be required by regulators.

### Safety Recommendation UNKG-2009-080 (AAIB)

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

**Reply**

European Organization for Civil Aviation Equipment (EUROCAE) Working Group 94 has been formed to make a feasibility study on the development of a Take-off performance monitoring system (TOPMS) standard. The Agency is represented in this Group (chair).

The conclusion of this feasibility study, expected in 2014, will determine if a second phase of standard development is suitable.

**Status:** Open – **Category**:

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| G-MEDA | AIRBUS A320 | Addis Ababa Airport, Ethiopia | 31/03/2003 | Serious incident |

## Synopsis of the event

A British Mediterranean Airbus A-320 aircraft, registration G-MEDA operating as flight number LAJ 6711 on a flight from Alexandria (Bourg-el-Arab), Egypt, to Addis Abeba, Ethiopia, carried out two approaches using the Addis Abeba VHF Omni-Directional Radio Range beacon (ADS VOR) and associated Distance Measuring Equipment (DME). On the second approach the aircraft crossed over a ridge of high ground in Instrument Meteorological Conditions (IMC) and came within 56 ft of terrain at a location 5 nm to the northeast of the airport. As the aircraft crossed the ridge the crew, alerted a few seconds earlier by a radio altimeter (RA) height callout, carried out a go-around; at the same time the Enhanced Ground Proximity Warning System (EGPWS) generated a 'TOO LOW TERRAIN' aural alert. The investigation determined that the antenna of the ADS VOR had suffered water ingress and was not functioning correctly. The correct maintenance procedures for the ADS VOR/DME and its associated monitoring equipment were not followed. The aircraft received erroneous information from the ADS VOR which was fed to the flight deck VOR display, the Flight Management System (FMS), the navigation displays and the EGPWS computer with its associated Terrain Awareness Display (TAD). A single common position source error thus adversely affected all these apparently independent navigation/situational awareness systems. The existing certification standards for the aircraft navigation systems were met but were not sufficient to protect against this problem.

## Safety Recommendation UNKG-2010-025 (AAIB)

It is recommended that the European Aviation Safety Agency and the Federal Aviation Administration consider whether the crew should be alerted when a FMS has identified a recurrent problem with a particular navigation aid and furthermore consider whether the subsequent use of that navigation aid for position information is desirable.

**Reply**

The recommendation suggests that the Flight Management System (FMS) should monitor ground stations, and give alerts/warnings if any are suspect. However, there is no requirement in the EASA regulatory framework for airborne systems to check ground station performance. The Safety Recommendation (SR) is requesting a new service from the on-board systems for which they were not designed.

A fundamental issue prevents implementation of the Safety Recommendation. It lies in the inherent difference between the World Geodetic System WGS-84 reference datum used by Global Positioning System (GPS) systems and the reference used by conventional radio navigation. Because of this difference, complex procedures and dedicated on-board and ground equipment are required to accurately assess the performance of ground based navigation sources (see ICAO Doc 8071, Vol. II Section 1.4.4-1.4.5).

This is why Flight Inspection services use special aircraft equipped with sensors that are dedicated and calibrated for this purpose. It is beyond the capability of typical aircraft and FMS equipment and why the correct functioning of the ground-based radio navigation system is the obligation of the Air Navigation Service Provider (ANSP).

**Status:** Closed – **Category**: Disagreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| G-PUMI | AEROSPATIALE AS332 | Aberdeen Airport, United Kingdom | 13/10/2006 | Serious incident |

## Synopsis of the event

The aircraft was departing from Runway 14 for a flight to oil platforms in the North Sea, carrying 13 passengers. Five seconds into the takeoff the crew heard a bang and an abnormal vibration started. The crew rejected the takeoff and landed back on the runway. The aircraft started to taxi but the severe vibration continued so the commander stopped and shut down the helicopter on the threshold of Runway 32. Initial examination showed that one main rotor blade spindle had fractured, through the lower section of its attachment yoke on the leading side of the spindle. Post-fracture plastic deformation of the lug had stretched open the fracture, separating the faces by some 12 mm. As a result of this accident the helicopter manufacturer published an Emergency Alert Service Bulletin, requiring periodic inspections, and this was subsequently mandated by the European Aviation Safety Agency (EASA) as an Airworthiness Directive. In July 2009 the manufacturer issued Service Bulletins which introduced a 'wet' assembly procedure, with new nuts, for the main rotor blade spindles. This eliminated the requirement for the repetitive inspection procedure and was made mandatory by the issue of an Airworthiness Directive (AD) by the EASA. The investigation identified the following casual factors for the failure of the spindle yoke: (i) wear on the flapping hinge inner race; (ii) excessive clamping pre-load across the yoke, due to the tie bolt being torqued to the specified dry value in the presence of grease when it was reinstalled 175 hours prior to failure of the yoke; (iii) significant hoop stress in the bore of the yoke due to adverse tolerance stacking and the associated interference fit of the bush in the yoke. The following were considered as contributory factors in the failure: (i) flight loads biased towards the high-speed level flight condition, slightly higher than those generated by normal level flight cruise conditions; (ii) a minor deviation in corner radius profile at the inner end of the bore of the yoke, with a small increase in the attendant stress concentration; (iii) a minor reduction, at the fatigue origin site, in the intensity of the compressive surface layer stresses from the shot-peen process; (iv) flight loads in the spindle yoke slightly higher than anticipated in certification fatigue testing, due to the action of the lead-lag dampers (frequency adaptors).

### Safety Recommendation UNKG-2010-027 (AAIB)

It is recommended that the European Aviation Safety Agency, with the assistance of the Civil Aviation Authority, conduct a review of options for extending the scope of HUMS detection into the rotating systems of helicopters.

**Reply**

EASA has coordinated with the National Aviation Authorities (NAAs) with a view to facilitating the development of Health and Usage Monitoring Systems (HUMS) for helicopter rotating systems.

A review of the state of the art regarding the extension of HUMS to rotor health monitoring was published by the Civil Aviation Authority of the United Kingdom (UK CAA) in CAA Paper 2008/05. The results of this work were inconclusive and further development of sensing techniques and technologies recommended.

Another study was then conducted in the UK to investigate the application of the advanced anomaly detection (AAD) methods, already developed and applied to transmission HUMS data, to rotor systems data. In view of the findings published in CAA Paper 2008/05, the scope of this work was restricted to tail rotor systems. The outcome of the study revealed that, whereas it seems possible to detect tail rotor defects, warnings are unlikely to be much in advance of the end of the flight preceding the 'failure' flight. On-board, post-flight indications would therefore be required for such a scheme to be effective. Furthermore, rotor Vibration Health Monitoring (VHM) data was found to be particularly susceptible to instrumentation problems. A low noise, high reliability VHM system is required for effective tail rotor health monitoring. Finally, further investigation is recommended to hopefully obtain better results: analysing VHM data captured during unsteady flight conditions; measuring vibration data on board the tail rotor rather than in the fuselage.

