



European Aviation Safety Agency  
Safety Analysis and Research Department  
Executive Directorate

**2011**

*Annual Safety Recommendations review*

# 2011

## *Annual Safety Recommendations review*

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## Table of Contents

1	Introduction.....	5
2	Overview of Safety Recommendations in 2011 .....	6
2.1	Safety recommendations received in 2011.....	6
2.2	Origin of the final safety recommendations received in 2011.....	6
2.3	Trends of investigated occurrences giving way to safety recommendations in 2011, by categories .....	7
2.4	Thematic distribution of final recommendations received in 2011.....	9
3	Final safety recommendations replied .....	11
3.1	Final Safety Recommendations replied in 2011.....	11
3.2	Status of final safety recommendations replied in 2011.....	11
3.3	Concluding actions.....	12
ANNEX A.	Replies to Recommendations in 2011 .....	14
ANNEX B.	Definitions .....	111
ANNEX C.	Safety Recommendations classification.....	113

# Executive summary

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 2011. 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.

# 1 Introduction

At European Union level, the principles governing the investigation of accidents and serious incidents are defined in the European 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 and repealing Directive 94/56/EC of 21 November 1994.

This Regulation is compliant with international standards and recommended practices as described in Annex 13 to the Chicago Convention on International Civil Aviation. It sets an obligation for each European Member State to establish an independent permanent national civil aviation safety authority which shall investigate accidents and serious incidents in order to improve aviation safety and prevent future occurrences without apportioning blame or liability. Investigation reports and the related safety recommendations shall be communicated to the concerned aviation authorities for consideration and appropriate action, as needed.

Basic Regulation EC No 216/2008, last amended by Regulation (EC) No 1108/2009 of the European Parliament and of the Council of 21 October 2009, defines the objectives of EASA. It states that "Results of air accident investigations should be acted upon as a matter of urgency, in particular when they relate to defective aircraft design and/or operational matters, in order to ensure consumer confidence in air transport".

Currently EASA's remit involves type-certification, (aircraft, engines, etc.), flight operations and flight crew licensing, approval and oversight of aircraft design organisations as well as production and maintenance organisations outside the EU. EASA is also directly involved in the European aviation safety rulemaking process. EASA's remit has been expanded in 2009 to Air Traffic Management and Airport. As a consequence, EASA has adopted an organisational structure commensurate with its activities.

The European Regulation (EU) No 996/2010 establishes, in article 18, the follow-up process to give to safety recommendations. Consequently, the Agency procedures have been aligned with this European legal requirement.

Thus, the handling of the safety recommendations in both an expeditious and responsible manner constitutes one of the pivotal responsibilities of EASA. Consequently, EASA provides responses to Safety Recommendations addressed to it and publishes an annual review of the safety recommendations handled in 2010 with a statistical overview of the situation.

The aim of this annual safety recommendations review is twofold:

- first, the review presents general statistical data of the final safety recommendations that the safety investigation authorities have addressed to EASA in 2011. It gives an overview of the work performed by EASA in the area of safety recommendations.
- second, it presents the replies that EASA has given in 2011 to safety recommendations and shows the safety issues that have been managed and their follow-up.

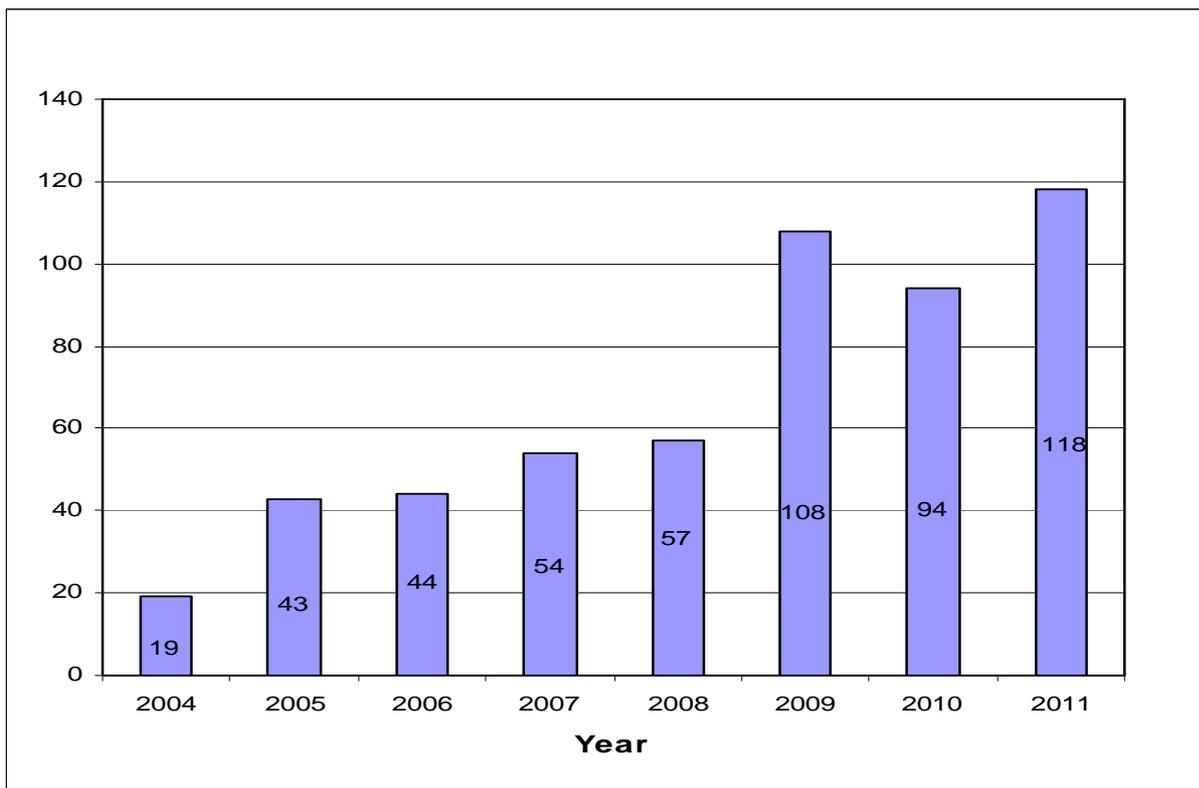
## 2 Overview of Safety Recommendations in 2011

### 2.1 Safety recommendations received in 2011

During the year 2011, 118 final safety recommendations were received by EASA. These safety recommendations were related to 1 study and 49 different occurrences distributed as follows: 28 accidents, 15 serious incidents and 6 incidents.

The total annual number of the final safety recommendations that the Agency has received so far, is shown in Chart 1. The number of safety recommendations varies according to aircraft operations and number of safety events.

Since 2009 it is observed the constant increase of incoming final safety recommendations.



**Chart1: Final Safety Recommendations per year**

As the remit of EASA expanded, final safety recommendations related to this new remit and initially addressed to the Member States have now been transferred to EASA.

Also, in some exceptional cases EASA, acting on its own initiative, has taken on board final safety recommendations which, although they were not addressed to it, were found to fall within its area of activities.

### 2.2 Origin of the final safety recommendations received in 2011

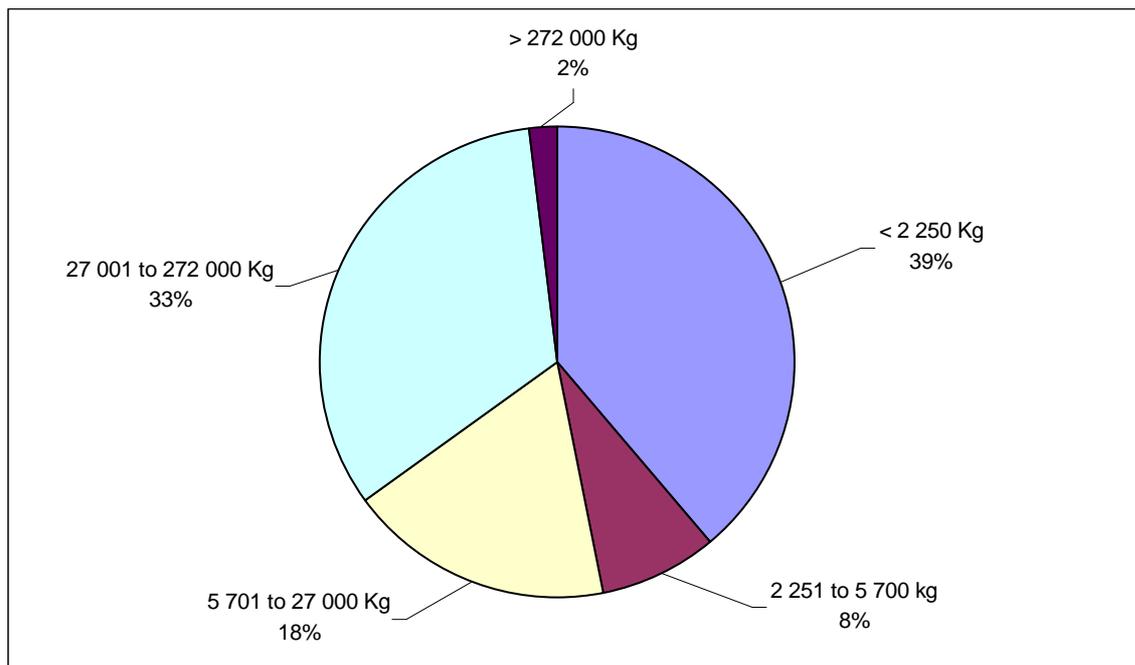
In 2011, Safety Investigation Authorities of 21 different States addressed 118 final safety recommendations to EASA.

With the exemption of 6 countries, which addressed to EASA 16 final safety recommendations accounting for 14% of the total amount, the remaining part was issued by EASA Member States.

### 2.3 Trends of investigated occurrences giving way to safety recommendations in 2011, by categories

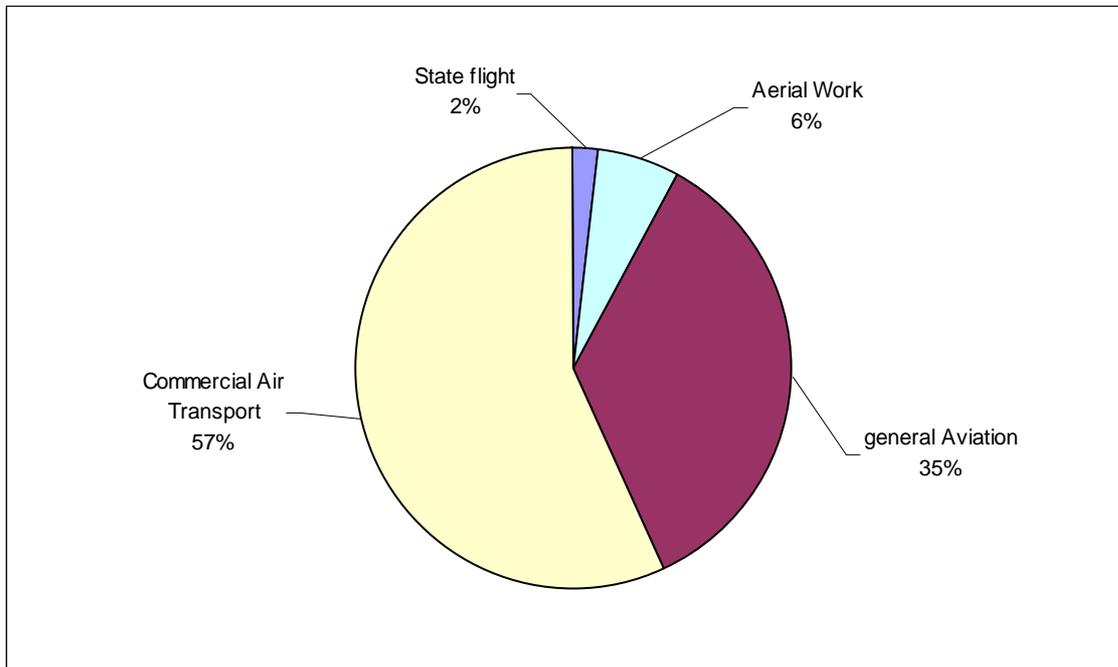
Drawing up a categorisation from a number of relatively limited events has to be carried out with caution. However, a distribution of the 49 occurrences addressed in 2011 to the Agency, for which safety recommendations were issued, has been done. It has to be mentioned that these statistics come from the ICAO ADREP database.

In chart 2, if the outcome of the distribution of investigated occurrences by mass groups shows the same pattern as in 2010. The investigated occurrences distributed into the mass category of aircraft below 2 250 kg increases by 3% (39%), the occurrences for aircraft between 2 251 and 5 700 kg doubled (8%). Conversely, for the large aircraft, with a mass from 27 001kg and above (35%), it is noted a slight decrease of 5%.



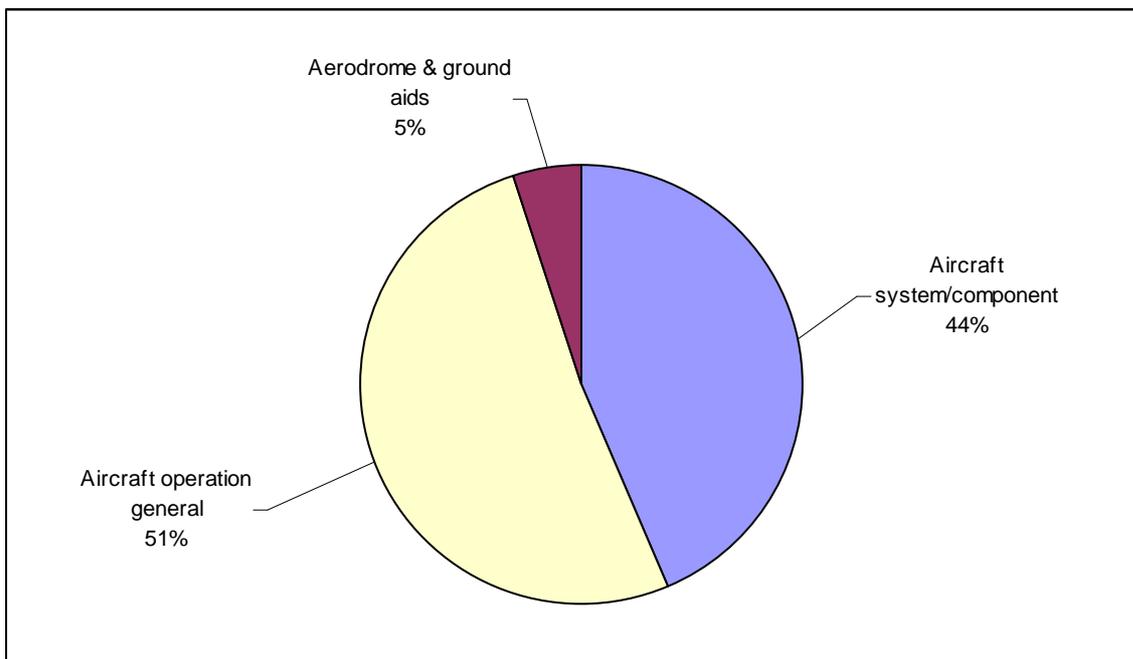
**Chart 2 Occurrences by aircraft mass group in 2011**

As shown in Chart 3, for 2011, the pattern of the distribution by type of operations is similar as in 2010. Events related to Commercial Air Transport operations and Aerial Work and leading to safety recommendations lightly increased respectively by 3% and 2%, while the part of General Aviation decreased from 40% to 35%.The part of occurrences involving aircraft conducting a state flight is similar as 2010, with 2%.



**Chart 3 Occurrences by type of operation in 2011**

For the year 2011, the categorising occurrences by event type (Chart 4) shows, as the previous year, the same pattern of distribution. The part of events related to the aircraft system or component decreased by 3 %, while the one related to the aircraft operation of the aircraft increased by the same percentage (3%). The remaining part, Aerodrome and ground aids, increased by 4%. This chart does not depict the consequential events.



**Chart 4 Occurrences by event type in 2011**

The outcome of this general presentation of occurrences by event type provides a picture of the occurrences' context. As in 2010, most of the occurrences that lead to safety recommendations in 2011 are related to operation issues or system/components problems. A literature review of all Safety Recommendations addressed to EASA highlight a special interest on procedures and check lists issues, as well as, like previous year, crew stall training aspects and recurrent safety actions on flight recorder design and serviceability improvement.

## 2.4 Thematic distribution of final recommendations received in 2011

The thematic distribution of the final safety recommendations covers the full range of safety concerns identified by the Safety Investigation Authorities during the investigation process. Depending on the domain concerned, the safety recommendation is allocated to a specific unit that has established responsibilities to act in the domain. The various area in which the EASA is taking actions are as followed.

The Executive directorate (E) concentrates the executive tasks for managing the Agency as a whole. The area in which the EASA is taking action is as followed:

E – Safety Analysis& Research for safety studies and research projects related to safety recommendations follow-up.

The Rulemaking Directorate (R) produces opinions addressed to the Commission and certification specifications, including airworthiness codes and acceptable means of compliance, as well as any guidance material for the application of Regulation and its implementing rules. The handling of Safety Recommendations is dealt with:

R – Product Safety for the initial and continuing airworthiness.

R – Flight Standard for the flight crew licensing and air operations.

R - ATM/Airport Safety for air traffic management and aerodromes.

The Certification Directorate (C) concentrates all certification tasks, consisting of type certification and continued airworthiness of products, parts and appliances; as well as the environmental approval of products; the handling of safety recommendations is dealt with:

C – Large Aeroplanes

C – General Aviation for Normal, Utility, Aerobatic, and Commuter Category Aeroplanes

C – Rotorcraft, balloons, airships

C – Propulsion

C – Flight Standards for the operational evaluation of individual type design

C – Experts section for technical support and assistance in technical domains

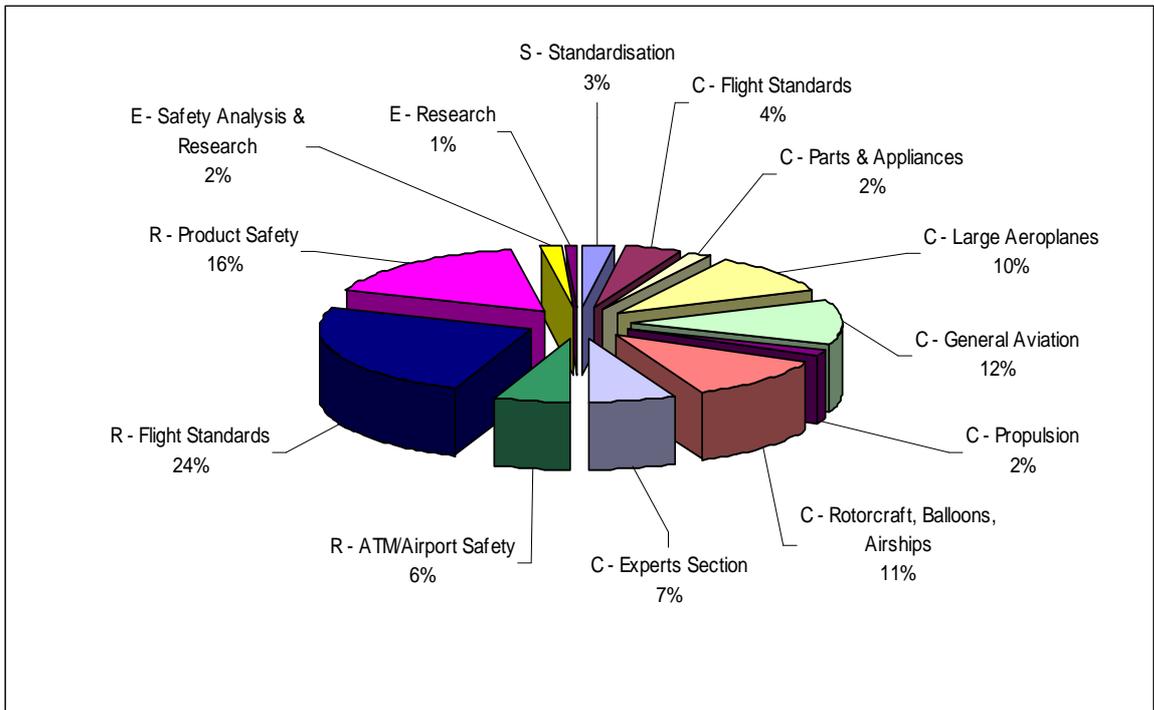
The Approvals and Standardisation Directorate (S) performs inspections, training and standardisation programmes to ensure uniform implementation of European aviation safety legislation in all Member States. It also deals with design organisations and production organisations approval; foreign organisations approval; and coordinates the European Community programme SAFA (Safety Assessment of Foreign Aircraft) regarding the safety of foreign aircraft using Community airports. The handling of Safety Recommendations is dealt with:

S – Organisations

S – SAFA coordination

S - Standardisation

As shown in Chart 5, the final safety recommendations whose content was related to certification issues corresponded to 48% and 46% had a rulemaking character. The remaining 6% came within the field of Safety Analysis & Research and Standardisation.



**Chart 5: Thematic distribution of Final Safety Recommendations in 2011**

Thus, taking into account that there are areas in which EASA's involvement is growing, it is expected that in the future, the number of safety recommendations sent to EASA will further increase, considering the new expanded EASA's competencies to other aviation areas.

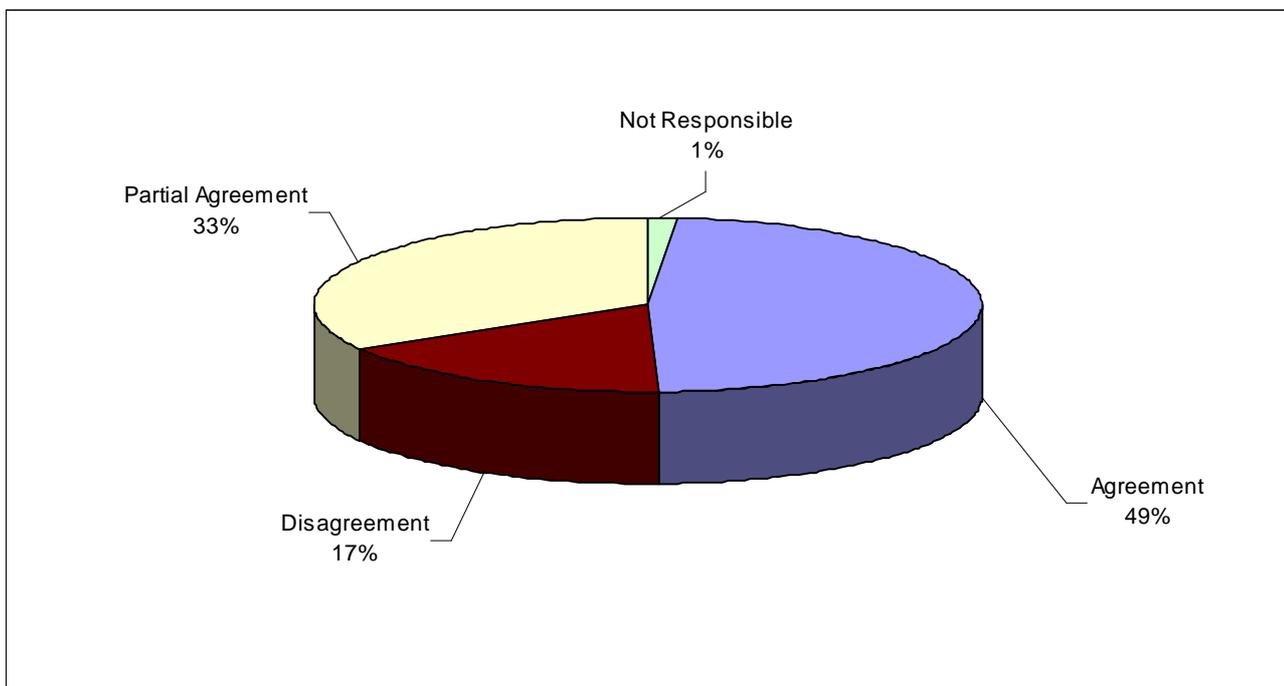
### 3 Final safety recommendations replied

#### 3.1 Final Safety Recommendations replied in 2011

In 2011, EASA replied to 207 final safety recommendations, concerning 109 different events, which represents respectively an increase of 11% with regard to the last year. The final safety recommendations that were reviewed and replied had been received in the years 2005 (2%), 2006 (2%), 2007 (2%), 2008 (5%), 2009 (16%), 2010 (23%) and 2011 (50%).

When the final safety recommendation is closed, the final assessment is usually given using the definitions of classification categories<sup>1</sup> given in Annex C.

Thus, in 2011, EASA agreed and acted upon the final safety recommendations made by the Safety Investigation Authorities in 49% of the cases. Furthermore, in 33% of the cases EASA partially agreed with the final safety recommendations thus recognising the safety issue but taking other remedial actions as the one recommended. In another 17% the final safety recommendations were not followed as depicted in Chart 6. It has to be mentioned that in very few cases (1%) the recommended actions were not in the scope of the Agency’s responsibility.

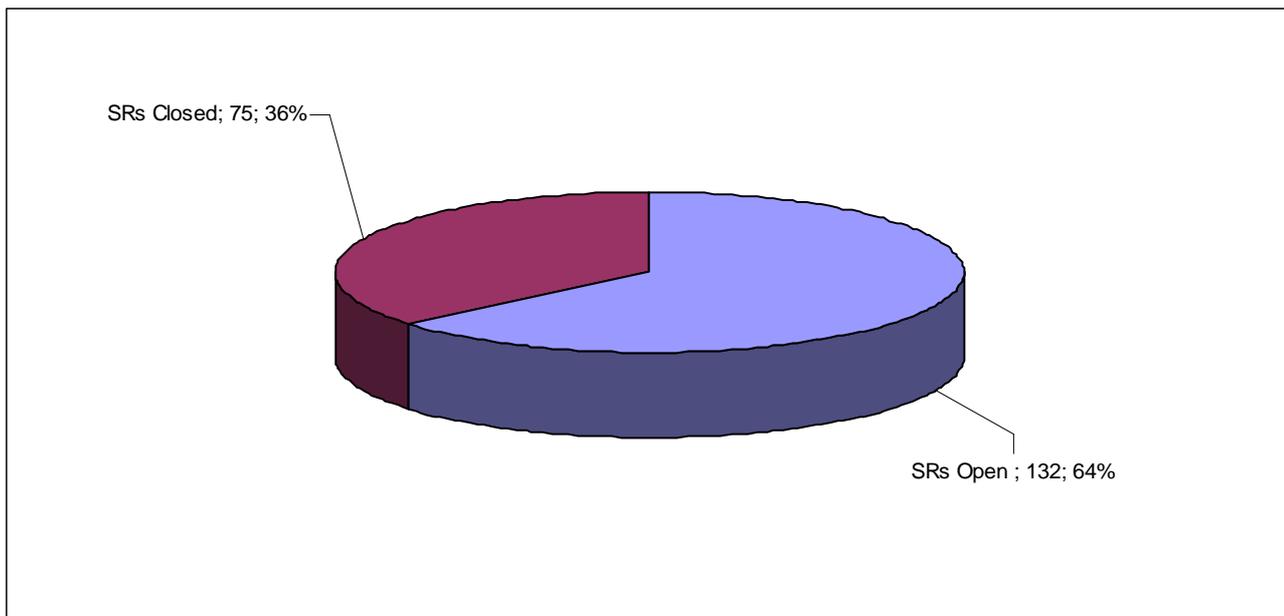


**Chart 6: Categories of replies to Final Safety Recommendations in 2011**

#### 3.2 Status of final safety recommendations replied in 2011

As far as the status of the safety recommendations replied in 2011 is concerned, (36%) final safety recommendations were closed, while (64%) remained open as it was assessed that following activities are not yet completed. In order to ensure the monitoring of safety recommendations, their status remain open until the proposed action has reached its final stage as displayed in Chart 7.

<sup>1</sup> These definitions of classification categories have been developed in the frame of an ECAC working group involving European Accident Investigation authorities and are part of a taxonomy aimed at facilitating a the management of safety recommendations.



**Chart 7: Status of Final Safety Recommendations replied in 2011**

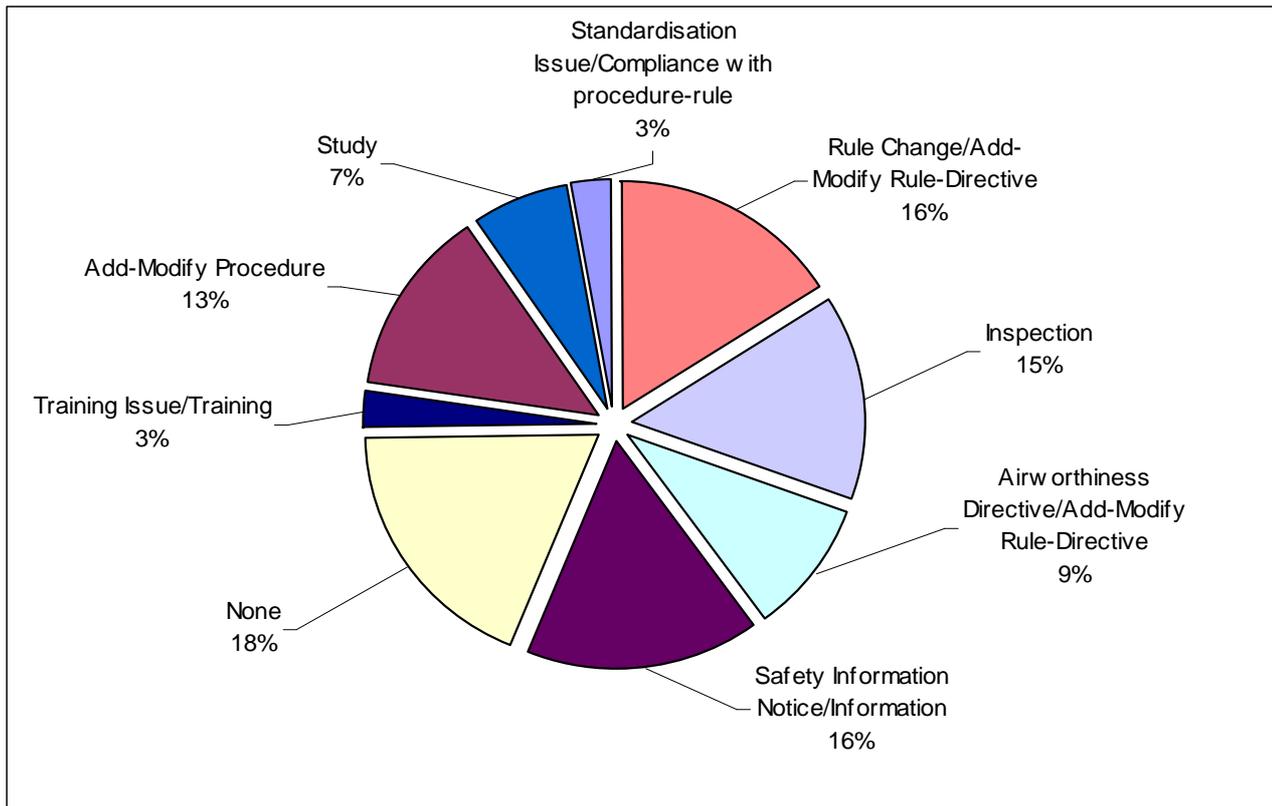
### 3.3 Concluding actions

When a safety recommendation is closed, if the closing status is "Agreement" or "Partial Agreement" a concluding action is always decided. Whenever the closing status is "Disagreement", no concluding action will be run.

As shown in Chart 8, the majority of the closed final safety recommendations classified as "agreement" or "partial agreement" led this year to a balanced distribution between safety information (16%) and rule change (16%).

It has to be reminded that rule changes require time, thus affecting the overall picture of the open final safety recommendations. As such, a regulatory modification has a wider impact on the overall aviation system and needs to be carefully assessed before being implemented. Such rulemaking activity requires getting the feedback of qualified entities and needs a minimum of stability and continuity to be implemented by organisations and States.

This is why the processing of some rulemaking activities and associated recommendations can take years.



**Chart 8: Concluding actions in 2011**

The other important area is Continuing Airworthiness. Unlike the rulemaking activity, the follow-up of such activity has a narrower impact and tends to be implemented shortly afterwards.

It should also be noted that in 18% of these final safety recommendations, no action was deemed necessary. This is the case when the safety recommendation was classified as disagreed, no longer applicable or not in the Agency's remit and closed.

## **Conclusions**

In the year 2011, the number of final safety recommendations addressed to EASA largely exceeded a hundred, with an increase of 11%, as well as the number of replies (240) addressed by the Agency to the Safety Investigation Authorities, which increased by 19%.

The majority (86%) of the final safety recommendations has been addressed to EASA by the Safety Investigation Authorities of the EASA Member States.

The largest portion of the safety recommendations received in 2011 have implications on the certification activity.

## **ANNEX A. Replies to Recommendations in 2011**

The responses made in 2011 to Final 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.

## ARGENTINA

Registration	Aircraft Type	Location	Date of event	Event Type
PT-MVA	AIRBUS - A330	International Airport Ezeiza / Ministro Pistarini, provincia de Buenos Aires, Argentina	05/01/2009	Accident

**Synopsis of the event:** El 05 ENE 09, el Comandante con la aeronave matrícula PT-MVA, luego de efectuar un aterrizaje normal, en pista 11 del Aeropuerto Internacional de Ezeiza/Ministró Pistarini (SAEZ), realizó la salida por la pista 17/35 hacia la calle de rodaje H; cuando se encontraba en cercanías de este cruce, escuchó una explosión en el tren de aterrizaje derecho. Posteriormente, detuvo los motores y permaneció en la calle de rodaje; el Comisario de a bordo le informó que se veía mucho humo saliendo del tren de aterrizaje derecho. Inmediatamente observó que el instrumento de temperatura de frenos del conjunto N0 8 llegó a 735° C. El comandante ordenó que se realice el descenso de los pasajeros, el cual se efectuó en forma normal. El Operador de la TWR EZE cuando observó que salía humo del tren de aterrizaje derecho activó los servicios de emergencia, los que asistieron al lugar del suceso El incidente ocurrió de día y con buenas condiciones de visibilidad.

**Safety Recommendation ARG-2010-003:** Consideration of the appropriateness of recommending that the company manufacturing the aircraft study the possibility of taking suitable measures to ensure the independence of the mechanical transmission of the anti-skid system tachogenerator drive peg, to minimise the probability of its failing when affected by the tire pressure indication system (TPIS), which in the present case caused the failure of both systems".

**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.

**Category:** Unknown - **Status:** Open

## AUSTRIA

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

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

**Safety Recommendation AUST-2008-002:** Die Empfehlungen aus früheren Untersuchungen der UUB (bzw der FUS) zu einer Verwendung von Zusammenstoßwarngeräten muss nach diesem Zusammenstoß und einem ähnlichen im November 2006 in der Nähe von Wr. Neustadt eindringlich wiederholt werden. So sollten seitens der EASA die Voraussetzungen für die Entwicklung von Vorschriften hinsichtlich Technik, Einbau und Zertifizierung von kostengünstigen Zusammenstoßwarngeräten für die Allgemeine Luftfahrt geschaffen werden. Es sollte auch eine mögliche Subventionierung von Zusammenstoßwarngeräten überlegt werden (Aero-Club, Steuerbefreiung usw). Welches der verfügbaren (auf gegenseitiger Funkabfrage bzw auf Transpondererkennung basierend) oder der in Erprobung befindlichen Systeme (satellitengestützte Verarbeitung von Transpondersignalen, ADS-B, bzw RFID- Technologie in Verbindung mit GPS) zum Einsatz kommen sollen, wird noch zu diskutieren sein. Testflüge mit allen derzeit erhältlichen Systemen durch die UUB haben jedenfalls eindrücklich die Wirksamkeit solcher Systeme bestätigt.