The final report has been published as CAA Paper 2012/01.

Although today there is no identified mature solution, the Agency will continue to liaise with UK CAA and other NAAs in order to promote and encourage further developments of HUMS detection into rotor systems.

**Status:** Closed – **Category**: Agreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| CS-DFE | DASSAULT FALCON2000 | Biggin Hill Airport, Kent | 11/11/2009 | Incident |

### Synopsis of the event

The aircraft had been undergoing a technical investigation to identify the cause of a braking defect. A flight crew were requested by the on-site maintenance team to carry out high speed taxi trials as part of the troubleshooting process. The crew conducted a series of seven accelerate/stop runs along the main runway, at gradually increasing reject speeds. At the commencement of the eighth run, the crew felt that a tyre had deflated and brought the aircraft to a stop. They were informed by ATC that there was a fire under the left wing; the crew and passengers then abandoned the aircraft safely. The fire was caused by damage to the brakes from excessive temperature, this released hydraulic fluid under pressure, which then ignited.

### Safety Recommendation UNKG-2010-061 (AAIB)

It is recommended that the European Aviation Safety Agency review the Falcon 2000 landing gear and hydraulic system design with a view to ensuring that, in the event of a leak, the system is protected so as to limit the loss of fluid in the vicinity of the brakes.

**Reply**

EASA has reviewed the Falcon 2000 brakes hydraulic system design with particular attention paid to limit the loss of fluid in the vicinity of the brakes. It is recognised that configurations with hydraulic fuses on both hydraulic systems ensure a robust protection against loss of fluid in the vicinity of the brakes in case of a major leak. However the positive in service experience of the Falcon fleet led EASA to conclude that a corrective action is not justifiable.

**Status:** Closed – **Category**: Agreement

### Safety Recommendation UNKG-2010-062 (AAIB)

It is recommended that the European Aviation Safety Agency require Dassault Aviation to review and amend the Falcon 2000 Airplane Flight Manual to ensure that the brake energy limitations quoted in all sections of the manual are consistent and reflect what has been satisfactorily demonstrated on the aircraft as a safe limit.

**Reply**

EASA has reviewed the brake energy limitations quoted in the Aircraft Flight Manual (AFM) and confirms that those limitations are consistent with the certification data.

Moreover, the AFM information is consistent with EASA policy stated in Certification Memorandum CM-HS-001 that allows the use of Technical Standard Order (TSO) demonstrated Brake Energy when associated with brake cooling time charts.

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

### Safety Recommendation UNKG-2010-063 (AAIB)

It is recommended that the European Aviation Safety Agency require Dassault Aviation to review and amend the Falcon 2000 Airplane Flight Manual to ensure that the guidance provided to flight crews relating to accumulated brake energy and minimum turnaround times is clear, consistent and takes account of all aspects of the aircraft's operation.

**Reply**

The minimum turnaround time is defined in section 5-800-XX of the Aircraft Flight Manual (AFM). In particular section 5-800-10 provides the brake cooling time to be observed after performing an Rejected Take Off (RTO) to remain inside the maximum brake energy at the next take off. EASA prompted the Type Certificate (TC) holder to review and improve the wording of the guidance provided to flight crew in the AFM.

Dassault Aviation will improve the wording of the F2000 aircraft AFM as already done during recent certification of Falcon 2000S aircraft.

**Status:** Open – **Category**: Agreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| G-REDL | AEROSPATIALE AS332 | 11 miles NE Petershead (Offshore) | 01/04/2009 | Accident |

## Synopsis of the event

The accident occurred whilst the helicopter was operating a scheduled passenger flight from the Miller Platform in the North Sea, to Aberdeen. Whilst cruising at 2,000 ft amsl, and some 50 minutes into the flight, there was a catastrophic failure of the helicopter's Main Rotor Gearbox (MGB). The helicopter departed from cruise flight and shortly after this the main rotor and part of the epicyclic module separated from the fuselage. The helicopter then struck the surface of the sea with a high vertical speed. An extensive and complex investigation revealed that the failure of the MGB initiated in one of the eight second stage planet gears in the epicyclic module. The planet gear had fractured as a result of a fatigue crack, the precise origin of which could not be determined. However, analysis indicated that this is likely to have occurred in the loaded area of the planet gear bearing outer race. A metallic particle had been discovered on the epicyclic chip detector during maintenance on 25 March 2009, some 36 flying hours prior to the accident. This was the only indication of the impending failure of the second stage planet gear. The lack of damage on the recovered areas of the bearing outer race indicated that the initiation was not entirely consistent with the understood characteristics of spalling (see 1.6.5.7). The possibility of a material defect in the planet gear or damage due to the presence of foreign object debris could not be discounted. The investigation identified the following causal factor:

1. The catastrophic failure of the Main Rotor Gearbox was a result of a fatigue fracture of a second stage planet gear in the epicyclic module.

In addition the investigation identified the following contributory factors:

1. The actions taken following the discovery of a magnetic particle on the epicyclic module chip detector on 25 March 2009, 36 flying hours prior to the accident, resulted in the particle not being recognised as an indication of degradation of the second stage planet gear, which subsequently failed.

2. After 25 March 2009, the existing detection methods did not provide any further indication of the degradation of the second stage planet gear.

3. The ring of magnets installed on the AS332 L2 and EC225 main rotor gearboxes reduced the probability of detecting released debris from the epicyclic module.

## Safety Recommendation UNKG-2011-045 (AAIB)

It is recommended that the European Aviation Safety Agency require the 'crash sensor' in helicopters, fitted to stop a Cockpit Voice Recorder in the event of an accident, to comply with EUROCAE ED62A.

**Reply**

This safety recommendation is considered within the framework of EASA rulemaking task RMT.0249 entitled "Recorders installation and maintenance thereof - certification aspects", whose Terms of Reference were published on 18 September 2014 on the EASA website.

RMT.0249 is dealing with new or revised aircraft certifications specifications (i.e. applicable to new designs). The general objective of this rulemaking task is to improve the availability and quality of data recorded by flight recorders in order to better support safety investigation authorities in the investigation of accidents and incidents. One of the specific objectives is to "prevent premature termination of recording due to the triggering of a negative acceleration sensor".

Regarding potential requirements applicable to existing designs, this will be considered in the framework of EASA rulemaking task RMT.0308 entitled "Amendment of requirements for data recorders II".

**Status:** Open – **Category**:

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| G-REDU | EUROCOPTER<br>EC225 | 132 NM east of Aberdeen, offshore | 18/02/2009 | Accident |

## Synopsis of the event

The Helicopter departed Aberdeen Airport at 1742 hrs on a scheduled flight to the Eastern Trough Area Project (ETAP). The flight consisted of three sectors with the first landing being made, at night, on the ETAP Central Production Facility platform. Weather conditions at the platform deteriorated after the aircraft departed Aberdeen; the visibility and cloud base were estimated as being 0.5 nm and 500 ft respectively. At 1835 hrs the flight crew made a visual approach to the platform during which the helicopter descended and impacted the surface of the sea. The helicopter remained upright, supported by its flotation equipment which had inflated automatically. All those onboard were able to evacuate the helicopter into its liferafts and they were successfully rescued by air and maritime Search and Rescue (SAR) assets.

## Safety Recommendation UNKG-2011-058 (AAIB)

It is recommended that the European Aviation Safety Agency requires that crews of helicopters, fitted with a Terrain Awareness and Warning System, be provided with an immediate indication when the system becomes inoperative, fails, is inhibited or selected OFF.

**Reply**

The EC225 Terrain Awareness and Warning System (TAWS) has a "TAWS" amber light on the helicopter Caution and Warning Panel (CWP). It was originally certified to illuminate for inhibited or failed TAWS and remain extinguished when the system is switched OFF. This design is in line with the 'Black Cockpit' concept applied to the EC225. It aims at limiting permanent unnecessary caution lights on the instrument panel and thus strengthening flight crew alertness and responsiveness to actual failure conditions, should any alarm illuminate. A "Black Cockpit" has valuable safety benefit under that perspective, provided however that control panels design is meant to prevent a wrong switch being activated and to ensure flight crews are always aware of any of their intentional manual selections. With this concept, voluntarily switching OFF TAWS did not trigger permanent illumination of the "TAWS" light of the CWP, as the system master switch design is interlock-secured and cover plate-guarded.

There may be human factors limitations to this approach (i.e. not displaying system inoperative status), for instance in case of a two pilot crew not communicating a switch selection, as it may have occurred for G-REDU. For this reason, the EC225 TAWS system has been improved by Airbus Helicopters with the modification MOD 332P083739.10/.11/.12/.13/.14/.15. This MOD is the current design standard for all newly produced EC225 helicopters and the retrofit of the fleet with this MOD has been made available by the Airbus Helicopters Service Bulletin No. EC225-34.029 dated 25-07-2013. This is a software upgrade from version V.26 (software version of the affected G-REDU rotorcraft) to V.28. Among various design improvements, it provides CWP lighting command of the 'TAWS' amber light when the system is selected OFF or a failure mimicking this condition. This completes the other already existing system conditions that trigger indication of this alarm in case of inhibited or failed TAWS. Moreover, some EC225 helicopters equipped with former TAWS software version V.24, can also accomplish the upgrade to the V.28 standard with the specific MOD 332P083739.16/.17/.18/.19 and SB No. EC225-34.031 dated 25-07-2013.

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

### Safety Recommendation UNKG-2011-068 (AAIB)

It is recommended that the European Aviation Safety Agency requires Eurocopter to review the design of the fairings below the boarding steps on AS332 and EC225 series helicopters to reduce the possibility of fairings shattering during survivable water impact and presenting sharp projections capable of damaging liferafts.

**Reply**

The helicopter, registered as G-REDU, suffered a collision with the water which is irrelevant to the certification scope for helicopters with respect to the current EASA Airworthiness Standards. For certification, EASA deals with intentional and controlled ditching, for which the aircraft structural requirements are prescribed in terms of horizontal and vertical velocities of the helicopter at the time of contact with the water during a ditching. The helicopter is therefore designed to structurally meet water contact loads derived from the predefined ditching conditions of the certification regulations.

Although the crash was survivable, the G-REDU helicopter flight conditions recorded during the sea impact were much higher than the regulatory ditching envelope applicable for certification, hence far beyond the certified structural ditching provisions of the rotorcraft. Moreover, other undetermined impact parameters had a large effect on the local failure of the fairings below the G-REDU helicopter boarding steps and in particular, the attitude of these fuselage skins relative to the surface of the sea water at impact (i.e. waves condition, shape and amplitude). The actual impact loads encountered locally by the fairings that failed during the accident remain therefore unknown after the investigation. Consequently, reviewing the affected fairings to reduce their possibility of failure versus structural loading conditions, beyond the ditching certification provisions and without any identified design targets or objective technical limit, is impracticable.

Nevertheless, EASA requested Airbus Helicopter to confirm that the failed fairings comply with the certification structural ditching provisions and assess whether they could even demonstrate higher structural resistance. Airbus Helicopters have provided Report no. ETVF 130/12 issue B, dated 2013, by which they show positive safety structural margins on the fairings to ultimate loads of the certification ditching conditions (CS29.563 & 801 requirements), i.e. using a 1,5 safety factor. Additionally, the EASA Rulemaking Task RMT.0120 is on-going with the aim to further consider structural design aspects for ditching certification and possible expansion of the ditching envelope.

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

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| G-ZAPZ | BOEING 737 | Chambery Airport | 14/04/2012 | Accident |

### Synopsis of the event

An onboard hand-held Electronic Flight Bag (EFB) computer was used to calculate the aircraft's takeoff performance. The commander omitted to enter the aircraft's takeoff weight into the performance calculation software, which defaulted to the previous flight's takeoff weight. The crew did not cross-check the data and incorrect speeds and thrust were calculated and subsequently used for the takeoff. As a consequence, the airspeed at rotation was too low and the pitch angle was sufficient to strike the tail on the runway. A broken spring within the aircraft's elevator feel and centering unit caused reduced resistance in the flight controls in pitch, contributing to the excessive pitch attitude achieved during rotation. The investigation also revealed wider issues relating to the general design and use of EFB computers to calculate performance data.

### Safety Recommendation UNKG-2012-036 (AAIB)

It is recommended that the European Aviation Safety Agency establish a set of detailed guidelines for the operational evaluation and approval of Electronic Flight Bags. These should be more specific than the proposed Acceptable Means of Compliance (AMC) 20-25 and include information such as provided in the Federal Aviation Authority document 'Electronic Flight Bag Authorization for Use' and Joint Aviation Authorities Safety Information Communication No 7.