**Reply:** The Agency agrees to study rulemaking options for cost-efficient collision warning systems. Rulemaking tasks RMT.0436 and RMT.0437 [former Multi Disciplinary Measures MDM.049(a) and (b)] 'Standards and implementation of collision warning systems in the field of general aviation due to increasing number of near misses and mid-air collisions' are part of the Agency's Rulemaking Programme inventory.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
OE-FCL	DIAMOND - DA42	Sankt Pantaleon, Austria	20/07/2007	Accident

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

**Safety Recommendation AUST-2009-008:** Festlegung von Triebwerksausfällen als Major Event im Rahmen der Zertifizierung von Luftfahrzeugen bzw. Triebwerken nach den Certification Specifications 23 (CS-23) bzw. Certification Specifications Engines (CS-E):Derzeit werden im Rahmen von Zertifizierungen von Luftfahrzeugen nach den CS-23 bzw. den CS-E

Triebwerksausfälle als Minor Event eingestuft. Für ein- und zweimotorige Luftfahrzeuge, die nach den CS-23 zertifiziert sind, stellt jedoch ein Triebwerksausfall eine schwere Störung mit hohem Gefährdungspotential dar (z.B. mehrere Unfälle der DA 42 nach Ausfall eines einzelnen Triebwerkes). Im Rahmen von Zertifizierungen von Luftfahrzeugen bzw. Triebwerken nach den CS-23 bzw. CS-E sollten Triebwerksausfälle als Major Event gewertet werden.

**Reply:** Certification Specifications (CS) 23 for Normal, Utility, Aerobatic and Commuter Aeroplanes and CS-E for Engines do not take a probabilistic approach to piston engine failure. Reference to minor and major severity classifications for piston engine failures are therefore inappropriate for this class of aircraft. For piston engines, CS-E.210 requires that a failure analysis be performed to establish that no single fault could lead to unsafe engine conditions beyond the normal control of the flight crew. While no specific reliability target is given, state-of-the-art engines typically achieve loss of power rates of between 10<sup>-3</sup> and 10<sup>-5</sup>/flight hour. Aircraft are certificated on the basis of assured continued safe flight or landing following engine failure. In effect, CS-23 mitigates the consequence of engine failure, for instance by controlling stalling speed (V<sub>so</sub>) and structural crashworthiness for single engine aircraft, or by requiring investigation of handling qualities and performance of multiple engine aeroplanes with a failed engine. However, it cannot be excluded that, under some conditions, the effects of engine partial or complete loss of power at aircraft level remain more severe than minor or even major, but the overall safety objectives can still be met considering the reduced exposure time to such conditions. While the Agency will continue to monitor accident/incident trends and related causal factors, there is currently no safety/economic data to support changing airworthiness standards in order to increase piston engine reliability.

**Category:** Disagreement - **Status:** Closed

**Safety Recommendation AUST-2009-010:** Maßnahmen zur Verbesserung der Flugleistung und der Steuerfähigkeit nach Ausfall eines Antriebes bei zweimotorigen, nach den CS-23 zertifizierten Luftfahrzeugen:

Es wurde festgestellt, dass Piloten der DA 42 nach Ausfall eines Triebwerkes Steuerungsprobleme und Probleme hatten, die Flughöhe zu halten.

Im Vergleich zu Verkehrspiloten sind Piloten von Luftfahrzeugen, die nach der CS-23 zugelassen sind, im Regelfall weniger umfangreich ausgebildet, haben weniger Übung und Flugerfahrung und fliegen außerdem im Regelfall als „Single Pilot“.

In den Zulassungsvorschriften sollten geeignete Maßnahmen gesetzt werden, die es Piloten von zweimotorigen, nach den CS-23 zertifizierten Luftfahrzeugen nach Ausfall eines Triebwerkes (vor allem des kritischen Triebwerkes) ermöglichen, der aufgetretenen schweren Störung sicherer zu begegnen (z.B. Verbesserung der Steuerfähigkeit, Erhöhung der vorgeschriebenen Leistungsreserven).

**Reply:** In the future EASA pilot licensing rules, the type rating requirements for multi-engine aeroplanes are proposed to be the same whatever the licence held by the pilot or the certification standard of the aircraft (refer Notice of Proposed Amendment 2008-17 available on the EASA website). These requirements contain training and testing provisions regarding one engine failures. The Diamond DA 42 has similar capabilities as other Certification Specifications (CS) 23 aircraft. EASA does not intend to differentiate according to the certification standard. However, in December 2010 the Agency conducted an Operational Evaluation Board (OEB) review of the current training practices, specifically the differences training as described in the Joint Aviation Requirement on Flight Crew Licencing (JAR-FCL) 1.235(c)(1). The OEB concluded that difference training courses between Multi-Engine Piston (MEP) variants should be conducted by a Flight Training Organisation (FTO) or Type Rating Training Organisation (TRTO) when the differences between the variants include:

- i) Electronic Flight Instrument System (EFIS) displays,
- ii) integrated avionics,
- iii) single lever engine operation,
- iv) other systems as determined by the Authority.

The full details of the OEB evaluation are available at the EASA website.

**Category:** Partial Agreement - **Status:** Closed

**Safety Recommendation AUST-2009-011:** Änderung der Zertifizierungsvorschriften für Kolbenriebwerke CS-E:

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

**Reply:** The Agency has initiated a rulemaking task RMT.0180 (former E.010) 'Initial Maintenance Inspection' to address this issue. The Agency will consider the Safety Recommendation as part of this rulemaking task.

**Category:** Unknown - **Status:** Open

**Safety Recommendation AUST-2009-012:** Ausfallsicherheit von Antrieben mit Kolbenriebwerken:

Nach der Zertifizierung der DA 40 und DA 42 mit TAE Triebwerken Centurion 1,7 und 2,0 sind eine Vielzahl von schweren Störungen und Antriebsausfälle aufgetreten. Die vorausgesagte Standfestigkeit hat mit der tatsächlichen bei weitem nicht übereingestimmt. Bei konventionellen Antrieben und Zulassungen war es üblich, bei bekannt ausfallkritischen Teilen wie z.B. der Zündung diese doppelt auszuführen. Dies ist nicht mehr der Fall. Gleichzeitig hat die Anzahl der ausfallkritischen Teile, die sich in modernen Antrieben befinden, zugenommen. Daher führt der Ausfall einzelner Bauteile zu kompletten Triebwerksausfällen. Es sollte geeignete Maßnahmen getroffen werden, die in der Praxis sicherstellen, dass die angenommene Ausfallwahrscheinlichkeit des Einzelantriebes (Einzeltriebwerk incl. allfälliger Getriebe, Kupplungen, Propellerregelungen etc.) gewährleistet ist. Dies sollte u.a. die weitgehend redundante Ausführung von ausfallkritischen Bauteilen (z.B. Elektro - ((z.B. Main Bus System)) und Treibstoffversorgung, Zündung, Propellerregelung etc.) beinhalten.

**Reply:** It should be noted that all piston engines, conventional as well as non-conventional, have non-redundant components that can cause an engine shut down or power loss (e.g. a failure of a carb float of a conventional spark ignited carburetted piston engine). The engine certification rules have never required redundant fuel systems for piston engines. Therefore there is no significant difference in the fuel system design of conventional and non-conventional piston engines. Because diesel engines are self-igniting, there is no need for an ignition system at all. EASA has reviewed the in-flight shut down/power loss (IFSD) rate of the TAE 125 engines. After implementing of several mandatory corrective actions, the IFSD rate of the TAE 125-01 and TAE 125-02 engines is now well in the expected range for piston engines. The FAA has established the following general event rates for piston engines (see FAA Memorandum 1999-00006):

- Shutdowns/power losses: >1 every 10,000 hours;
- Accidents: 1 every 100,000 hours;
- Fatal Accidents: 1 every 1,000,000 hour.

The actual IFSD of the TAE 125 engines is around 0.4 every 10,000 flight hours (rolling 12 month) which is less than half of the IFSD rate established by the FAA.

**Category:** Disagreement - **Status:** Closed

## BELGIUM

Registration	Aircraft Type	Location	Date of event	Event Type
OO-YEB	PIK - PIK20D	Weelde, Belgium	12/06/2010	Accident

**Synopsis of the event:** On Saturday 12 June, the pilot arrived on the EBWE airfield with his own sailplane, a PIK-20D, registered OO-YEB, stored in a trailer. He assembled his sailplane. The flight preparation procedure occurred normally. He took off at 12:15, launched by the winch, located 1430m further on the Runway 25 of EBWE. As witnessed by the flight instructor, the initial climb occurred normally; there was no lateral drift, and no sign of abnormal speed build-up. The winch man saw the sailplane coming, and when it reached the separation point, the winch man cut the power of the winch. The winch man noticed that the tow cable did not detach from the sailplane. When the sailplane came vertical above him, the winch man activated the emergency cable cut-off. The system worked, and the cable was cut; the remaining length was 525m. Witnesses showed the sailplane in a steady dive, nose down, without any lateral movement of the sailplane. The sailplane crashed 310m away from the winch in a very steep dive. The pilot was fatally injured by impact.

**Safety Recommendation BELG-2010-004:** AAIU(be) recommends EASA to incorporate a requirement for a "positive check" after assembly of sailplanes equipped with l'Hotellier couplings, such as the ones used on OO-YEB. This requirement could be incorporated in the existing Airworthiness Directives, or in another adequate document.

**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.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
D-KJGA	SPORTINE AVIACIJA - LAK17	Suarlee-Namur, Belgium	09/05/2009	Accident

**Synopsis of the event:** After a major modification was embodied to his sailplane; the installation of an engine, and further certification in Germany, the pilot wanted to perform a flight to test the modifications. The sailplane was towed to an altitude of 1600 ft, without any problem. The pilot of the towing airplane had a last radio contact when the sailplane separated from the towing airplane. The sailplane was last seen crossing the EBNM airfield, in the direction of the landing circuit. A witness saw the engine was out, but did not hear the engine operating. The airbrakes were seen extended. Upon reaching the circuit, when it was expected to turn left, the sailplane went into a spin (or hook turn, according to a witness) to the right. The sailplane crashed alongside the motorway E411. The pilot died on impact.

**Safety Recommendation BELG-2010-006:** AAIU(be) recommends EASA to advise the TC-Holder to take appropriate actions and to revise the Information Bulletin N°017.A.8.65.0121I and subsequently revise the Major Change Approval EASA.AC.11123, in order to ensure conformity of the modified LAK-17A with all the conditions identified in the LAK-17AT Flight Manual, and take all appropriate interim measures for the modified LAK-17A already flying.

**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.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
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OO-TRB	CESSNA - 172	Ebul, Belgium	02/01/2010	Accident
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**Synopsis of the event:** The airplane took off from the airfield of Ursel at 15.00 UTC with two persons on board for a local flight. Around 15:20 UTC, the meteorological conditions around Ursel degraded rapidly, involving an important snowfall. At 15:40 the airfield staff called by radio the OO-TRB without success. Later after contacting the neighbouring airfields it became evident that the airplane was missing. A search action was initiated, involving a SAR helicopter from the Military and a Federal Police helicopter. The wreckage of the airplane was found around 21:00 UTC at a short distance North of the airfield. The two occupants were fatally injured.

**Safety Recommendation BELG-2010-007:** AAIUbe recommends the BCAA/EASA to promote that pilots activate systematically the transponder (if installed), not only to facilitate air traffic control but also in order to eventually reduce the time to find a crashed airplane.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation BELG-2010-010:** The BCAA/EASA to revise the biannual skill test program for general/recreational aviation pilots to include topics such as:

- Decision making when encountering adverse meteorological condition
- Unintentional IMC condition
- Navigation flight capabilities.

**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.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
OO-DJK	BAE - AVRO146RJ	during climb from LFML passing 10.000 ft, France	11/02/2011	Incident

**Synopsis of the event:** During climb at approx 10.000 ft, a bang has been heard by the crew. There was some slight vibration but all parameters remained unchanged. Aircraft continued his flight to BRU and landed uneventfully. In BRU it was discovered that the composite top wing leading edge fairing panel above centertank was lost. No one got injured.

**Safety Recommendation BELG-2011-022:** AAIU(be) recommends EASA to revise EASA AD 2008-0180 to make reference to ISB 53-202 Revision 5, once the latter has been issued, and to make a clear statement that the next inspections have to be performed in accordance with the ISB 53-202 Revision 5. The current statement "The use of later approved revisions of this document is acceptable for compliance with the requirements of this AD" doesn't mandate compliance with the latest approved revision of the ISB 53-202.

**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.

**Category:** Unknown - **Status:** Open

## CANADA

Registration	Aircraft Type	Location	Date of event	Event Type
C-GZCH	SIKORSKY - S92	St. John's, Newfoundland and Labrador, 35 nm E, Canada	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:** 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:** EASA accepts that the interpretation of "extremely remote" in paragraph 29.927 of the rotorcraft certification specifications is ambiguous and has caused confusion in demonstrating compliance. EASA together with the Federal Aviation Administration (FAA) and Transport Canada (TCCA), are considering methods to clarify the intent. In addition, a Joint Cooperation Team (JCT) between EASA, FAA and TCCA is being initiated under the leadership of TCCA, to undertake a detailed review of current certification standards and guidance material (Advisory Circular) relating to the certification of helicopter main gear box lubrication systems. This will include issues such as loss of lubrication, the reliability of lubrication systems, and the adequacy of the 30 minute Cat A capability. The JCT aims to be completed within 1 year and any recommendations will be considered for future rulemaking.

**Category:** Unknown - **Status:** Open

## CHINA

Registration	Aircraft Type	Location	Date of event	Event Type
B-6167	AIRBUS - A319	Huanghua International Airport, Changsha, China	19/06/2008	Serious incident

**Synopsis of the event:** On June 19, 2008, a local operator was operating flight MU2261 from Chongqing to Wenzhou on aircraft A319/B-6167, with 108 passengers and 9 crew members on board. The flight was diverted to Changsha because of a fire in the passenger oxygen system behind AFT cargo compartment. Sidewall linings Parts of system and structure of the aircraft were damaged, but there were no personal injuries.

**Safety Recommendation CHIN-2011-004:** It is recommended that EASA issue AD to prohibit the use of old typed intermediate pressure hose in airborne oxygen system.

**Reply:** Within the continued airworthiness the EASA and Type Certificate Holder understand that the suspected tubes are not in use on Airbus single aisle aircraft. There is no need for an airworthiness directive issuance to prohibit the use of old typed intermediate pressure hose in airborne oxygen system.

**Category:** Partial Agreement - **Status:** Closed

**Safety Recommendation CHIN-2011-005:** It is recommended that EASA, FAA and CAAC perform HP oxygen shock tests to oxygen regulation device equipped on civilian aircraft.

**Reply:** The Agency accepts to review the specifications for gaseous oxygen systems. A generic Certification Review Item (CRI) entitled Oxygen Fire Hazard in Gaseous Oxygen Systems has been initiated by the Agency for certification of Large Aeroplanes (CS-25). This CRI addresses the various ignition mechanisms which may be foreseen in gaseous oxygen system (centralised, decentralised or portable) which includes temperature rise from oxygen compression. It provides to the applicant considerations in term of system design and installation, failure mode and safety analysis, hazard analysis (i.e. assessment of the potential ignition and combustion mechanism). The Agency has also provisioned a rulemaking task RMT.0458 which will propose amending applicable certification specifications (CS), which will include the lessons learnt from this incident and the outcome from the CRI and related discussions with the industry. This task will primarily consider CS-25 aircraft and as a second step will also consider amending CS-23, CS-27 and CS-29 specifications.

**Category:** Unknown - **Status:** Open

## DENMARK

Registration	Aircraft Type	Location	Date of event	Event Type
OY-KFF	BOMBARDIER - CL600 2D24	Copenhagen Airport, Kastrup (EKCH), Runway 04R, Denmark	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:** 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:** The Agency accepts that wildlife may be a risk to the safety of aircraft operation. The Agency will therefore evaluate the existing technical solutions for the observation of birds in darkness and in reduced visibility conditions, and will then consider the best course of action in the context of the Implementing Rules on aerodromes.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
OY-XXB	SCHEMPP HIRTH - VENTUS2CT	the Gliding Centre Arnborg, Denmark	05/04/2009	Accident

**Synopsis of the event:** The accident occurred during a private VFR flight from Gliding Centre Arnborg. After five hours flight, the pilot of the aircraft turned back towards Gliding Centre Arnborg with the intention of landing the aircraft. The pilot prepared for a long final approach to runway 27. Approximately five kilometres from the airfield, the aircraft was positioned for a long final approach to runway 27 at 1400 ft elevation. Approximately four kilometres from Gliding Centre Arnborg, the main wheel was extended at a speed of approximately 150 km/h and flaps were set to position -1. Flight speed was then increased by 30-50 km/h due to a surplus altitude of 100 metres. One kilometre from Gliding Centre Arnborg, the glider was flying at 30-40 metres altitude, at which point flaps were set to neutral. Approximately 400 metres before runway 27, the air brake was opened about 1/4 to 1/3, until speed had decreased to 150-160 km/h. Upon crossing the beginning

of runway 27 at 10-15 metres altitude, the air brake was fully opened. Shortly after - at 5-8 metres altitude - the pilot heard loud rattling noises, followed by a loud bang. Hereupon the glider decelerated drastically and it was no longer possible to control the aircraft. The glider crashed on runway 27 and, as a consequence of the accident, the glider was destroyed. The accident took place in daylight and under visual meteorological conditions (VMC).

**Safety Recommendation DENM-2010-004:** The Accident Investigation Board recommends that, the European Aviation Safety Agency (EASA) evaluates the design, and/or possibly introduces a maintenance scheme including wear and tear limitations for the flaps locking device as well as an adjustment procedure for the handle spring, so that unintentional changing of the flaps position is not possible.

**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.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
OY-RBB	DIAMOND - DA40	1 nm west of Copenhagen Airport, Roskilde (EKRK), Denmark	07/06/2007	Incident

**Synopsis of the event:** The flight, during which the incident occurred, was a local test flight, VFR from Copenhagen Airport, Roskilde (EKRK). The purpose of the test flight was to check the function of a new Engine Control Unit (ECU) that was installed in the aircraft. The test flight was performed at 2000 ft without it leading to any technical remarks. The pilot moved the engine power control lever towards idle and initiated a descent back to EKRK. At left hand base leg to runway 11 the pilot advanced the engine power control lever to adjust the glide to the threshold of runway 11. There was no reaction from the engine when the pilot added full power. The engine did not respond to the pilot input but stayed at low power, he observed no warnings. At this point it was not possible to reach the runway. An emergency was declared by the pilot and he informed EKRK TWR that he was forced to land west of the airport. The landing was successful without any damage to the aircraft.

**Safety Recommendation DENM-2011-001:** The Danish Accident Investigation Board recommends EASA to a review of the TAE-125-01 diesel engine design with the emphasis on the fail-safe design principle and how it's been applied to an individual engine component, as well as to the complete power plant system including its electronic failure modes.

**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.

**Category:** Unknown - **Status:** Open

## ECUADOR

Registration	Aircraft Type	Location	Date of event	Event Type
EC-JOH	AIRBUS - A340	Aeropuerto Mariscal Sucre, Quito, Ecuador	09/11/2007	Accident

**Synopsis of the event:** En noviembre 09 de 2007, se cumplía el vuelo de itinerario en la ruta Madrid-Quito-Guayaquil, con 359 personas a bordo, 345 pasajeros y 14 tripulantes. Las condiciones meteorológicas en el aeropuerto Mariscal Sucre de Quito, exigían la aplicación de las reglas de vuelo por Instrumentos, razón por la cual la tripulación de la aeronave, autorizada por el Control de Aproximación del aeropuerto de Quito, realizó el procedimiento de aproximación por instrumentos número 4 (VOR OIT DME/ILS), para la pista 35. El avión sufrió un aterrizaje violento, con las siguientes consecuencias:

- Los neumáticos números 3 y 8 del tren de aterrizaje principal explotaron al momento del tope de ruedas
- Las barras Lower Articulation Link (LAL) de los dos trenes de aterrizaje principales se rompieron provocando la falla del sistema de reversas, quedando en modo APP IDLE y ocasionando que los frenos de las ruedas 1 a 4 fueren liberados durante la fase de frenado en modo NORMAL.

**Safety Recommendation ECUD-2009-001:** PARA AUTORIDADES DE REGULATION EN AVIACION (FAA Y EASA): que se revise la reglamentación para cálculos de performance, particularmente de las longitudes de pista, de manera que los valores puedan obtenerse de la manera mas directa posible, evitando al máximo correcciones manuales, que efectuadas a ultimo minuto pueden inducir a errores por la premura o limitado tiempo para hacer cálculos.

**Reply:** The current regulation for commercial air transport operations by aeroplanes, Regulation (EC) 859/2008 (so-called 'EU-OPS') contains in Subparts F and G the applicable performance requirements for aeroplanes with a maximum take-off mass of more than 5700kg. These requirements are directed to the operator. According to paragraph OPS 1.210 of EU-OPS, "an operator shall establish procedures and instruction, for each aeroplane type, containing ground staff and crew members' duties for all types of operation on the ground and in flight. An operator shall establish a check-list system to be used by crew members for all phases of operation of the aeroplane under normal, abnormal and emergency conditions as applicable, to ensure that the operating procedures in the Operations Manual are followed."

Paragraph OPS 1.1040 further specifies the general rules for operations manuals. Appendix 1 to OPS 1.1045 contains the detailed contents of the Operations Manual, specifying for OM-Part B:

#### 4. PERFORMANCE

4.0. Performance data must be provided in a form in which it can be used without difficulty.

4.1. Performance data. Performance material which provides the necessary data for compliance with the performance requirements prescribed in OPS 1 Subparts F, G, H and I must be included to allow the determination of:

- take-off climb limits - mass, altitude, temperature;
- take-off field length (dry, wet, contaminated);
- net flight path data for obstacle clearance calculation or, where applicable, take-off flight path;
- the gradient losses for banked climb outs;
- en-route climb limits;
- approach climb limits;
- landing climb limits;
- landing field length (dry, wet, contaminated) including the effects of an in-flight failure of a system or device, if it affects the landing distance;
- brake energy limits; and
- speeds applicable for the various flight stages (also considering wet or contaminated runways).

4.1.1. Supplementary data covering flights in icing conditions. Any certificated performance related to an allowable configuration, or configuration deviation, such as anti-skid inoperative, must be included.

4.1.2. If performance data, as required for the appropriate performance class, is not available in the approved AFM, then other data acceptable to the Authority must be included. Alternatively, the Operations Manual may contain cross-reference to the approved data contained in the AFM where such data is not likely to be used often or in an emergency.

4.2. Additional performance data. Additional performance data where applicable including:

- (a) all engine climb gradients;
- (b) drift-down data;
- (c) effect of de-icing/anti-icing fluids;
- (d) flight with landing gear down;
- (e) for aeroplanes with three or more engines, one engine inoperative ferry flights; and
- (f) flights conducted under the provisions of the CDL.

The regulation cannot specify detailed methods to determine the figures for any possible operation/aircraft combination. As indicated in the texts above, it is the responsibility of the operator to provide the appropriate data to the flight crew in a form that can be used without difficulty and this applies also to runway lengths among other equally important data. It is therefore considered that the present rules satisfy the safety recommendation.

**Category:** Disagreement - **Status:** Closed

## ESTONIA

Registration	Aircraft Type	Location	Date of event	Event Type
OH-HCI	SIKORSKY - S76	Tallinn Bay, Estonia	10/08/2005	Accident

**Synopsis of the event:** On 10 August 2005, a Sikorsky S-76C+ helicopter, registration OH-HCI, was operating a scheduled passenger service between Helsinki, Finland and Tallinn, Estonia. The helicopter departed Tallinn at 12:39 hours (local time) with 12 passengers and two pilots on board. Approximately three minutes after take-off while climbing at 1380 ft above sea level, the flight data recorder showed that the flight was interrupted by a sudden helicopter pitch-up and left roll maneuver, then remained in varying attitudes of right yaw (rotation), roll and pitch for 37 seconds until impacting the water at 12:42:28 hours. There were no survivors. The Aircraft Accident Investigation Commission determined that the cause of the accident was an uncommanded extension of the main rotor forward actuator and subsequent loss of control of the helicopter. Contributing to the uncommanded extension of the actuator was the separation of the plasma coating on one of two actuator pistons and the operator's failure to detect the internal leakage of the main rotor forward actuator.

**Safety Recommendation ESTO-2008-001:** It is recommended that FAA and EASA will introduce the means requiring fitting helicopters operating on regular passenger flights with floats automatically inflating in contact with water.

**Reply:** Opinion 04/2011 Air Operations published on the Agency's web site 01/06/2011 contains: CAT.IDE.H.320 All helicopters on flights over water - ditching

(a) Helicopters shall be designed for landing on water or certified for ditching in accordance with the relevant airworthiness code when operated in performance class 1 or 2 on a flight over water in a hostile environment at a distance from land corresponding to more than 10 minutes flying time at normal cruise speed.

(b) Helicopters shall be designed for landing on water or certified for ditching in accordance the relevant airworthiness code or fitted with emergency flotation equipment when operated in:

(1) performance class 1 or 2 on a flight over water in a non-hostile environment at a distance from land corresponding to more than 10 minutes flying time at normal cruise speed;

(2) performance class 2, when taking off or landing over water, except in the case of helicopter emergency medical services (HEMS) operations, where for the purpose of minimising exposure, the landing or take-off at a HEMS operating site located in a congested environment is conducted over water; or

(3) performance class 3 on a flight over water beyond safe forced landing distance from land.

The issue of automatic deployment on water contact is part of the rulemaking task RMT.0120 (former 27&29.008) 'Ditching Occupant Survivability' which is identified in the Agency's Rulemaking Programme.

**Category:** Unknown - **Status:** Open

**Safety Recommendation ESTO-2008-003:** To aid flight safety and also accident investigation, the Commission recommends that the FAA and EASA implement the use of crash-protected cockpit image system on helicopter operations that carry passengers for hire.

**Reply:** Rulemaking tasks RMT.0283 and RMT.0284 [former MDM.087(a) previously OPS.035(a) and former MDM.087(b) previously OPS.035(b)] 'Feasibility of crash protected image recorders on the flight deck' are on the Agency's Rulemaking Programme inventory.

**Category:** Unknown - **Status:** Open

## FINLAND

Registration	Aircraft Type	Location	Date of event	Event Type
OH-ATB	ATR - ATR42	Seinäjoki Airport, Finland	11/12/2006	Incident

**Synopsis of the event:** On 11 December 2006 ATR 42-500 passenger aircraft, registration OH-ATB, was on a scheduled flight from Helsinki to Seinäjoki from where the flight was to continue to Kokkola. There were 27 passengers and 3 crew members onboard. An incident occurred during landing at Seinäjoki aerodrome when the aircraft veered off the paved runway onto the left side's sand/gravel runway shoulder during the landing roll. The left main landing gear broke two runway edge lights and its anti skid wiring was cut. The captain was able to steer the aircraft back onto the runway. After the damage was inspected the remaining leg to Kokkola was cancelled. The aircraft stayed overnight at Seinäjoki and was flown back to Helsinki the following morning.

**Safety Recommendation FINL-2007-001:** The investigation commission recommends that EASA investigate the prevalence of flight data recorder malfunctions and, depending on the results, consider shortening the applicable maintenance cycles in order to ensure continuous proper functioning of flight data recorders.

**Reply:** The Comments Response Document to Notice of Proposed Amendment 2009-2b requires in paragraph CAT.GEN.AH.195 (b) that the operator shall conduct operational checks and evaluations of flight data recorder (FDR) recordings, cockpit voice recorder (CVR) recordings and data-link recordings to ensure the continued serviceability of the recorders. In addition, it is recommended in AMC1-CAT.GEN.AH.195 that whenever a recorder is required to be carried, the operator should:

- 1) perform an annual inspection of FDR recording, CVR recording and, if applicable, datalink recording; and
- 2) check every five years or in accordance with the recommendations of the sensor manufacturer, that the parameters dedicated to the FDR and not monitored by other means are being recorded within the calibration tolerances.

It is also specified in GM1-CAT.GEN.AH.195 that Procedures for the inspections and maintenance practices of the FDR and CVR systems are given in Annex 6 of the Convention on International Civil Aviation (ICAO), Part I and in Annex II-B of the European Organisation for Civil Aviation Equipment Document, EUROCAE ED-112.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
OH-CAU	CESSNA - 172	Porvoo motorway, Finland	28/09/2007	Accident

**Synopsis of the event:** An air accident occurred at approximately 16:29 on Friday 28 September 2007 at Sipoonlahti, west of the city of Porvoo. A Cessna 172N, registration OH-CAU, owned by the Malmi Aviation Club made an emergency landing on Porvoo motorway, close to the Sipoonlahti exit. In addition to the pilot there were two passengers onboard. No-one was injured; however, the aircraft sustained major damage. The incident caused no harm to road traffic.

**Safety Recommendation FINL-2009-003:** The investigation commission recommends that EASA take action to ensure that required maintenance instructions will be published concerning the fuel tank filler caps adjustment on the aircraft equipped with TAE-engines.

**Reply:** Special Airworthiness Information Bulletin (SAIB) No CE-10-40R1 "Aircraft Fuel System; water contamination of fuel tank systems on Cessna single engine airplanes" issued by the FAA on 30 July 2010 and posted on EASA Airworthiness Directives publishing tool on 02 August 2010, satisfactorily addresses the safety recommendation.

**Category:** Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
OH-PDY	PIPER - PA28R	Taipalsaari, Finland	15/08/2008	Accident

**Synopsis of the event:** An air accident occurred at Taipalsaari on Friday, 15 August 2008 at approximately 13:14 (all times are Finnish local time) when a Piper PA-28R-200 Arrow II, registration OH-PDY, crashed into Lake Saimaa near the southern tip of Peräluoto Island. The accident site is located approximately 20 km north of Lappeenranta Airport. The aircraft was destroyed upon impact and all occupants, the flight instructor and two student pilots, were killed instantly. They had flown an instrument training flight from Helsinki-Malmi to Kuopio in accordance with the training syllabus. The flight from Kuopio to Lappeenranta was an internal progress flight test arranged by the flight school. As the aircraft was approaching Lappeenranta Terminal Control Area, the pilot requested to leave the cruising altitude of 8000 ft (ca. 2400 m) in order to fly some manoeuvres included in the progress check flight's programme. The topic was upset recovery practice. Air traffic control gave 3000 ft (900 m) as the lower limit for their exercise. A person who witnessed the aircraft crash into the water reported the accident to the Emergency Response Centre of South-East Finland at about 13:17. The wreckage and the occupants in the aircraft were quickly located. After the crash some eyewitnesses saw loose aircraft parts fall from a cloud and plunge into the lake. When the wreckage was recovered, it was confirmed that approximately half of both wings and the right stabilator were missing.

**Safety Recommendation FINL-2010-006:** The investigation commission recommends that 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.

**Reply:** The Agency agrees that the recording of the flight trajectory based on the available Global Positioning System (GPS) position, on a non-volatile memory is a way to support the investigation of some incidents and accidents. The Agency will not conduct a separate study but will support the proposal of the Safety Recommendation when considering the update of the European Organisation for Civil Aviation Equipment (EUROCAE) document ED-72A "Minimum Operational Performance Specification for Airborne GPS Receiving Equipment Used for Supplemental Means of Navigation".

**Category:** Partial Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
OH-LQE	AIRBUS - A340	Helsinki-Vantaa Airport, Finland	22/06/2009	Serious incident

**Synopsis of the event:** At takeoff the inner tyre on the main landing gear's rear wheel delaminated and the tread tore into pieces, damaging hydraulic lines on the landing gear system. In addition, one wheel's brake line was damaged either at takeoff or landing. The aircraft flew to Helsinki-Vantaa where it landed without any further damage. There were no injuries to persons.

**Safety Recommendation FINL-2010-007:** The investigation commission recommends that Airbus Industries evaluate the need and possibilities of shielding hydraulic and electric systems in wheel wells.

**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.

**Category:** Unknown - **Status:** Open

## FRANCE

Registration	Aircraft Type	Location	Date of event	Event Type
F-GEVN	SOCATA - TB20	Saint Andre les Vergers, France	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:** Le BEA recommande que la DGAC impose la présence d'un détecteur de monoxyde de carbone à bord des aéronefs d'aviation générale.

**Reply:** Rulemaking tasks RMT.0329 and RMT.0330 [former OPS.059 (a) and (b)] 'Carbon monoxide detector on board all general aviation aircraft' are on the Agency's Rulemaking Programme inventory and they address the intent of the Safety Recommendation.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
F-GJQO	AVIONS ROBIN - DR400	Bordeaux Léognan Saucats airfield, France	08/06/2005	Accident

**Synopsis of the event:** Le pilote et son passager prennent place à bord de l'avion afin d'effectuer un vol au départ de l'aérodrome de Saucats. Au point d'arrêt de la piste 03 revêtue. Il effectue les essais moteur, puis s'aligne et décolle. Des témoins au sol remarquent une fumée noire importante dégagée par l'avion, ainsi qu'une longueur de roulement au décollage anormalement élevée. Constatant une baisse importante de puissance lors de la montée initiale, le pilote décide d'effectuer un demi-tour pour rejoindre l'aérodrome. A la sortie du virage, l'avion accroche la cime des arbres, heurte ensuite plusieurs pins et termine sa course sur le dos, en lisière de la forêt. Le pilote est légèrement blessé et l'avion totalement détruit.

**Safety Recommendation FRAN-2007-005:** The EASA, in relation with APEX, should consider the appropriateness to improve the effectiveness of Robin Aviation Service Bulletin 174 dated of 29.11.2000, made compulsory by the airworthiness directive issued on 24.01.2001:

- by envisaging a systematic replacement of this baize at an interval to be defined,
- or by studying a modification of the design of the heat by-pass flap in the carburetor air intake.

**Reply:** EASA issued on 29 April 2011 the Airworthiness Directive (AD) 2011-0076 on "Power plant - Air Intake - Air Filter - Inspection / Installation / Modification", for DR 400 aeroplanes, all models, all serial numbers.

**Category:** Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
	AIRBUS - A320	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 œuvre 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:** 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. Given the complexity and the number of factors implied, it is the Agency's view that efforts should be put to develop several layers of protection acting together to prevent errors during performance calculation, prevent/detect erroneous entries into aircraft flight management computers, monitor the actual aircraft performance during take off and inform the pilots when it is unsafe. 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:

- on board weight and balance system [an European Organisation for Civil Aviation Equipment Working Group (EUROCAE WG-88) has started to work on Minimum Operational Performance Specifications (MOPS), and the Agency is chairing this Working Group];
- take off performance monitoring system (although the feasibility has not yet been demonstrated, the Agency has asked EUROCAE to create a group to review the state of the art);
- certification/approval policy regarding Electronic Flight Bags and their integration inside the cockpit environment (in particular performance calculation module).