**Reply**

The Acceptable Means of Compliance (AMC) 20-25 content has significantly evolved during the Notice of Proposed Amendment (NPA) 2012-02 consultation phase of the Rulemaking Task RMT.0001.

This evolution includes more detailed guidelines for the operational evaluation and take into account Joint Aviation Authorities Safety Information Communication No. 7.

Please refer to Comment Response Document (CRD) to NPA 2012-02 which was published on 31/07/2013 on the EASA Website.

The CRD provides the resulting text of AMC 20-25 in its Appendix A. Paragraph D.3.2 of Appendix D to AMC 20-25 provides the following with regard to the electronic flight bag (EFB):

"The user should be able to modify performance calculations easily, especially when making last minute changes.

Calculation results and any outdated input fields should be deleted:

(a) when modifications are entered;

(b) when the EFB is shut down or the performance application is closed; and

(c) when the EFB or the performance application have been in a standby or 'background' mode long enough, i.e. such that it is likely that when it is used again the inputs or outputs are outdated."

**Status:** Closed – **Category**: Agreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| G-BDTO | BRITTEN NORMAN BN2A | 27 nm north-east of Alderney, Channel Islands | 27/03/2012 | Serious incident |

### Synopsis of the event

The aircraft was on a scheduled flight from Alderney Airport, Channel Islands to Southampton International Airport. Shortly after levelling in the cruise, the pilot heard a "very loud bang" and the aircraft experienced severe vibration, which the pilot subsequently identified as a failure of the No 2 tail-mounted engine. The propeller of the inoperative engine could not initially be feathered, and the pilot was unable to maintain altitude, so he declared an emergency. The propeller blades eventually moved to the feather position and the pilot performed an uneventful landing back at Alderney Airport. The No 2 cylinder on the No 2 engine was subsequently found to have released from the crankcase.

### Safety Recommendation UNKG-2013-002 (AAIB)

It is recommended that the European Aviation Safety Agency, in collaboration with the UK Civil Aviation Authority, conduct a risk-based assessment of the Britten-Norman BN2 MKIII Series Trislander and BN2 Series Islander aircraft, with respect to one engine inoperative performance and the hazard and probability of an associated failure to feather of the affected engine's propeller.

**Reply**

Britten Norman (BN) in collaboration with EASA and the UK Civil Aviation Authority has completed a risk assessment which considered the hazard and the probability of a propeller failing to feather after an engine failure and continuing to windmill. The current safety assessment guidance, namely Advisory Circular (AC) 23.1309 (as referenced in CS 23.1309), has been used as guidance. Given that there are insufficient events/flight hours to determine the probability of the event accurately, only its principles of balancing the likely consequences of a hazard against the probability of that hazard occurring have been used.

In terms of consequences of the hazard, BN has shown that in the vast majority of the cases, the Aircraft would be able to make a safe landing thus the hazard would be minor. There can be a combination of factors which might result in the inability of the airplane to maintain altitude and ultimately to perform a safe landing. It was not required that such a combination of factors be considered in the requirements in the certification basis of the A/C, and this remains the case in the current requirements for this class of aircraft.

It is not possible to make a quantitative measurement of the corresponding probability, but the data available supports a qualitative conclusion that the risk associated with the propeller failing to feather after engine failure (and with no further failures) is acceptable.

The relevant events that occurred during the service life of the Islander and Trislander fleet, showing a deficiency of the design or of the maintenance instructions, have been addressed by means of Airworthiness Directives or other appropriate measures. In the case of the event object of the investigation, behind this Safety Recommendation, a Service Letter (SL 121) has been issued addressing maintenance aspects of the engine stud.

**Status:** Closed – **Category**: Agreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| G-CHCN | EUROCOPTER EC225 | 32 nm southwest Sumburgh, Shetland Islands | 22/10/2012 | Accident |

### Synopsis of the event

The crew of the helicopter carried out a controlled ditching following indications of a failure of the main gearbox (MGB) lubrication system and, subsequently, a warning indicating failure of the emergency lubrication system. All passengers and crew evacuated the helicopter and were subsequently rescued without injury.

### Safety Recommendation UNKG-2013-006 (AAIB)

It is recommended that the European Aviation Safety Agency requires the manufacturers of aircraft equipped with a Type 15-503 Crash Position Indicator system, or similar Automatically Deployable Emergency Locator Transmitter, to review and amend, if necessary, the respective Flight Manuals to ensure they contain information about any features that could inhibit automatic deployment.

**Reply**

The European Aviation Safety Agency has issued on 17 January 2014 the Airworthiness Directive EASA AD 2014-0019, regarding the Crash Position Indicator System (CPI), requiring temporary amendment of the aircraft flight manual (AFM) and installation of a placard, on installations where such an action has no detrimental effect on ELT operation. This AD also requires replacement of the System Interface Unit with an improved part as a terminating action for the temporary AFM amendment and placard installation.

**Status:** Closed – **Category**: Agreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| VP-MON | BRITTEN NORMAN BN2A | V.C. Bird International Airport, Antigua (TAPA) | 07/10/2012 | Accident |

### Synopsis of the event

The aircraft crashed shortly after takeoff. Water was present in the fuel system feeding the right-hand engine, which was not producing power at impact.

This Special Bulletin, issued by the AAIB, contains information on the progress of the investigation and focuses on the fuel suction filter assemblies.

### Safety Recommendation UNKG-2013-014 (AAIB)

It is recommended that the European Aviation Safety Agency takes action to require that Britten-Norman Islander aircraft are equipped with fuel suction filter assemblies that minimise the likelihood of any water present in the fuel tank sumps being fed to the engines.

**Reply**

The EASA has issued an airworthiness directive (AD No.: 2012-0270R1) on 16 April 2013 that requires a one-time inspection of the fuel filler cap and fuel filler receptacle to determine whether they are at the same modification state and depending on findings, accomplishment of applicable corrective action(s). In order to mitigate the risk of water contamination, pending the installation of matching fuel filler cap and receptacle, the AD also requires daily pre-flight water contamination checks.

**Status:** Closed – **Category**: Agreement

| 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.

### 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**

This safety recommendation is being considered within the framework of rulemaking tasks RMT.0516 and RMT.0517 'Updating Authority Requirements (Part-ARO) and Organisation Requirements (Part-ORO)', as indicated in issue 2 of the associated Terms of Reference, which were published on 06 October 2014.