The Agency will continue to study the subject and bring forward proposals.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
F-GPXB	FOKKER - F28	Orly, France	16/04/2005	Incident

**Synopsis of the event:** Du fait d'un problème d'origine électronique, les alarmes HYD LO QTY 1 et HYD LO QTY 2 sont apparues simultanément sans qu'il y ait de fuite hydraulique. L'équipage a appliqué successivement les deux procédures associées, ce qui l'a amené à arrêter les pompes hydrauliques et donc à se priver de toute assistance hydraulique. Ces procédures n'indiquent pas que dans cette configuration le seul moyen restant de manœuvre du compensateur est le moteur électrique de secours, contrôlé par le bouton ALTN STAB. Or, le P100 ne reste contrôlable en tangage en l'absence d'assistance hydraulique que par cet intermédiaire. Ce cas n'avait pas été prévu par le constructeur. En revanche, en cas de diminution de pression hydraulique détectée sur les deux circuits, la procédure du constructeur indique bien d'utiliser le moteur électrique de secours du compensateur.

**Safety Recommendation FRAN-2008-509:** The BEA recommends to EASA to ask the manufacturer to review its procedures so that the crew always keep means to control the aircraft in pitch when the hydraulic pumps are manually stopped; and mandate the application of the chosen solution to the F100 fleet.

**Reply:** EASA published the Airworthiness Directive (AD) 2011-0051 "Hydraulic Power – Hydraulic Quantity Abnormal Procedure – Airplane Flight Manual Change" on 22 March 2011 mandating the implementation of new abnormal procedures for hydraulics in the Aircraft Flight Manual (AFM).

**Category:** Agreement - **Status:** Closed

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

**Synopsis of the event:** Flight 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:** 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 is under the responsibility of the European Commission and the Agency has no mandate to initiate changes to it. However, the Agency has developed Opinion 04/2011, proposing to the European Commission draft Implementing Rules for commercial air transport operations (based on EU-OPS) which will supersede EU-OPS.

EASA Opinion 04/2011 includes a new paragraph 'ORO.AOC.125 Non-commercial operations of aircraft listed in the operations specifications by the holder of an Air Operator Certificate (AOC)'. This paragraph is intended to cover non-revenue flights of AOC holders and states the following:

"The holder of an AOC may conduct non-commercial operations with an aircraft otherwise used for commercial operations that is listed in the operations specifications of its AOC, without being required to submit a declaration in accordance with this Part, provided that the operator:

- (a) describes such operations in detail in the operations manual, including:
  - (1) identification of the applicable requirements;
  - (2) a clear identification of any differences between operating procedures used when conducting commercial and non-commercial operations; and
  - (3) a means of ensuring that all personnel involved in the operation are fully familiar with the associated procedures;
- (b) submits the identified differences between the operating procedures referred to in (a)(2) to the competent authority for prior approval.

It is intended as interim measure closing the safety gap until the dedicated task on non-revenue flights [rulemaking task number RMT.0352 and RMT.0353 (former OPS.075)] is started. In addition, the rulemaking tasks RMT.0393 and RMT.0394 (former Multi-Disciplinary Measures MDM.097) are addressing in particular maintenance check flights. The Terms of References (ToR) are published on the website and work with a rulemaking group is on-going. 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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation FRAN-2009-004:** The BEA recommends that EASA require that non-revenue flights be described precisely in the approved parts of the operations manual this description specifically determining their preparation, programme and operational framework as well as the qualifications and training of crews.

**Reply:** Opinion 04/2011 proposing to the European Commission draft implementing rules for commercial air transport operations includes a new paragraph 'ORO.AOC.125 Non-commercial operations of aircraft listed in the operations specifications by the holder of an Air Operator certificate (AOC)'. This paragraph is intended to cover non-revenue flights of AOC holders and states the following:

"The holder of an AOC may conduct non-commercial operations with an aircraft otherwise used for commercial operations that is listed in the operations specifications of its AOC, without being required to submit a declaration in accordance with this Part, provided that the operator:

(a) describes such operations in detail in the operations manual, including:

(1) identification of the applicable requirements;

(2) a clear identification of any differences between operating procedures used when conducting commercial and non-commercial operations; and

(3) a means of ensuring that all personnel involved in the operation are fully familiar with the associated procedures;

(b) submits the identified differences between the operating procedures referred to in (a)(2) to the competent authority for prior approval."

**Category:** Agreement - **Status:** Closed

**Safety Recommendation FRAN-2009-005:** The BEA recommends that as temporary measure, EASA require that such flights be subject to an authorisation, or declaration by the operator, on a case-by-case basis.

**Reply:** EASA issued on 05 May 2011 the Safety Information Bulletin (SIB) 2011-07 about "Functional Check Flights" for all aircraft, certificated in any category, operated under an Air Operator Certificate (AOC).

**Category:** Partial Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
V2-LFL	DE HAVILLAND - DHC6	Pointe-A-Pitre Airport, France	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:** 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:** Rulemaking task RMT.0373 (former OPS.079) 'Terrain Awareness and Warning System (TAWS) operation in Instrument Flight Rules (IFR) and Visual Flight Rules (VFR)' is on the Agency's Rulemaking Programme inventory and it addresses the intent of the Safety Recommendation.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
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F-GLZC	AIRBUS - A340	Cayenne Rochambeau airport, France	25/05/2001	Incident
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**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:** 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:** Rulemaking tasks RMT.0369 and RMT.0370 [former OPS.077 (a) and (b)] 'Prediction of windshear for aeroplane CAT operations', are on the Agency's Rulemaking Programme. This Safety Recommendation will be considered during the tasks.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
F-BXHD	MUDRY - CAP10	Saint Léger en Yvelines, France	21/10/2007	Accident

**Synopsis of the event:** Le dimanche 21 octobre 2007 à 9 h 47, le pilote du CAP 10 immatriculé F-BXHD décolle de l'aérodrome de Chavenay-Villepreux. Il est seul à bord et annonce son intention d'effectuer un vol local dans le sud. Des enregistrements radar et des témoignages indiquent que le pilote réalise des figures de voltige de 9 h 59 à 10 h 07 entre l'Etang Neuf et Gambaiseuil. A l'issue, il s'éloigne en direction du sud-est. A 10 h 08 min 54, les radars perdent la trace de l'avion. L'épave est retrouvée sur la commune de Saint Léger en Yvelines, dans le Bois des Longues Mares en forêt de Rambouillet.

**Safety Recommendation FRAN-2009-013:** Le BEA recommande que l'EASA et la DGAC s'assurent du contrôle des commandes de vol de tous les avions équipés d'assemblages dont les tendeurs sont pourvus de gorges afin de s'assurer de la présence d'épingles de sécurité.

**Reply:** EASA issued on 11 February 2010 the Safety Information Bulletin 2010-06 "Verification of the proper installation of Flight Control Cable - Turnbuckles". In addition EASA issued on 26 November 2010 the Airworthiness Directive 2010-0233 "Flight Controls - Turnbuckles - Inspection" specifically on the type in subject.

**Category:** Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
G-BDXE	BOEING - 747	Saint-Denis Gilliot, France	25/10/2004	Incident

**Synopsis of the event:** Au décollage de nuit de l'aérodrome de Saint-Denis Gillot, alors que l'avion a atteint une hauteur d'environ 300 ft, le réacteur no 4 subit un pompage. Des flammes sont aperçues par certains passagers et membres de l'équipage de cabine. L'équipage de conduite applique la procédure d'urgence « feu, grave dommage ou séparation-réacteur », ce qui le conduit à arrêter le réacteur no 4. Il décide de poursuivre le vol sur trois réacteurs, avec comme objectif, dans un premier temps, d'atteindre l'Europe. Arrivé au-dessus de l'Italie, il prend la décision de poursuivre jusqu'à la destination planifiée, Paris Charles de Gaulle. L'avion atterrit après 11 h 34

min de vol, soit quarante-quatre minutes de plus que la durée prévue au plan de vol, avec une quantité de carburant proche de la réserve finale.

**Safety Recommendation FRAN-2009-021:** Le BEA recommande que les autorités européennes imposent aux exploitants de fournir à leurs équipages des consignes opérationnelles détaillées sur la poursuite éventuelle du vol vers un aéroport autre que l'aéroport accessible le plus proche.

**Reply:** Rulemaking Task OPS.072 "Policy on flight continuation after in-flight shutdown" is identified in the Rulemaking inventory as published in the EASA website and will address the issue.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
F-GVCE	AEROSPATIALE - AS350	Montferrier, France	27/05/2009	Accident

**Synopsis of the event:** Le déroulement du vol a été restitué à partir des témoignages recueillis. Le 27 mai 2009, le pilote décolle à 8 h 20 de l'héliport de Préchac (65) pour deux jours de travail aérien dans les Pyrénées. Le programme comporte des ravitaillements au profit de refuges en altitude et des enlèvements de pylônes d'un ancien téléphérique minier sur le versant boisé d'une montagne. Vers 16 h 30, pour la sixième fois consécutive, le pilote se présente en vol stationnaire au cap 220° à la verticale d'un morceau de pylône dont la masse est estimée entre 700 et 1 000 kg. L'opérateur au sol accroche le crochet de l'élingue au fardeau. Il est en contact radiophonique avec le pilote. Après l'accrochage, l'opérateur prévient le pilote qu'il peut lever la charge. Alors que l'élingue se tend, le crochet se coince dans le câble entourant la charge puis se décroince. L'hélicoptère tangue puis part subitement et rapidement en rotation par la gauche. Pour reprendre le contrôle en lacet, le pilote enfonce le palonnier droit mais sans résultat. Il diminue alors le pas collectif mais n'obtient aucun effet sur le lacet. L'hélicoptère en rotation heurte les arbres et s'écrase sur le dos à proximité du fardeau.

**Safety Recommendation FRAN-2010-001:** The BEA recommends that The European Aviation Safety Agency (EASA) makes it mandatory for helicopter crews to wear protective headgear, at least for certain activities.

**Reply:** The Agency published its proposals regarding aerial work operational requirement in Notice of Proposed Amendment (NPA) 2009-02b. In this NPA, paragraph OPS.COM.488, dealing with Individual protective equipment, proposes to require the following: "Persons on board shall wear personal protective equipment which is adequate for the type of operation." Related guidance material GM OPS.COM.488 Personal protective equipment specifies: "TYPES OF INDIVIDUAL PROTECTIVE EQUIPMENT Personal protective equipment should include, but is not limited to: flying suits, gloves, helmets, protective shoes, etc".

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
F-GAVH	AVIONS ROBIN - DR400	Aérodrome Bordeaux-Léognan-Saucats (33), France	03/07/2010	Accident

**Synopsis of the event:** Le 3 juillet 2010, un avion Robin DR 400/160, immatriculé F-GAVH et appartenant à l'Aéroclub National des Electriciens et Gaziers décolle de l'aéroport de Bordeaux-Léognan-Saucats (33) en piste 03 revêtue pour un vol local avec quatre personnes à bord. Après la rotation, plusieurs témoins rapportent que l'avion ne parvient pas à prendre de la hauteur. A une hauteur qu'ils estiment entre trente et cinquante mètres, ils le voient s'incliner brusquement à

droite et glisser sur l'aile droite jusqu'au sol. Les quatre occupants sont grièvement blessés, l'avion est détruit.

**Safety Recommendation FRAN-2010-011:** Le Bureau d'Enquêtes et d'Analyses pour la Sécurité de l'Aviation Civile recommande que dans le cadre du suivi de navigabilité des avions Robin, l'AESA et la DGAC étudient avec le constructeur et fassent mettre en œuvre une solution simple qui évite aux opérateurs de maintenance tout montage incorrect du filtre à air.

**Reply:** EASA issued the Safety Information Bulletin SIB No.: 2010-34 "DR400 series - Engine Air Filter P/N 56-23-02-000" on 16 December 2010.

**Category:** Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
F-BXPQ 28-AGV	PIPER - PA28 JABIRU	Commune de Saint-Martin-de-Nigelles (28), France	04/02/2010	Accident

**Synopsis of the event:** Le pilote du Jabiru 28-AGV décolle de la plateforme ULM de Pierres (28) pour un vol local. L'élève pilote du Piper F-BXPQ décolle à 10 h 38 de la piste 07 droite de l'aérodrome contrôlé de Toussus-le-Noble (78) pour un vol de navigation solo de 150 NM minimum, tel que prévu dans sa formation en vue de l'obtention du PPL(A). Le pilote atterrit successivement sur les aérodromes de l'Aigle vers 11 h 15 et d'Alençon vers 11 h 50. Il décolle de l'aérodrome d'Alençon pour un retour sur l'aérodrome de Toussus-le-Noble, dès les formalités administratives accomplies (validation du carnet de vol). Les deux aéronefs entrent en collision en vol à 12 h 57 à la verticale du Bois de Saint-Martin, à une distance de 1 NM du VOR d'Epernon et de 20 NM de l'aérodrome de Toussus-le-Noble. La trace radar indique que l'avion Piper F-BXPQ suivait une route au 075°. L'ULM 28-AGV a été aperçu par un témoin en provenance du secteur sud-est.

**Safety Recommendation FRAN-2010-019:** The BEA recommends that EASA accelerate the evaluation of various systems that assist in detection of traffic and promote the deployment of such systems in the field of general aviation.

**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.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
F-WWKK	AIRBUS - 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-2010-020:** The BEA recommends that EASA modify the regulation relating to in-flight tests in order to limit access to the cockpit of persons on board the airplane in accordance with the safety equipment available.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation FRAN-2010-021:** The BEA recommends that EASA evaluate, with Airbus, the relevance of inserting a note on the functioning of the Outflow Valves (OFV) in the Flight Crew Training Manual (FCTM) and a modification of the CAB PR EXCESS CAB ALT procedure.

**Reply:** It is reminded that the Flight Crew Training Manual (FCTM) and the Flight Crew Operating Manual (FCOM) are Airbus documents, which are not approved by EASA. After an evaluation with Type Certificate Holder, it has been deemed that a note on the functioning of the Outflow Valve in the FCTM was not relevant. Indeed, regarding the FCTM, it shall be noted that the failure scenario experienced during this acceptance flight is not relevant of a normal revenue flight. As regards the modification of the CAB PR EXCESS CAB ALT procedure, Airbus has taken the action to modify the FCOM with the following wording (will be introduced in the November 2011 revision): FCOM "CAB PR EXCESS CAB ALT", and Quick Reference Handbook (QRH) "EMERGENCY DESCENT" procedures will be modified with a wording similar to:

- ATC. . . . . NOTIFY
- Notify ATC of the nature of the emergency, and state intention, and squawk 7700 unless otherwise specified by ATC. If not in contact with ATC, select transponder code 7700, and transmit a distress message on one of the following frequencies: (VHF) 121.5 MHZ, or (HF) 2182 KHZ, or 8364 KHZ.
- ATC XPDR 7700 . . . . . CONSIDER

**Category:** Partial Agreement - **Status:** Closed

**Safety Recommendation FRAN-2010-022:** 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:** 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.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
F-GUGJ	AIRBUS - A318	Bordeaux FIR, OLRAK Point, France	02/06/2010	Serious incident

**Synopsis of the event:** On 2 June 2010 at 14 h 11 min 07, the pilot of the PC 12, registered EC-ISH, en route from Buochs (Switzerland) bound for San Sebastian (Spain) contacted sector T of the en-route southwest ATC Centre at Bordeaux (CRNA/SO), stable at FL 270. He was cleared on a heading for OLRAK. At 14 h 15 min 39, the pilot of the PC 12 informed ATC that one of his altimeters was indicating FL 270 and the other FL 290. He asked the controller if the latter could help clear up this uncertainty by checking his altitude if he put the transponder on stand-by. The controller answered that he could not do that but that he was going to ask for information from the military ATC. At 14 h 16 min 25, the controller contacted the military coordination and control centre (CMCC), call sign Marengo, also based in the CRNA/SO and asked them if there was a way to check the exact altitude of EC-ISH "other than by the use of secondary radar, with a primary radar for example". Marengo answered that they only had a secondary radar image and that they would check it out. At 14 h 17 min 55, the A318 crew contacted sector T of the CRNA/SO, in climb towards FL 230. The ATC answered that they would call back for a higher altitude. At 14 h 18 min 10, Marengo contacted the control and detection centre (CDC) at Lyon Mont Verdun and asked if they could read the altitude of a civil aircraft without an alticoder, in code 2742, east of Clermont (this related to the PC 12). The controller at of Lyon Mont Verdun CDC answered that he "reads FL 270 in mode C for this airplane". At 14 h 19 min 04, the A318 was cleared to climb to FL 290 on OLRAK. It was located behind the PC 12 on the same route. Its speed was about 170 kts more than that of the PC 12. At 14 h 19 min 30, Marengo called back the controller at the CRNA/SO and relayed the information that indicated that the PC 12 was at FL 270. At 14 h 19 min 48, the controller called PC 12 back to tell him that he was at exactly FL270 after a check via the military. A 14 h 30 min 20, the pilot of the PC 12 informed the controller that an airplane had passed very close to him and asked at what altitude this airplane was. The controller answered that this traffic

was 2,000 feet above. The pilot answered that the traffic was just below and asked if the military were sure of the altitude that they had supplied. At 14 h 31, the pilot of the A318 stated that he wanted to file an airprox as he had just overtaken an airplane at the same level while making an avoidance manoeuvre to the left. He stated that he had had no TCAS information. The pilot of the PC 12 asked to descend to a level where he would be separated from all traffic. He stated that he had a problem with his 2 altimeters, which showed a variation of 2,000 feet and that the altitude displayed on the ATC control screens was apparently false. Note: the pilot of the Pilatus used the co-pilot barometric system for the rest of the flight. There was no triggering of the Short Term Conflict Alert (STCA) system at the control position or a TCAS alert on either of the 2 airplanes. The minimum separation between the 2 airplanes could not be measured on the recording, the 2 radar plots being mixed together. The crews estimated that the separation was between 15 and 30 metres horizontally and about 100 feet vertically.

**Safety Recommendation FRAN-2011-001:** The BEA recommends to EASA that procedures in the flight manual relating to situations of doubtful or erroneous altitude be completed or developed by manufacturers.

**Reply:** This response relates to the Pilatus PC12 only. The Type Certificate Holder, Pilatus, has issued a revised Section 3 (Revision 10, dated 20 December 2010) to the approved flight manual for the PC12/47E which addresses the issue of Primary Flight Display (PFD) Miscomparison alerts.

**Category:** Agreement - **Status:** Closed

**Safety Recommendation FRAN-2011-002:** The BEA recommends to EASA that these cases be considered as emergency situations that must be declared without delay by crews to the ATC services.

**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.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
F-GRIB	ROBINSON - R22	La Falaise (78), France	21/09/2005	Accident

**Synopsis of the event:** L'élève effectue une épreuve en vol avec un examinateur en vue de l'obtention de la licence de pilote privé hélicoptère. A 15 h 02, il décolle d'Issy-les-Moulineaux (92) vers Pontoise (95). Le vol prévoit une mise en place à Pontoise puis une navigation vers Dreux (27) au cours de laquelle des exercices de maniabilité seront exécutés. Vers 15 h 25, ils atterrissent à Pontoise puis redécollent, montent vers 1 500 pieds et quittent le circuit. Six minutes plus tard, après avoir survolé la vallée de la Seine, l'équipage perd le contrôle de l'hélicoptère qui entre en collision avec le sol.

**Safety Recommendation FRAN-2011-003:** EASA make it mandatory for pilots to undertake training in the specific characteristics of the R22 Mariner when equipped with float-type landing gear.

**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.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
F-GRRR	MUDRY - CAP10	Saint Rambert d'Albon (26), France	04/06/2010	Accident

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

**Safety Recommendation FRAN-2011-005:** The BEA recommends that EASA study the need to cover procedures for pulling out of a spin in an exhaustive manner in the CAP10 Flight Manual.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation FRAN-2011-006:** The BEA recommends that EASA study the possibility of mandatorily equipping aerobatic airplanes with parachutes with a strap for automatic opening of the parachute whatever the state of consciousness of the pilot who has evacuated.

**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.

**Category:** Unknown - **Status:** Open

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, the flight 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-2009-016:** The BEA recommends that EASA and ICAO extend as rapidly as possible to 90 days the regulatory transmission time for ULB's installed on flight recorders on airplanes performing public transport flights over maritime areas.

**Reply:** 1. The International Civil Aviation Organisation (ICAO) has proposed amendments to Annex 6, in order to extend the transmission time of Underwater Locator Beacons (ULB) to 90 days, by Type I State Letter 2011/02. The Secretariat is currently processing the received comments.

2. EASA will take into account mentioned possible amendment of ICAO Annex 6 once adopted and published, in order to assess inclusion of the topic into an appropriate rulemaking task on air operations.

3. EASA has supported SAE International for amending (i.e. 90 days transmission instead of 30 days) the industry standard SAE Aerospace Standard (AS) 8045. New edition AS 8045A has

been published on 03 August 2011. EASA plans to correspondingly amend European Technical Standard Order (ETSO) C121 (rulemaking task ETSO.008 is active).

4. EASA actions in 2 and 3 above address the Safety Recommendation.

**Category:** Unknown - **Status:** Open

**Safety Recommendation FRAN-2009-017:** The BEA recommends that EASA and ICAO make it mandatory, as rapidly as possible, for airplanes performing public transport flights over maritime areas to be equipped with an additional ULB capable of transmitting on a frequency (for example between 8.5 kHz and 9.5 kHz) and for a duration adapted to the pre-localisation of wreckage.

**Reply:** 1. The International Civil Aviation Organisation (ICAO) has proposed (Type I State Letter 2011/02) amendment to Annex 6, Part I, in order to mandate the carriage of additional Underwater Locator Beacons (ULB) on all aeroplanes with a maximum take-off mass (MTOM) exceeding 27 tons and used for Commercial Air Transport (CAT), before 01 January 2018. This additional ULB shall transmit on the frequency of 8.8 kHz for a minimum of 30 days. The ICAO Secretariat is currently processing the received comments.

2. Meanwhile, EASA is following up the work of SAE International on the definition of a new industry standard for low-frequency ULB.

3. Further possible actions by EASA will be decided after conclusion of actions 1 and 2 above.

**Category:** Unknown - **Status:** Open

**Safety Recommendation FRAN-2011-009:** The BEA recommends that EASA review the content of check and training programmes and make mandatory, in particular, the setting up of specific and regular exercises dedicated to manual aircraft handling of approach to stall and stall recovery, including at high altitude.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation FRAN-2011-010:** The BEA recommends that EASA define additional criteria for access to the role of relief Captain so as to ensure better task-sharing in case of relief crews.

**Reply:** Considering the variability of the criteria in use in Europe, EASA agreed to add to its Rulemaking Programme the rulemaking tasks RMT.0190 and RMT.0191 [(former FCL.004 (a) and (b))] 'Requirements for cruise relief co-pilots'. It is foreseen to review the Implementing Rules and the Acceptable Means of Compliance (AMC) material for cruise relief pilots as regards experience, training, checking and Crew Resource Management (CRM).

**Category:** Unknown - **Status:** Open

**Safety Recommendation FRAN-2011-012:** The BEA recommends that EASA and the FAA evaluate the relevance of requiring the presence of an angle of attack indicator directly accessible to pilots on board airplanes.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation FRAN-2011-015:** The BEA recommends that EASA and the FAA make mandatory the recording:

- of the position of the flight director crossbars,
- of the parameters relating to the conduct of the flight displayed on the right side, in addition to those displayed on the left side.

**Reply:** European Organization for Civil Aviation Equipment (EUROCAE) Working Group 90 is currently reviewing and amending the standard ED-112, which specifies flight data recorder

parameters. EASA will take into account the conclusions of this working group in rulemaking tasks RMT.0308 and RMT.0309 [former OPS.023 (a) and (b)] 'FDRs – alignment with ED-112', which are on the Agency's Rulemaking Programme.

**Category:** Unknown - **Status:** Open

**Safety Recommendation FRAN-2011-016:** The BEA recommends that EASA and the FAA evaluate the relevance of making mandatory the recording of the air data and inertial parameters of all of the sources used by the systems.

**Reply:** European Organization for Civil Aviation Equipment (EUROCAE) Working Group 90 is currently reviewing and amending the standard ED-112, which specifies flight data recorder parameters. EASA will take into account the conclusions of this working group in rulemaking tasks RMT.0308 and RMT.0309 [former OPS.023 (a) and (b)] 'FDRs – alignment with ED-112', which are on the Agency's Rulemaking Programme.

**Category:** Unknown - **Status:** Open

**Safety Recommendation FRAN-2011-017:** 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:** 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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation FRAN-2011-018:** 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:** 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.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
SU-BPZ	BOEING - 737	Paris Charles de Gaulle Airport, France	16/08/2008	Serious incident

**Synopsis of the event:** At night in VMC conditions, the crew of flight to Luxor lined up from intersection Y11 on runway 27L at Paris Charles de Gaulle Airport. The runway distance available for take-off was temporarily reduced because of construction work. During the takeoff run, the airplane struck some provisional lights at the end of the runway then, during the rotation, destroyed some markers on the safety-barrier positioned in front of the construction zone. It took off before a provisional blast fence and continued its flight to its destination.

**Safety Recommendation FRAN-2011-019:** The BEA recommends that EASA conduct a study on the standards that should be taken into account during certification of on-board performance calculation systems, in order to ensure that their ergonomics and procedures for use are compatible with the requirements of safety.

**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.

**Category:** Unknown - **Status:** Open

## GERMANY

Registration	Aircraft Type	Location	Date of event	Event Type
D-CUNO	BEECH - 300	Freiburg aerodrome, Germany	12/01/2006	Accident

**Synopsis of the event:** On the morning of 12 January 2006 a Beech 300 aircraft operated by a commercial air transport company took off from its home base at Freiburg/Breisgau (EDTF) for a commercial flight. The task was to transport passengers from Karlsruhe/Baden-Baden (EDSB) to Braunschweig (EDVE), and return. The B300 landed back at Karlsruhe at 17:19 hrs local time; the passengers disembarked and the flight crew took off again at 17:59 hrs for the return flight to Freiburg. This leg was flown under VFR-Night. The aircraft flew in a southerly direction at 4,500 ft in radio contact to Strasbourg-Approach (119,450 MHz). Prior to changing frequency at 18:12 hrs, the commander also established radio contact with the Freiburg Air inspection Officer to ask for the current Freiburg Airfield weather information. The aircraft reduced cruise altitude to 3,500 ft. During the subsequent flight there were several exchanges of position reports and the current weather between the crew and the Freiburg Air Inspection Officer. At 18:16 hrs the aircraft was overhead the airfield on a southerly heading. The aircraft made a 180-degree turn overhead the town of Freiburg onto a northerly heading to commence an approach to land. Using GPS, the aircraft subsequently made a further ISO-degree turn to intercept the extended centreline of runway 16. During the final stages of the approach to land, the Beech lowered its landing gear and a little later the commander reported his position as three to four NM from the airfield. At 18:26 hrs the aircraft made contact with trees and crashed approximately 450 meters from the threshold of Runway 16 of Freiburg Aerodrome.

**Safety Recommendation GEF-2009-025:** The European Aviation Safety Agency (EASA) should regulate to require that "Single-Pilot Aircraft" engaged in EU-OPS 1.940 flights made in accordance with Instrument Flight Rules and at night, must have a minimum crew of two pilots, and that their training is in accordance with JAR-FCL including Multi-Crew-concept (MCC) training.

**Reply:** Task OPS.062, addressing Second pilot requirement for air ambulance flights with aeroplanes has been introduced in the Agency 2010-2013 Rulemaking Programme. The Agency considers that this addresses the issue.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
D-AIQP	AIRBUS - A320	Hamburg, Germany	01/03/2008	Serious incident

**Synopsis of the event:** Because of the weather associated with hurricane Emma, on 1 March 2008 the Airbus A320 left Munich Airport on a scheduled flight to Hamburg at 1231hrs about two hours behind schedule, with a crew of five and 132 passengers. Given the ATIS weather report including wind of 280°/23 kt with gusts of up to 37 kt, during the cruise phase of the flight the crew decided on an approach to Runway 23, the runway then also in use by other traffic. During the approach to land, the aerodrome controller gave several updates on the wind. Immediately prior to touchdown, the wind was reported as 300°/33 kt, gusting up to 47 kt. The initial descent was flown by autopilot and the co-pilot assumed manual control from 940 ft above ground. After the aircraft left main landing gear had touched down, the aircraft lifted off again and immediately adopted a left wing down attitude, whereupon the left wingtip touched the ground. The crew initiated a go-around procedure. The aircraft continued to climb under radar guidance to the downwind leg of runway 33, where it landed at 1352 hrs. No aircraft occupants were injured. The aircraft left wingtip suffered damage from contact with the runway.

**Safety Recommendation GERF-2010-005:** EASA should initiate an amendment to EU No. 859/2008 (EU-OPS) requiring special operating procedures for the operation of civil aircraft by airlines engaged in public transport activities in the presence of extreme weather situations. In addition to provisions and decision guidance air operators should establish an organisational structure or unit to provide assistance to crews for pre-flight preparation and in-flight support, when faced with defined (extreme) weather conditions. If necessary, the organisational structure or unit must take the decision to cancel a flight for reasons of weather. In this context, the pilot-in-command's power of decision should remain unaffected.

**Reply:** EU-OPS is under the responsibility of the European Commission and the Agency has no mandate to initiate changes to it. However, the Agency has developed Opinion 04/2011, proposing to the European Commission draft Implementing Rules for commercial air transport operations (based on EU-OPS) which will supersede EU-OPS.

Concerning the first item of the Safety Recommendation, the Agency's Opinion 04/2011 sufficiently addresses the issue with the following provisions:

ORO.GEN.110 Operator responsibilities

(c) The operator shall establish and maintain a system for exercising operational control over any flight operated under the terms of its declaration or certificate.

(f) The operator shall establish procedures and instructions for the safe operation of each aircraft type, containing ground staff and crew member duties and responsibilities for all types of operation on the ground and in flight. [...]

(i) The operator shall specify flight planning procedures to provide for the safe conduct of the flight based on considerations of aircraft performance, other operating limitations and relevant conditions on the route to be followed and at the aerodromes or operating sites concerned. These procedures shall be included in the operations manual.

CAT.OP.MPA.175 Flight preparation

(a) An operational flight plan shall be completed for each intended flight based on considerations of aircraft performance, other operating limitations and relevant expected conditions on the route to be followed and at the aerodromes/operating sites concerned.

CAT.OP.MPA.300 Approach and landing conditions

Before commencing an approach to land, the commander shall be satisfied that, according to the information available to him/her, the weather at the aerodrome and the condition of the runway or Final Approach and Take-off area (FATO) intended to be used should not prevent a safe approach, landing or missed approach, having regard to the performance information contained in the operations manual. Concerning the second item of the safety recommendation, the Agency is of the opinion that such a measure should not be regulated by EASA. It is for the operator to decide how to best provide assistance to crews in order to fulfil the operator's responsibilities within the air operations requirements. Concerning the pilot-in-command's power of decision as mentioned in the Safety Recommendation, Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 (the 'Basic Regulation') lays down the power of the pilot-in-command as follows (see 1.c of Annex IV): The pilot-in-command must be responsible for the operation and safety of the aircraft and for the safety of all crew members, passengers and cargo on board.

**Category:** Partial Agreement - **Status:** Closed

**Safety Recommendation GERF-2010-006:** EASA should place a contract with a suitable research institute (DLR, University or similar) to determine what measuring systems are suitable to detect the presence of near-surface gusts on airports, and how the resulting gust data and wind direction information should be processed and communicated to pilots. The results should lead to a process through which the information so obtained can be standardised and incorporated into the regulations governing air operations.

**Reply:** The Agency identified a project for launch during the period 2011-2013, the study on "Near-ground wind gust detection" and for which the purpose is to determine what measuring systems are suitable to detect the presence of near-surface gusts on airports. This project will address the intent of the Safety Recommendation.

**Category:** Unknown - **Status:** Open

## GREECE

Registration	Aircraft Type	Location	Date of event	Event Type
5B-DBY	BOEING - 737	Grammatiko, Greece	14/08/2005	Accident

**Synopsis of the event:** On 14 August 2005, a Boeing 737-300 aircraft, registration number 5B-DBY, departed Larnaca, Cyprus at 06:07 h for Prague, Czech Republic, via Athens, Hellas. The aircraft was cleared to climb to FL340 and to proceed direct to RDS VOR. As the aircraft climbed through 16 000 ft, the Captain contacted the company Operations Centre and reported a Take-off Configuration Warning and an Equipment Cooling system problem. Several communications between the Captain and the Operations Centre took place in the next eight minutes concerning the above problems and ended as the aircraft climbed through 28 900 ft. Thereafter, there was no response to radio calls to the aircraft. During the climb, at an aircraft altitude of 18 200 ft, the passenger oxygen masks deployed in the cabin. The aircraft leveled off at FL340 and continued on its programmed route. At 07:21 h, the aircraft flew over the KEA VOR, then over the Athens International Airport, and subsequently entered the KEA VOR holding pattern at 07:38 h. At 08:24 h, during the sixth holding pattern, the Boeing 737 was intercepted by two F-16 aircraft of the Hellenic Air Force. One of the F-16 pilots observed the aircraft at close range and reported at 08:32 h that the Captain's seat was vacant, the First Officer's seat was occupied by someone who was slumped over the controls, the passenger oxygen masks were seen dangling and three motionless passengers were seen seated wearing oxygen masks in the cabin. No external damage or fire was noted and the aircraft was not responding to radio calls. At 08:49 h, he reported a person not wearing an oxygen mask entering the cockpit and occupying the Captain's seat. The F-16 pilot tried to attract his attention without success. At 08:50 h, the left engine flamed out due to fuel depletion and the aircraft started descending. At 08:54 h, two MAYDAY messages were recorded on the CVR. At 09:00 h, the right engine also flamed out at an altitude of approximately 7 100 ft. The aircraft continued descending rapidly and impacted hilly terrain at 09:03 h in the vicinity of Grammatiko village, Hellas, approximately 33 km northwest of the Athens International Airport. The 115 passengers and 6 crew members on board were fatally injured. The aircraft was destroyed.

**Safety Recommendation GREC-2006-048:** EASA/JAA and ICAO study the feasibility of requiring the installation of crash protected image recorders on the flight deck of commercial aircraft.

**Reply:** Rulemaking tasks RMT.0283 and RMT.0284 [former MDM.087(a) previously OPS.035(a) and former MDM.087(b) previously OPS.035(b)] 'Feasibility of crash protected image recorders on the flight deck' are on the Agency's Rulemaking Programme inventory.

**Category:** Unknown - **Status:** Open

## HONG KONG

Registration	Aircraft Type	Location	Date of event	Event Type
B-MHJ	AGUSTA BELL - AB139	Sheung Wan/Sky Shuttle Heliport, Hong Kong	03/07/2010	Accident

**Synopsis of the event:** Shortly after take-off from Sheung Wan/Sky Shuttle Heliport (ashore Victoria Harbour) for Macao, B-MHJ ditched into the harbour north-west of the heliport.

**Safety Recommendation HONG-2011-004:** European Aviation Safety Agency to require AgustaWestland to perform static, fatigue, dynamic and aerodynamic tests and analyses on AW139 tail rotor blades so as to minimise the possibilities of tail rotor blade failure which could have been caused by one or the combination of these effects.