**Status:** Open – **Category**:

### 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**

This safety recommendation is being considered within the framework of rulemaking tasks RMT.0516 and RMT.0517 'Updating Authority Requirements (Part-ARO) and Organisation Requirements (Part-ORO)', as indicated in issue 2 of the associated Terms of Reference, which were published on 06 October 2014.

**Status:** Open – **Category**:

### Safety Recommendation UNKG-2014-011 (AAIB)

It is recommended that the European Aviation Safety Agency review the certification requirements for the location of fire extinguisher nozzles in relation to the smoke detectors, on aircraft equipped with multi-criteria smoke detectors, in order to minimise the adverse effects associated with activation of the fire extinguishing system.

**Reply**

The Agency is reviewing this event and will determine if any action is needed. Further information will be provided as soon as available.

**Status:** Open – **Category**:

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| G-REDW | EUROCOPTER EC225 | 20 NM east of Aberdeen | 10/05/2012 | Accident |

### Synopsis of the event

The helicopter was on a scheduled flight from Aberdeen Airport to the Maersk Resilient platform, in the North Sea, 150 nm east of Aberdeen. On board were two flight crew and twelve passengers. The helicopter was in the cruise at an altitude of 3,000 ft, 34 nm east of Aberdeen Airport, when the flight crew were presented with indications of low pressure in the MGB main and standby oil lubrication systems. The crew activated the MGB emergency lubrication system and, following a subsequent warning indicating failure of that system, carried out a controlled ditching into the sea. All the passengers and crew evacuated the helicopter into a life raft and were subsequently rescued. Two passengers sustained minor injuries.

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| G-CHCN | EUROCOPTER<br>EC225 | North Sea, 32nm southwest of Sumburgh | 22/10/2012 | Accident |

### Synopsis of the event

The crew of the helicopter carried out a controlled ditching following indications of a failure of the main gearbox (MGB) lubrication system and, subsequently, a warning indicating failure of the emergency lubrication system. All passengers and crew evacuated the helicopter and were subsequently rescued without injury.

### Safety Recommendation UNKG-2014-013 (AAIB)

It is recommended that the European Aviation Safety Agency provide Acceptable Means of Compliance (AMC) material for Certification Specification (CS) 29.1585, in relation to Rotorcraft Flight Manuals, similar to that provided for Aeroplane Flight Manuals in the AMC for CS 25.1585 to include cockpit checklists and systems descriptions and associated procedures.

**Reply**

An amendment of the Acceptable Means of Compliance where EASA would take into account the specificity of helicopter type and intended operations is under consideration.

An update will be provided as soon as any progress is available.

**Status:** Open – **Category**:

### Safety Recommendation UNKG-2014-016 (AAIB)

It is recommended that the European Aviation Safety Agency review the installation of the Type 18R MK3 liferaft in the EC225 sponson to ensure that there is a high degree of deployment reliability in foreseeable sea conditions.

**Reply**

In cooperation with Airbus Helicopters, EASA has initiated a review of the installation of the Type 18R MK3 liferafts in the sponsons of the EC225 helicopter with the aim of checking the actual degree of deployment reliability of the liferafts for the current certificated sea conditions. As part of this review, consideration will be given to liferaft deployment service experience on EC225 and other equivalent Super-Puma helicopters.

The outcome of the review will be provided when available.

**Status:** Open – **Category**:

### Safety Recommendation UNKG-2014-017 (AAIB)

It is recommended that the European Aviation Safety Agency develop certification requirements for externally mounted liferafts fitted to offshore helicopters which ensure a high degree of deployment reliability in foreseeable sea conditions.

**Reply**

The drafting group of rulemaking task RMT.0120 is currently considering a broad range of helicopter ditching, water impact and survivability issues, with the objective of reviewing existing rules and ensuring that they are and remain appropriate to meet identified hazards. A review of existing equipment standards (ETSOs) forms part of this task, including those related to life rafts (ETSO-2C70b and ETSO-2C505). The drafting group is aware that neither of these standards was developed specifically with external mounting in mind, and therefore do not contain specific test provisions to ensure correct, effective and reliable deployment in all foreseeable sea conditions and fuselage attitudes. This safety recommendation is therefore taken into account.

The drafting group is also working to identify other shortcomings with the existing standards from previous accident investigations.

Once the overall review is complete, the drafting group will propose adequate changes to equipment standards and also possibly to rotorcraft certification specifications (CS-27 and CS-29).

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

### Safety Recommendation UNKG-2014-018 (AAIB)

It is recommended that the European Aviation Safety Agency amend the regulatory requirements to require that the long mooring line on liferafts fitted to offshore helicopters is long enough to enable the liferaft to float at a safe distance from the helicopter and its rotor blades.

**Reply**

The drafting group of rulemaking task RMT.0120 is currently considering a broad range of helicopter ditching, water impact and survivability issues, with the objective of reviewing existing rules and ensuring that they are and remain appropriate to meet identified hazards.

The issue mentioned in this safety recommendation is already known and taken into account by the drafting group, and it will form part of its proposed changes to the design requirements.

**Status:** Closed – **Category**: Agreement

### Safety Recommendation UNKG-2014-019 (AAIB)

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

**Reply**

In 2012 EASA commissioned a research project, Engine Rotor Material Damage Tolerance (EROMDAT), addressing damage resistance and fatigue tests for high-strength materials used for engine rotating parts.

A final project meeting is planned with the engine manufacturers involved in the project in September 2014.

EASA will take the opportunity of this meeting to discuss with the participants about the applicability of proposed test methods on other metallic materials (low alloy steel) used for rotorcraft main gearbox design.

**Status:** Open – **Category**: Disagreement

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| G-CRST | AGUSTA A109 | London | 16/01/2013 | Accident |

### Synopsis of the event

The helicopter was flying to the east of Battersea Heliport when it struck the jib of a crane, attached to a building development at St George Wharf, at a height of approximately 700 ft in conditions of reduced meteorological visibility. The pilot, who was the sole occupant of the helicopter, and a pedestrian were fatally injured when the damaged helicopter impacted a building and adjacent roadway.

### Safety Recommendation UNKG-2014-032 (AAIB)

It is recommended that the European Aviation Safety Agency review Federal Aviation Regulations Part 135 Rules 135.615, VFR Flight Planning, and 135.617, Pre-flight Risk Analysis, in advance of the scheduled regulatory standardisation programme, to assess whether immediate implementation would provide safety benefits for helicopter operations within Europe.

**Reply**

The Agency understands that, based on the type of operation performed, this safety recommendation is related to Commercial Air Transport (CAT) operations. Whilst it is acknowledged that the aircraft involved in the accident was operating under UK national legislation, it should be noted that EU regulations for CAT operations, published in 2012, shall be applied by EASA Member States by 28 October 2014 at the latest.

The Agency has assessed Federal Aviation Regulation FAR 135.615 'VFR flight planning' and concluded that the safety elements therein are already covered by Commission Regulation (EU) No 965/2012, as last amended ('air operations regulation'), and Commission Implementing Regulation (EU) No 923/2012 ('rules of the air regulation'), as follows:

- ORO.GEN.110 Operator responsibilities, which requires operators to establish procedures for safe operations, and to establish checklist systems;
- CAT.OP.MPA.135 Routes and areas of operation – general, where route specifications are included;
- SERA.5001 Visual Meteorological Conditions (VMC) visibility and distance from cloud minima, defining lowest values for flight visibility, cloud base and distance to clouds;
- SERA.5005 Visual flight rules, establishing minimum safe flight altitudes;
- CAT.OP.MPA.145 Establishment of minimum flight altitudes, which ensure a method to establish the altitudes;
- CAT.OP.MPA.245 Meteorological conditions – all aircraft, ensuring evaluation of weather reports;
- CAT.OP.MPA.270 Minimum flight altitudes, requiring adherence to the above paragraphs;
- SERA.5010 Special Visual Flight Rules (VFR) in control zones, which defines weather minima for such operations;
- CAT.GEN.MPA.105 Responsibilities of the commander, related to responsibility for safe operations in accordance with the aircraft flight manual.

The Agency has also assessed FAR 135.617 'pre-flight risk analysis' and concluded that the requirements on the operator are covered by the above-mentioned air operations regulation, as follows:

- ORO.GEN.200(a)(3) provides for a hazard identification and risk management process;
- ORO.GEN.110(i) covers flight planning procedures.

The EU rules do not specify in detail the pre-flight risk analysis, to be performed by the commander, or its format. This specification is the duty of the operator in line with the paragraphs cited above. In addition, as mentioned in the accident investigation report, the European Helicopter Safety Team (EHEST) has also promulgated checklists to support operators and pilots in the implementation of these rules.

In summary, the Agency finds that the safety benefits to be derived from implementation of the above-mentioned FARs are already captured through the existing EU legislation.

**Status:** Closed – **Category**: Agreement

### Safety Recommendation UNKG-2014-034 (AAIB)

It is recommended that the European Aviation Safety Agency assess whether mandating the use of Helicopter Terrain Awareness and Warning Systems compliant with Technical Standard Order C194 or European Technical Standard Order C194 would provide safety benefits for helicopter operations within Europe.

**Reply**

The Agency understands that, based on the type of operation performed, this safety recommendation is related to Commercial Air Transport (CAT) operations. Whilst it is acknowledged that the aircraft involved in the accident was operating under UK national legislation, it should be noted that EU regulations for CAT operations, published in 2012, shall be applied by EASA Member States by 28 October 2014 at the latest.

The Agency considers that Commission Regulation (EU) No 965/2012, as last amended ('air operations regulation'), and Commission Implementing Regulation (EU) No 923/2012 ('rules of the air regulation'), together with the basic flying skills that are instructed in accordance with Commission Regulation (EU) No 1178/2011 ('aircrew regulation'), already provide operational and flight crew training mitigation against the risk collision with the ground or obstacles.

The additional safety benefits from the use of Helicopter Terrain Awareness and Warning Systems will be assessed for each type of helicopter operation within the framework of a future rulemaking task.

**Status:** Open – **Category**:

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| G-GAVA | BAE JETSTREAM3100 | Doncaster Sheffield Airport | 15/08/2014 | Accident |

### Synopsis of the event

The aircraft's left main landing gear failed shortly after it landed on Runway 20 at Doncaster Sheffield Airport. The left main landing gear detached from its mounts and the aircraft slid along the runway on its remaining landing gears, left wingtip and luggage pannier before veering off the runway and coming to rest on the adjacent grass. The single passenger and the flight crew vacated the aircraft without injury. Preliminary findings indicate that the failure was initiated as a result of stress corrosion cracking in the forward yoke pintle at the top of the left landing gear leg. Further analysis is required to determine the precise details of the failure, however, the preliminary findings are of significance because the same aircraft, operating under a different registration, was involved in a similar accident in 2012 during which the right main landing gear failed. The subsequent investigation identified intergranular corrosion / stress corrosion cracking of the forward yoke pintle at the top of the main landing gear leg as the cause of that failure.

### Safety Recommendation UNKG-2014-038 (AAIB)

It is recommended that the European Aviation Safety Agency take action to assure the continued airworthiness of those BAE Systems Jetstream 31 main landing gear legs that are manufactured from DTD 5094 aluminium alloy and have SB 32-JM7862 embodied.

**Reply**

The issue is linked to the special washer addressed in Service Bulletin (SB) 32-JM7862. A new inspection (SB 32-A-JA140940) has been issued that describes the inspection of the special washer installation (as previously mandated by SB 32-JM7862 and Airworthiness Directive (AD) 2013-0206), the actions to take in case of incorrect installation and the follow-up inspections to be performed in order to check the position/condition of the washer, post return to service. This new inspection is mandated by AD 2014-0239 which supersedes AD 2013-0206.

Furthermore, SB 32-JM7862 has been revised to improve the installation of the special washer. This improvement was also mandated by the same AD.

**Status:** Closed – **Category**: Agreement

### Safety Recommendation UNKG-2014-039 (AAIB)

It is recommended that the European Aviation Safety Agency take action to mandate an effective inspection regime for the Jetstream 31 that will detect cracking and prevent failure of the yoke pintle of main landing gear legs manufactured from DTD 5094 aluminium alloy.

**Reply**

EASA is working with British Aerospace (BAE) Systems to review and improve the inspection regime required by the Service Bulletin (SB) 32-A-JA851226 and mandated by the Airworthiness Directive (AD) 2013-0208. In the short term, the new SB, that is being produced to check the correct installation of the special washer and thus prevent the stress corrosion, together with the inspections of SB 32-A-JA851226 are deemed to provide an acceptable level of safety. In recognition of the on-going AAIB investigation, due consideration will be given to any and all future findings from the investigation.

**Status:** Open – **Category**:

# United Arab Emirates

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| N571UP | BOEING 747 | Dubai Airport | 03/09/2010 | Accident |

## Synopsis of the event

The flight was cargo from Dubai to Cologne. After take off from Dubai at aprox. 32000 ft the crew declared an emergency due to fire detection in the forward main deck. The captain chose to return to Dubai. 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 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 Dubai. The aircraft crashed 9NM Southwest of Dubai International Airport.