**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.

**Category:** Unknown - **Status:** Open

## HUNGARY

Registration	Aircraft Type	Location	Date of event	Event Type
HA-ECE	EUROCOPTER - EC135	Kiskunlacháza, Hungary	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:** 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:** Rulemaking tasks RMT.0271 and RMT.0272 [former MDM.073 (a) and (b)] 'Recorders for small aircraft' are on the Agency's Rulemaking Programme inventory and they address the intent of the Safety Recommendation.

**Category:** Unknown - **Status:** Open

## ICELAND

Registration	Aircraft Type	Location	Date of event	Event Type
TF-JXF	BOEING - 737	Keflavik, Iceland	28/10/2007	Serious incident

**Synopsis of the event:** The flight was a charter carrying 189 passengers from Antalya, Turkey to Keflavik, Iceland. The flight crew was augmented by one pilot as the duration of the flight duty was estimated to be 14 hours and 15 minutes. Due to technical reasons and flight planning the flight was delayed and the actual duration of the flight duty period was 17 hours and 20 minutes. The flight crew rested in the cockpit of the aircraft and did not use the crew rest area located in the passenger compartment from Keflavik to Antalya nor on the way back to Keflavik. The flight crew made an unscheduled fuel stop in Edinburgh before continuing on the last leg to Keflavik. An approach was set up for runway 02 at Keflavik International Airport. The aircraft contacted the runway and then bounced up into the air again before full runway contact was made with the main landing gear tires followed by the nose landing gear tire. The aircraft was not decelerated enough when nearing the runway end so the pilot flying attempted to turn the aircraft onto taxiway November at the end of the runway. The aircraft skidded off the taxiway and came to rest parallel to the taxiway with the nose landing gear and the right main landing gear off the paved surface. There were no injuries to the passengers or the crew.

**Safety Recommendation ICLD-2011-001:** Recommendation to EASA: Modify the flight and duty time regulations to take into consideration factors shown by recent research, scientific evidence, and current industry experience to affect crew alertness (reference NTSB recommendation A-06-010).

**Reply:** Rulemaking tasks RMT.0440 and RMT.0322 [former OPS.055 (a) and (b)] 'FTL requirements for Commercial Air Transport (CAT) aeroplanes' are on the Agency's Rulemaking Programme and they address the intent of the Safety Recommendation.

**Category:** Unknown - **Status:** Open

**Safety Recommendation ICLD-2011-002:** Recommendation to EASA: Ensure operators have adequate on-board rest facilities when required by regulations. The crew rest facility should ensure a dark and quiet (most silent area on-board aircraft) environment where the skeletal muscles can fully relax in a horizontal position.

**Reply:** Rulemaking tasks RMT.0440 and RMT.0322 [former OPS.055 (a) and (b)] 'FTL requirements for Commercial Air Transport (CAT) aeroplanes' are on the Agency's Rulemaking Programme and they address the intent of the Safety Recommendation.

**Category:** Unknown - **Status:** Open

**Safety Recommendation ICLD-2011-003:** Recommendation to EASA: Develop guidance, based on empirical and scientific evidence, for operators to establish fatigue management systems, including information about the content and implementation of these systems (reference NTSB recommendation A-08-044).

**Reply:** Rulemaking tasks RMT.0440 and RMT.0322 [former OPS.055 (a) and (b)] 'FTL requirements for Commercial Air Transport (CAT) aeroplanes' are on the Agency's Rulemaking Programme and they address the intent of the Safety Recommendation.

**Category:** Unknown - **Status:** Open

**Safety Recommendation ICLD-2011-004:** Recommendation to EASA: Develop and use a methodology that will continually assess the effectiveness of fatigue management systems implemented by operators, including their ability to improve sleep and alertness, mitigate performance errors, and prevent incidents and accidents (reference NTSB recommendation A-08-045).

**Reply:** Rulemaking tasks RMT.0440 and RMT.0322 [former OPS.055 (a) and (b)] 'FTL requirements for Commercial Air Transport (CAT) aeroplanes' are on the Agency's Rulemaking Programme and they address the intent of the Safety Recommendation.

**Category:** Unknown - **Status:** Open

## IRELAND

Registration	Aircraft Type	Location	Date of event	Event Type
EI-IHL	AEROSPATIALE - AS350	Ballynacally, Co. Clare, Ireland	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:** EASA review the suitability of single-engine helicopters engaged in Low Level Aerial Work operations.

**Reply:** Rulemaking task RMT.0374 (former OPS.080) 'Single-engine helicopters engaged in aerial work' is on the Agency's Rulemaking Programme inventory and it addresses the intent of the Safety Recommendation.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
EI-ECS	-	Near Birr Airfield, Co. Offaly, Ireland	06/12/2008	Accident

**Synopsis of the event:** The new motor glider took off from Birr Airfield (EIBR) on a check flight prior to issuance of a Permit to Fly. There were two persons on board, the Check Pilot and the Owner. During the climb the engine suddenly stopped and subsequent attempts to restart it failed. An attempt was made to return to the airfield but the aircraft became low on approach. In attempting a forced landing into a field short of EIBR the aircraft struck the topmost branches of a tree and descended into a garden. Neither occupant was injured other than minor cuts. The Pilot candidly stated that he had misjudged the approach back to the airfield, having been distracted by the engine stoppage and the attempts to restart it.

**Safety Recommendation IRLD-2010-018:** The European Aviation Safety Agency should include in the certification requirements for light aircraft that manufacturers within the EU should place adequate markings on the exterior of an aircraft equipped with a ballistic parachute.

**Reply:** The Agency requires placards to be installed for certification of light aircraft equipped with ballistic recovery systems. A Special Condition (SC) is being used, that requires the installation of placards in compliance with ASTM standard F2316-08 ("Standard Specification for Airframe Emergency Parachutes for Light Sport Aircraft"). The Agency will incorporate contents of the SC in the Certification Specifications through the rulemaking tasks dedicated to amending CS-VLA (for very light aeroplanes), CS-22 (for sailplanes and powered sailplanes), CS-23 (for normal, utility, aerobatic and commuter airplanes). The new CS-LSA (for light sport aeroplanes) already requires compliance with the ASTM standard.

**Category:** Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
EI-BHT	BEECH - 77	Kilmovee, Co. Mayo, Ireland	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 conclusively determined.

**Safety Recommendation IRLD-2011-003:** 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 (CS) 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 accepts to review potential improvements of occupants protection specifications for light aeroplanes involved in survivable accidents and a dedicated new Rulemaking Task (MDM.090) is created. Both Certification Specifications and retroactive requirements options should be analysed. The fitment of four points harnesses will be part of the improvement options to be considered by the Rulemaking Group.

**Category:** Unknown - **Status:** Open

## ITALY

Registration	Aircraft Type	Location	Date of event	Event Type
OE-FAN	CESSNA - 500	Sinnai / Cagliari, Italy	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:** L'ANSV raccomanda che l'ENAC, con l'EASA, riconsideri i requisiti di installazione 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:** Rulemaking tasks RMT.0371 and RMT.0372 [former OPS.078 (a) and (b)] 'TAWS for turbine powered aircraft under 5700 kg MTOM able to carry 6 to 9 passengers' are on the Agency's Rulemaking Programme and they address the intent of the Safety Recommendation.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
OY-MRG	BOEING - 737	Florence Airport (LIRQ), Italy	13/06/2009	Serious incident

**Synopsis of the event:** The crew experienced a flameout while crossing 2500 ft on approach to Florence Airport. The crew decided for an in-flight restart of the engine and the aircraft was then safely landed on the destination airport.

**Safety Recommendation ITAL-2009-006:** ANSV recommends to the Federal Aviation Administration (FAA) and the European Aviation Safety Agency to consider requesting Boeing to build-up a pro-active procedure allowing flight crews to identify and manage the event of CFM56-7B22 engines 5th stage bleed air check valve stuck in the open position.

**Reply:** EASA has reviewed the final response of the Federal Aviation Administration (FAA) for the same Safety Recommendation (FAA reference number 09.291) and the Agency concurs with the position proposed by the Primary Certification Authority.

**Category:** Agreement - **Status:** Closed

**Safety Recommendation ITAL-2009-007:** ANSV recommends to the Federal Aviation Administration (FAA) and the European Aviation Safety Agency to verify the on-going manufacturer investigation process on the involved P/N, in order to determine if the failure is associated with the design of the part or with a production deviation occurrence which affects a limited number of serial numbers. Furthermore to ensure that the affected parts are replaced either if they are identified to belong to a specific batch or if is a fleet wide problem.

**Reply:** EASA has reviewed the final response of the Federal Aviation Administration (FAA) for the same Safety Recommendation (FAA reference number 09.292) and the Agency concurs with the position proposed by the Primary Certification Authority.

**Category:** Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
I-CVDA	PIPER - PA28	Voghera Airport, Italy	30/08/2009	Accident

**Synopsis of the event:** Il 30 giugno 2009, l'allievo pilota effettuava il primo volo da solista con l'aeromobile I-CVDA nell'ambito del conseguimento dell'attestato di allievo pilota. Il decollo avveniva dall'aeroporto di Voghera/Rivanazzano alle ore 16.25 UTC, per pista 34. Dopo aver eseguito un circuito di traffico ad Ovest dell'aeroporto, l'aeromobile, alle 16.40 UTC, atterrava per pista 34. Al contatto con la pista, il velivolo rimbalzava e successivamente, dopo altri due rimbalzi, ritoccava la pista con il carrello anteriore, che, piegandosi sul lato destro, generava una brusca imbardata dell'aeromobile, con conseguente contatto della semiala sinistra e dell'elica con la superficie asfaltata. L'aeromobile si fermava al bordo pista; l'allievo, dopo aver spento il motore, abbandonava incolume il velivolo.

**Safety Recommendation ITAL-2010-001:** Ente nazionale per l'aviazione civile e EASA valutare la possibilità di fissare dei vincoli di carattere temporale per il completamento dell'iter addestrativo teorico-pratico per il conseguimento dell'attestato di allievo pilota e delle licenze di volo non professionali.

**Reply:** Commission Regulation (EU) No 1178/2011 of 03 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council, includes, in Annex I Part-FCL, requirements for time-limits. In FCL.025 Theoretical knowledge examination for the issue of a licences, paragraph (a)(2) states that applicants shall only take the examination when recommended by the approved training organisation responsible for their training. Paragraph (b)(2) states that an applicant has successfully completed the required theoretical knowledge examination for the appropriate pilot licence or rating when he/she has passed all the required examination papers within a period of 18 months counted from the end of the calendar month when the applicant first attempted an examination. In addition, paragraph (c) (1)(i) states that the validity period of the theoretical knowledge examinations will be, for a Private Pilot Licence (PPL), 24 months.

**Category:** Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
S5-DNE	DIAMOND - DA42	Trieste-Ronchi dei Legionari airport (LIPQ), Italy	11/04/2010	Accident

**Synopsis of the event:** On April 11th, 2010, a Diamond DA42 "TwinStar" registration marks S5-DNE, due to landing gear extension problems during approach to Portoroz airport (LJPZ), diverted to Trieste-Ronchidei Legionari airport (LIPQ) to land on a safer runway, with the left main landing gear not down. The aircraft stopped safely on the runway and the emergency services on the airport approached the aircraft but no action has been needed. Minor damages to the aircraft no damages to the airport and no injuries were reported. The aircraft was moved to a parking area through the use of a little crane.

**Safety Recommendation ITAL-2011-014:** ANSV recommends EASA and FAA that an additional inspection should be asked as soon as possible to the Operators/Owner of the aircraft now in operation, in order to check the component for the installation of the item "9" -figure 1, on all dumpers not yet modified as per RSB 42-089/1.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation ITAL-2011-015:** ANSV recommends EASA and FAA that the different choice on the nut locking method stated on the RSB 42-089/1 should become "mandatory" since the previous solution adopted by Designer (application of Loctite 262 only) appears to be not sufficient at all.

**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.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
I-AIRY	AEROSPATIALE - AS350	Lasa, Bolzano airfield, Italy	16/05/2011	Incident

**Synopsis of the event:** On May 16th 2011, the Eurocopter AS350 B2 registration marks I-AIRY was flying from Merano (BZ, Italy) to Curon Venosta (BZ, Italy). During flight at an altitude of about 4.300 ft, the pilot noticed that the "low oil pressure" light came on, accompanied by a yaw jerk to the right, a loud noise and a NR drop with its audio warning. The pilot immediately lowered the collective pitch and landed the aircraft in autorotation on Lasa airfield that was directly in front of him. An observer on the ground reported the presence of white smoke from the exhaust pipe. On the ground, the preliminary inspection did not reveal any finding likely to explain the event. Minor damages to the helicopter due to the hit of one of the main rotor blades against the tail boom happened during touch-down. No injuries were reported by the three persons on board (pilot included).

**Safety Recommendation ITAL-2011-016:** ANSV recommends EASA and FAA that an additional inspection should be asked as soon as possible to the Operators/Owners of the helicopter type in subject now in operation (equipped with the optional Service Bulletin Nr. 28.00.09), in order to check the "oil to fuel heater" component for pollution presence and for correct fuel flow values.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation ITAL-2011-017:** ANSV recommends EASA and FAA that a scheduled check should be implemented within the maintenance program of the helicopter type in subject (equipped with the optional Service Bulletin Nr. 28.00.09) in order to check the fuel flow of the "oil to fuel heater" component during its operative life and in order to perform its cleaning.

**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.

**Category:** Unknown - **Status:** Open

## NETHERLANDS

Registration	Aircraft Type	Location	Date of event	Event Type
G-JSAR	AEROSPATIALE - AS332	the North Sea, near Den Helder, Netherlands	21/11/2006	Accident

**Synopsis of the event:** On 21 November 2006 at 23.28 hours a search and rescue helicopter, a Eurocopter AS332L2 Super Puma, with registration G-JSAR made an emergency landing in the North Sea, approximately 10 nautical miles North West of Den Helder in the Netherlands. The 4 crew members and 13 passengers were rescued out of the water after approximately one hour and were transported ashore to Den Helder. One passenger suffered from light hypothermia and was taken to hospital, but was discharged within a few hours. The other occupants were not injured. The passengers were staff from the offshore installation K15B, which is owned by NAM. Because of a blackout that had started at 20.00 hours that day, they had walked over to the Noble George Sauvageau, a drilling rig located next to the K15B, via a bridge. It was decided to take these non-essential staff from K15B ashore with the search and rescue helicopter G-JSAR. During the return flight of the G-JSAR, the cockpit crew reported engine speed fluctuations and experienced controllability problems and decided to make an emergency landing. All occupants evacuated the helicopter, but the life rafts located in the sponsons were not used during the evacuation. The Netherlands Coastguard organized and coordinated the rescue operation.

**Safety Recommendation NETH-2010-001:** The Board recommends that EASA consider expanding the parameters for the flight data recorders of helicopters to include the forces of the steering ("control forces"), as is the case in some categories of fixed wing aircrafts.

**Reply:** Rulemaking tasks RMT.0308 and RMT.0309 [former OPS.023 (a) and (b)] 'FDRs - alignment with ED-112 (IRs) - Update of the parameter list including the parameter performance' are on the Agency's Rulemaking Programme and they address the intent of the Safety Recommendation.

**Category:** Unknown - **Status:** Open

**Safety Recommendation NETH-2010-002:** The Dutch Safety Board recommends that EASA considers to provide solutions concerning the "smoothness" of survival suits in combination with inflated life jackets in order that speedy retrieval of survivors from the water is not hampered.

**Reply:** EASA European Technical Standard Order (ETSO) 2C502 and ETSO-2C503 (both published in July 2006) provide minimum performance standards for helicopter crew and passenger immersion suits. ETSO-2C502 defines integrated immersion suit systems which incorporate the functionality of a lifejacket whereas ETSO-2C503 defines immersion suits which require the wearing of a compatible life jacket. In addition, ETSO-2C504 (published also in July 2006) provides minimum performance standards for constant wear life jackets to be worn with a compatible immersion suits according to ETSO-2C503. ETSO-2C502 (integrated immersion suit) as well as ETSO-2C504 (constant wear life jacket) requires specific design features for recovery of survivors from the water and therefore already address this Safety Recommendation. In fact:

- The integrated suit according to ETSO-2C502 (for ETSO-2C504: the life jacket) must be fitted with a lifting becket which complies with the requirements of paragraph 4.15 of the European Standard EN 396:1993 or equivalent.
- The inflated or uninflated immersion suit according to ETSO-2C502 (for ETSO-2C504: inflated or uninflated life jacket) shall not adversely affect recovery of the wearer by the use of a rescue strop with a circumference of 180cm (70in).

In the related accident report it is stated that immersion suits and separate life jackets had been used but no information either on the manufacturer or on the certification standard(s) of the crew and passenger immersion suits is provided. However, since the accident occurred in November 2006, it is assumed that the concerned immersion suits and life jackets were not certificated versus ETSO-2C503 respectively ETSO-2C504 which were only published 4 months prior to the

accident. Nevertheless all immersion suits respectively constant wear life jackets certificated after the date of July 2006 are provided with design features to aid the recovery of survivors from water. In conclusion, while the recommendation can be deemed applicable to earlier standards, and its spirit is accepted, the mentioned EASA ETSOs, published in 2006, already improve the speedy retrieval of survivors from water.

**Category:** Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
TC-JGE	BOEING - 737	a field 1,5 km away of the runway threshold of Amsterdam Schiphol Airport, The Netherlands	25/02/2009	Accident

**Synopsis of the event:** A Boeing 737-800 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). The investigation Board concluded that the improper functioning of the left-hand radio altimeter system led to the thrust from both engines being reduced by the autothrottle to a minimal value too soon, ultimately causing too big a reduction in speed. The airspeed reached stall speed due to a failure of monitoring the airspeed and pitch attitude of the aircraft and a failure to implement the approach to stall recovery procedure correctly. This resulted in a situation where the wings were no longer providing sufficient lift, and the aircraft crashed.