## Safety Recommendation UNAR-2013-026 (AIB)

The FAA and EASA are requested to provide operators of cargo aircraft of a maximum certificated take-off mass in excess of 45,500 kg with the option to modify existing Class E cargo compartments, through a process of FAA or EASA recommended modifications, to control a class E cargo fire without requiring a crewmember to enter the compartment through the use of an active fire suppression system.

**Reply**

Active fire suppression systems are not required by the current rule for class E cargo compartments. Access to class E cargo compartments is allowed only for special operational purpose and is not including fire fighting.

In addition EASA has not certified cargo compartments where the approved fire fighting procedure would require a crew member to enter the compartment.

Furthermore, with the existing regulation, it is already possible to get approval of installation of active fire suppression systems for Class E cargo compartments or to upgrade to e.g. class C cargo compartments where a fire suppression system is required.

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

# United States

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| N106US | AIRBUS<br>A320 | the Hudson River about 8,5 miles from La Guardia Airport, New York | 15/01/2009 | Accident |

## Synopsis of the event

On January 15, 2009, about 1527 eastern standard time, 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 La Guardia Airport (LGA), New York City, New York. The flight had departed LGA about 2 minutes before the in-flight event occurred and was en route to Charlotte Douglas International Airport, Charlotte, North Carolina. The 150 passengers, including a lap-held child, and 5 crewmembers evacuated the airplane via the forward and over wing exits. One flight attendant and four passengers were seriously injured, and the airplane was substantially damaged.

## Safety Recommendation UNST-2010-092 (NTSB)

The National Transportation Safety Board makes the following recommendations to the European Aviation Safety Agency: Require Airbus to redesign the frame 65 vertical beam on A318, A319, A320, and A321 series airplanes to lessen the likelihood that it will intrude into the cabin during a ditching or gear-up landing and Airbus operators to incorporate these changes on its airplanes. (A-10-92)

**Reply**

EASA has approved the Airbus modification (MOD 153724) regarding redesign of frame 65 vertical beam on A318, A319, A320, and A321 series aeroplanes, that will be applied in production. First implementation was done on aircraft MSN 6408 according to plan (before end of 2014).

Some specific configurations exist for which the design approved by MOD 153724 needs to be supplemented by variations that will be approved beginning 2015. Modification service bulletins (MSBs) for the existing fleet will follow. EASA will initiate mandatory action on the existing fleet when those MSBs have been issued.

Target date for the EASA airworthiness directive based upon MOD approval and MSB availability is the second half of 2015.

**Status:** Open – **Category**:

### 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**

The Agency has collaborated with the Federal Aviation Administration (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. The FAA published TSO-C127b dated 06 June 2014.

The Agency is preparing an equivalent revision of ETSO-C127 from issue 'a' to issue 'b' as part of rulemaking task RMT.0206 (Terms of Reference dated 26 June 2013). The NPA is planned for publication by Quarter 04 2014.

**Status:** Open – **Category**:

| Registration | Aircraft Type | Location | Date of event | Event Type |
|---|---|---|---|---|
| N14053 | AIRBUS A300 | Belle Harbor, New York | 12/11/2001 | Accident |

### Synopsis of the event

On November 12, 2001, about 0916:15 eastern standard time, flight 587, an Airbus Industrie A300-605R, N14053, crashed into a residential area of Belle Harbor, New York, shortly after take-off 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.

### Safety Recommendation UNST-2010-120 (NTSB)

The National Transportation Safety Board recommends that the European Aviation Safety Agency after the yaw axis certification standard recommended in Safety Recommendation UNST-2010-119 (A-10-119) has been established, review the designs of existing airplanes to determine if they meet the standard. For existing airplane designs that do not meet the standard, the European Aviation Safety Agency (EASA) should determine if the airplanes would be adequately protected from the adverse effects of a potential aircraft-pilot coupling (APC) after rudder inputs at all airspeeds. If adequate protection does not exist, EASA should require modifications, as necessary, to provide the airplanes with increased protection from the adverse effects of a potential APC after rudder inputs at high airspeeds. (A-10-120)

**Reply**

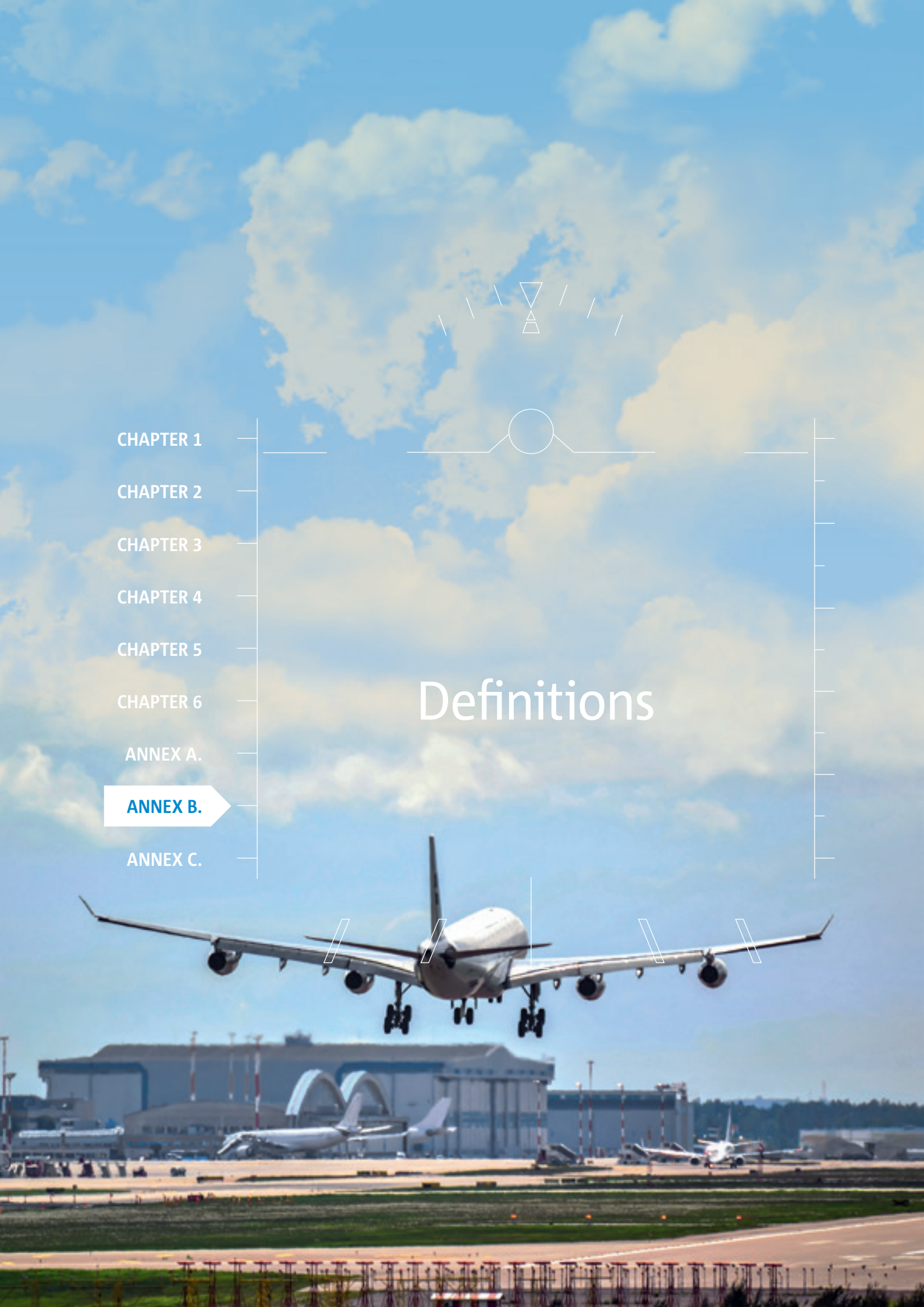
EASA participated in the Aviation Rulemaking Advisory Committee (ARAC) Committee Flight Controls Harmonization Working Group (FCHWG) (Reference: Federal Register / Vol. 76, No. 59 / Monday, March 28, 2011 / Notices) tasked to consider whether changes to Part 25 are necessary to address rudder pedal sensitivity and rudder reversals.

The report recommends an evolution of the yaw axis certification standards. One of the conclusions was that these new standards should be applicable only to new designs.

For existing transport aeroplanes, EASA in accordance with conclusions from FCHWG believe that design reviews and retrofit of modifications should be considered on a case by case basis and that the normal continuing airworthiness of type design process should apply for any potentially unsafe condition that might be identified. It has to be noted that none of the aeroplanes reviewed as part of the FCHWG deliberations were found to have an unsafe condition.

**Status:** Closed – **Category**: Partial Agreement

# Definitions



# ANNEX B: 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 Recommendations classification

# 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.

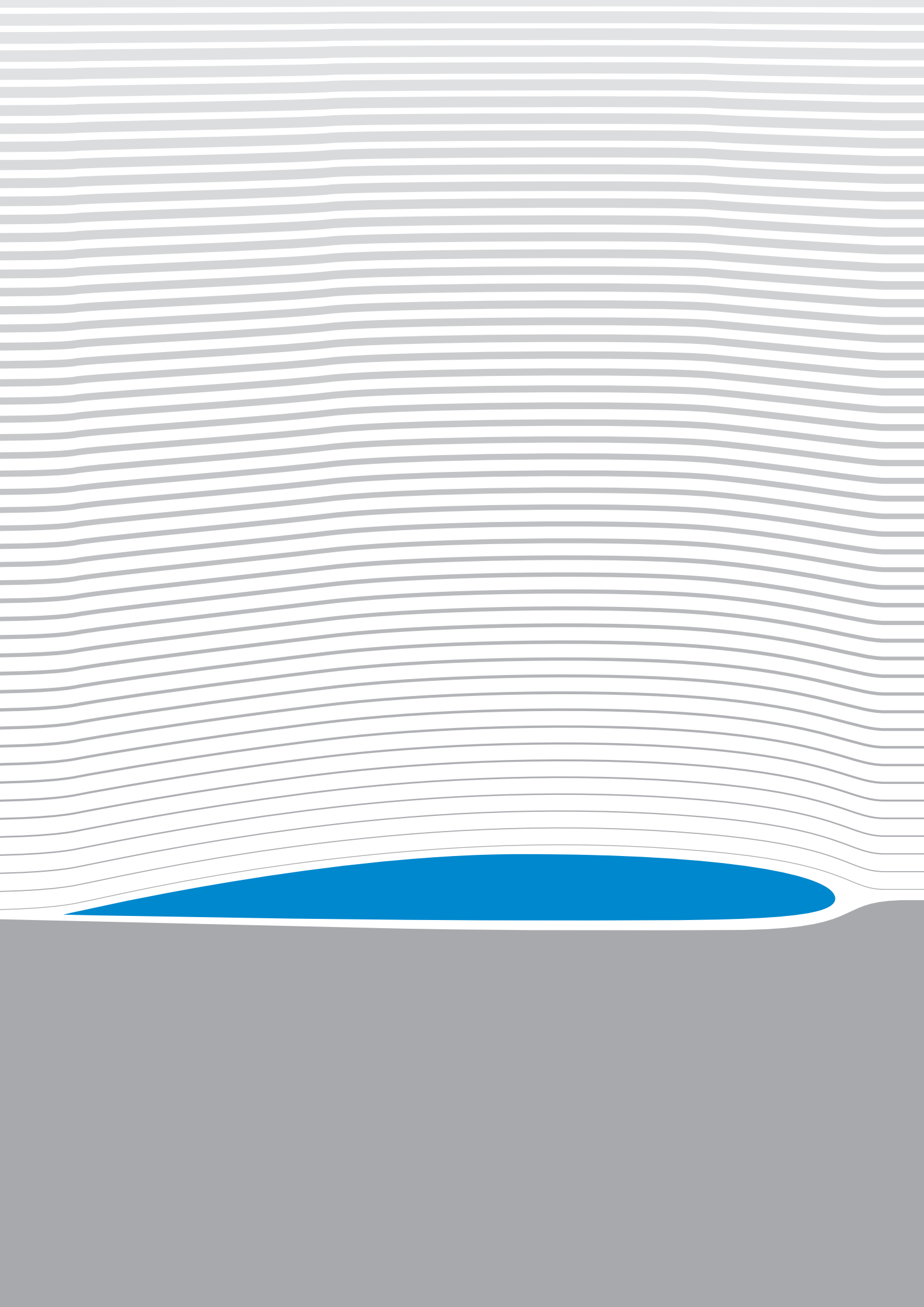
In addition to common definitions, the taxonomy also defines a unique pre-defined format for referencing safety recommendations. This format is composed by a 4 digits originating state name followed by the year it was issued and then a three digits number (ex: UNKG-2007-001 for recommendation #1 issued 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.

## **Classification category:** 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.

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

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

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