**Safety Recommendation NETH-2010-004:** 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 has reviewed the Federal Aviation Administration (FAA) position and the Agency concurs with the corrective actions proposed by the Primary Certification Authority. The Agency is planning to adopt both FAA Airworthiness Directives (AD) as soon as they are published. The item remains open until publication of associated EASA AD's.

**Category:** Unknown - **Status:** Open

**Safety Recommendation NETH-2010-008:** FAA, EASA and DGCA should make (renewed) efforts to make airlines aware of the importance of reporting and ensure that reporting procedures are adhered to.

**Reply:** Directive 2003/42/EC lays down the current requirements for occurrence reporting in civil aviation, whereas the Regulation (EU) No 996/2010 contains provisions for notifying accidents and serious incidents. In addition, specific requirements for Air Operations and Airworthiness are included in the Commission Regulation (EC) No 859/2008 and 2042/2003, respectively. The implementation of reporting systems in each State as required by the applicable requirements is being checked during the standardisation visits carried out by the Agency. The visits are carried out in accordance with a yearly plan including recurrent and follow-up visits, as well as on ad-hoc

basis when required. The checking of the Accident Prevention and Flight Safety programs of selected operators is also included in the scope of the visits. The checking is done by means of detailed checklists which are designed to ensure that proper procedures are in place and that they are adhered to.

**Category:** Agreement - **Status:** Closed

<b>Registration</b>	<b>Aircraft Type</b>	<b>Location</b>	<b>Date of event</b>	<b>Event Type</b>
PH-SVU	AVIONS ROBIN - DR400	Lekkerkerk, Netherlands	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:** 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:** 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.

**Category:** Unknown - **Status:** Open

## NORWAY

Registration	Aircraft Type	Location	Date of event	Event Type
LN-OLT	AEROSPATIALE - AS365	Brokskar, Troms County, Norway	17/05/1999	Accident

**Synopsis of the event:** During an ambulance mission from Tromsø to Senja the helicopter flew into an area of strong turbulence and at the same time encountered a wind vortex with horizontal axis. This resulted in a large pitch down attitude and both sides of the helicopter's horizontal stabiliser ruptured. The Commander's control reaction to achieve a normal flight attitude, plus the effect of the Stability and Control Augmentation System (SCAS), resulted in a severe rotor flapping. The flapping resulted in contact between the main rotor blades and the helicopter fuselage. The flight continued towards its destination with the crew unaware of the extent of the damage, except that the trim attitude was more nose-down than normal. The landing at the destination of Sifjord, Senja, was uneventful, but the return flight was cancelled.

**Safety Recommendation NORW-2005-022:** The Norwegian Civil Aviation Authority evaluates whether the Aircraft Flight Manual should be revised to include a warning against landing in hilly terrain or snow-covered ground, which will increase the danger of the stabiliser fins touching the ground. The review of the Flight Manual should also consider a note that if such contact is suspected, the stabiliser must be checked by qualified personnel before any further flying takes place.

**Reply:** It is part of the pilot basic training to take precautions when he lands on a rough ground (hilly or snow covered for example). An additional instruction in the Rotorcraft Flight Manual (RFM) that could be only very general will not improve safety. General maintenance instructions ensure that, where a contact is suspected, the stabiliser as well as every other likely affected parts of the helicopter have to be checked.

**Category:** Disagreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
G-CRPH	AIRBUS - A320	Harstad/Narvik airport Evenes, Norway	25/11/2004	Serious incident

**Synopsis of the event:** An Airbus A320 with registration G-CRPH, was aligned up for take off on runway 35 at ENEV. During the application of take off power, there was an asymmetric build up of engine thrust causing the left engine to lag the right engine. This caused a yawing moment that resulted in a loss of directional control. The aircraft yawed approximately 40° and departed the partially snow covered runway in spite of the crew selecting engine idle, applying nose wheel steering and braking. The aircraft continued to move forward at a slow speed off the paved area and onto an area of snow-covered soft ground. The nose wheel created a large furrow as the aircraft came to a stop in snow and soil at an angle of approximately 40° to the runway centre line. The tail and the nose of the aircraft were 12 m and 35 m from the runway edge respectively. The distance from the runway centre line to the edge was 22.5 m. Damage to the aircraft was limited to a punctured left nose wheel tyre, a separated and deformed left nose wheel hubcap and a broken nose leg taxi light. The last reported friction numbers for runway 17 were 30-32-32 measured with Skiddometer with high pressure tire (BV-11/SKH). The runway was covered with up to 8 mm of loose dry snow upon sanded ice. The lagging engine rpm of the left engine was probably caused by icing on the fan blades during the taxiing and holding before take off.

**Safety Recommendation NORW-2007-028:** AIBN recommends that Airbus Industrie review their concept of "Fluid contamination being Equivalent to Wet Runway" for landing on contaminated runways.

**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.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
LN-LVT	CESSNA - 172	Skien airport Geiteryggen (ENSN), Norway	19/04/2009	Serious incident

**Synopsis of the event:** The candidate's private pilot license had expired in August 2008. In order to have his license reissued, the candidate had undergone training. The day before the serious incident, the candidate had practiced handling engine failure after take-off. A skill test was scheduled for the candidate on 19 April. The aero club had two Cessna 172s, one older model with a carburettor engine and one more recent model, LN-LVT, with an injection engine. The training had taken place with the older model, but it became necessary to use LN-LVT on the day of the incident. The procedures for starting the engine are relatively different between the two models, partly due to the fact that the more recent models have an electric auxiliary fuel pump. In accordance with the checklists for the aircraft, the engine needs to be primed with use of the auxiliary fuel pump switch to ON before starting up, and be switched to OFF again before engaging the starter. The candidate have explained that he was unaware of this. Although the checklist was read, the switch was left in the ON position after start-up. After take-off from runway 19, the aircraft's engine failed at a height of about 550 feet above the airport. The candidate informed the aerodrome flight information service (AFIS) unit that he was turning back towards the runway. Another aircraft, which had recently landed, was therefore asked to quickly exit the runway. After a flight of about one minute, LN-LVT successfully landed on runway 01. The two on board evacuated from the aircraft out on the runway. They observed that fuel had leaked out from the aircraft onto the runway, and that a lot of fuel continued to run under the engine cowlings. The aircraft's fuel shutoff valve was then closed and after some time the leak stopped. The airport's fire and rescue crew came quickly to the aircraft and covered the fuel on the runway with foam.

**Safety Recommendation NORW-2010-009:** The AIBN recommends that the EASA, who has given Type Certificate A.051 for the Cessna 172S, to consider the need for replacing the standpipes in question with a version with longer thread section.

**Reply:** Cessna has already implemented with the Safety Recommendation by incorporating a Standpipe with more thread area but it is not intended to apply this retrospectively as the occurrence is regarded as isolated.

**Category:** Partial Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
OY-RJC	BOMBARDIER - CL600 2B19	Oslo Airport Gardermoen, Norway	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:** 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.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation NORW-2011-004:** 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:** 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.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
WINTER	-	various locations		Accident

**Synopsis of the event:** Over a 10-year period, the Accident Investigation Board Norway (AIBN) has received 30 reports of accidents and incidents related to operations on contaminated and slippery runways. In the same period AIBN has published 12 investigation reports and issued 36 safety recommendations. This theme investigation focuses on the general framework for operations on contaminated and slippery runways and the potential for safety improvements in general. The AIBN has accumulated and analysed a large volume of documentation, reports, test and research data from various national and international sources in addition to consulting expertise in the field of micrometeorology. In the 30 investigated occurrences, the AIBN found that the aircraft braking coefficient (ABC) was not in accordance with the measured/estimated runway friction coefficients (FC). The AIBN has identified numerous common factors that have reduced the safety margins and factors that explain the differences between ABC and FC. These factors are related to meteorological conditions and friction measurements uncertainty, runway treatment, operational aspects and regulatory conditions. The AIBN believes that incidents relating to slippery

runways occur because the involved parties do not realise that existing rules and regulations are based on a simplification of the actual physical conditions. The measured/estimated friction values are used as scientific truths and not compared to other meteorological conditions ("safety indicators"). The safety margins are reduced by operational procedures which to a limited degree take into account the uncertainties connected to input parameters used for landing distance calculations. The AIBN's findings are supported by research programmes and studies. The AIBN findings show that the national regulations governing operations on contaminated and slippery runways are less strict than those that govern operations in summer conditions. This is in spite of the ICAO and EASA guidelines and regulations which prescribe that if winter operations are to be performed on a regular basis, the authorities require the operators to take special measures in order to attain an "equivalent level of safety" to summer conditions. The many incidents and accidents relating to contaminated and slippery winter runways, reveal that an "equivalent level of safety" is not achieved in connection with Norwegian winter operations.

**Safety Recommendation NORW-2011-008:** The AIBN recommends that ICAO, FAA, EASA and CAA Norway review and validate the permitted measuring (validity) ranges for approved friction measuring devices.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation NORW-2011-009:** The AIBN recommends that ICAO, FAA, EASA and CAA Norway consider revising the SNOWTAM table to reduce the degree of friction uncertainty.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation NORW-2011-010:** The AIBN recommends that FAA, EASA and CAA Norway consider, on the basis of risk assessments, whether all available reverse thrust should continue to be included in part or in whole when calculating the required landing distance on contaminated and slippery runways.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation NORW-2011-011:** The AIBN recommends that FAA, EASA and CAA Norway evaluate the airlines' crosswind limits in relation to friction values and consider whether they should be subject to separate approval by the authorities.

**Reply:** 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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation NORW-2011-012:** The AIBN recommends that EASA considers a more conservative determination of friction values on various types and depths of contamination.

**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.

**Category:** Unknown - **Status:** Open

## POLAND

Registration	Aircraft Type	Location	Date of event	Event Type
D-AGPH	FOKKER - F28	Warszawa-Okecie (EPWA), Poland	01/07/2010	Serious incident

**Synopsis of the event:** On 1 July, 2010 the flight crew of F - 100 airplane, flight No SWR343T, during „Soxer 1G” departure from EPWA approximately at FL 70 could hear an impact sound from the nose bottom part of the fuselage. The flight crew stopped climbing, reduced the flight speed to approximately 200 kt, and decided to return to the take-off aerodrome. The landing took place at 08:44. During the investigation SCAA determined that the probable cause of the serious incident could be: Reduced strength of the radome sandwich structure caused by gradual (over time) degradation of the material in fiberglass epoxy composite structures and their bonds. Probable factor contributing to the incident could be: several bird strikes against the radome, which occurred earlier and could cause a progressive weakening of its structure. Maintenance of the radome and minor repairs made by the airplane user did not reveal weakening of the construction and did not maintain properly the composite structure and protect it from environmental factors despite they were carried out according to the procedures given in the aircraft maintenance manual.

**Safety Recommendation POLD-2011-005:** EASA should notify all F70/100 users about the occurrence.

**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.

**Category:** Unknown - **Status:** Open

## SOUTH AFRICA

Registration	Aircraft Type	Location	Date of event	Event Type
G-BYGA	BOEING - 747	O.R. Tambo Airport, Johannesburg, South Africa	11/05/2009	Serious incident

**Synopsis of the event:** On the 11th May 2009, a Boeing 747-400 aircraft operated by an airline with appropriate certification and holder of an Air Operator Certificate was involved in a serious incident during takeoff from OR Tambo Airport at Johannesburg, South Africa. The serious incident involved the un-commanded retraction of the automatic Group 'A' leading edge flaps on rotation for a period of about 23 seconds. Subsequent to the initiation of the retraction of the Group 'A' leading edge flaps, the aircrew was faced with unexpected stall warnings. The pilot flying was able to prevent the aircraft from stalling, with support from the other crew members and to keep the aircraft flying until the leading edge flaps re-extended and normal performance capability returned. At no time was the aircrew aware that the Group 'A' leading edge flaps had retracted or as to the circumstances leading to the stall warnings. They were however aware that the thrust reverser in-transit EICAS amber message on the P2- Pilots Center Instruments Panel did display during takeoff roll prior to rotation. After discussing the occurrence and not being sure about what had been the cause of the event, the crew elected to return to the airport where an uneventful landing was carried out approximately 2 hours later.

**Safety Recommendation SOUF-2010-003:** It is recommended that the Regulatory and Certificating Authorities of all States of Design and States of Manufacture should introduce requirements to review all software control and hardware control logics and combinations thereof to ensure that all probable defect possibilities are identified.

**Reply:** Software and hardware control logics are specified in the system requirements and then developed into software and hardware requirements. Once system requirements are transferred to the software and hardware processes, the respective development follows a guidance which is usually an Industry standard such as EUROCAE ED12B or ED80 (or RTCA DO178B or DO254). Indeed, the version of the standard used differs according to the time of the Type Certificate (TC) or Supplemental Type Certificate (STC) issuance. Also, a rigorous safety process is followed to identify any failure condition, which impacts the safety of the aircraft. In the compliance verification, as for CS 25.1309 part of safety assessment process, safety impacts of software/hardware are evidenced through Failure Hazard Analysis (FHA), System Safety Analysis (SSA), Fault Tree Analysis (FTA), Failure Mode and Effect Analysis (FMEA), and CCA (Common Cause Analysis) that latest includes Zonal Safety Analysis (ZSA), Particular Risk Analysis (PRA), Common Mode Analysis (CMA) and HEA (Human Error Analysis).

**Category:** Agreement - **Status:** Closed

**Safety Recommendation SOUF-2010-004:** It is recommended that the Regulatory and Certificating Authorities of all States of Design and States of Manufacture should introduce requirements to review the processes used to introduce modifications to control software since issuance of the original type certification, e.g. consider a recertification process.

**Reply:** Introduction of design modification of the initial Type Design is ruled by Part 21 with Subpart D - Changes to type-certificates (TC) (21A.90 to 21A.109) for TC Holders and with Subpart E - Supplemental Type Certificates for other applicants (21 A.111 to 21 A.120). Principle is based on a change classification (Minor/Major), application for approval of the change, definition of the certification basis for the proposed change depending on the Substantial/not Substantial and Significant/Non-Significant change. Associated guidance material [GM 21A.91, GM 21 A.93(b), GM 21A.101, GM 21A.101 Appendix 1,2 & and 3] describes the process to be followed and, among other example, considers modification involving software evolution. Depending on the change classification (Minor/Major; Substantial/Not-Substantial; Significant/Non-Significant), it may leads to a complete review of the initial type certification basis and upgrade to the latest certification

requirements. It is EASA's opinion that existing Part 21 rules and associated Guidance Material address design changes including those involving software evolutions.

**Category:** Disagreement - **Status:** Closed

**Safety Recommendation SOUF-2010-005:** It is recommended that the Regulatory and Certifying Authorities of all States of Design and States of Manufacture should verify that appropriate resolutions for such occurrences have been developed and are in place to prevent un-commanded actions that can result in an accident. (Related to SOUF-2010-004)

**Reply:** The Federal Aviation Administration (FAA) issued the Airworthiness Directive (AD) 2009-13-03 "Thrust Reverser Control System Wiring to Flap Control Unit (FCU) - Modification" on 01 July 2009 that addresses this Safety Recommendation.

**Category:** Agreement - **Status:** Closed

## SPAIN

Registration	Aircraft Type	Location	Date of event	Event Type
EC-FTG	SOCATA - TB10	Sierra de Peña de Francia (Salamanca), Spain	08/03/2003	Incident

**Synopsis of the event:** El día 8 de marzo de 2003, a las 10:30 hora local, la aeronave Socata TB-10, matrícula EC-FTG, sufrió la parada del motor cuando se encontraba a 6.500 ft de altura en las estribaciones de la Sierra de Peña de Francia (Salamanca). El piloto era un alumno de una escuela de vuelo que realizaba un vuelo de navegación como alumno solo. El tripulante de la aeronave, puesto en contacto con la torre de control del Aeropuerto de Salamanca, declaró emergencia y llevó a cabo el procedimiento de puesta en marcha sin resultado positivo. Finalmente, seleccionó el terreno que valoró más adecuado y aterrizó sin consecuencias para él. Después de evacuar la aeronave comunicó, por teléfono móvil, el aterrizaje a la oficina de operaciones de la escuela.

**Safety Recommendation SPAN-2003-007:** With respect to a Recommendation issued by the BEA, in combination with the FAA of USA and the DGAC France, regarding a similar accident happened in France, to consider the need to make mandatory the provisions of the service bulletin no 261, issued on 17 March 1995 for the Teledyne Continental, for aircraft Socata Tobago TB-10, Spanish registered.

**Reply:** EASA issued on 08/06/2011 the Safety Information Bulletin (SIB) 2011-16 "Teledyne Continental Ignition Systems (formerly Bendix) Magneto Capacitor Installation". This SIB addresses the intent of the safety recommendation.

**Category:** Partial Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
EC-IHD	CESSNA - 208	Barcelona Airport, Spain	28/02/2005	Incident

**Synopsis of the event:** On Monday, February 28 2005, the aircraft EC-IHD began takeoff from runway 07L of Barcelona Airport at 06:13h UTC, in order to carry out a cargo flight (urgent post) to Palma de Mallorca. Approximately one minute after having started the takeoff run, when the aircraft was in the phase of initial climb at an altitude of around 800 feet, the pilot, noticing that the aircraft was beginning to vibrate and that he was not able to maintain airspeed or altitude despite increasing power, declared an emergency and his intention to return to the airport. After making a 180° turn to the left, and judging it impossible to reach the runway given his low altitude, the pilot landed (with prior authorization from ATC) on taxiway Tango parallel to runway 07L-25R at 06:16h. The emergency landing was carried out normally and the aircraft did not suffer any apparent damage, making the taxi without assistance to the same parking position from which it had left. During the taxi, when the ground control controller asked the reason for the emergency, the pilot answered that it had been due to the formation of ice. The meteorological conditions at the airport the hours before the incident and during were bad (there had been a wave of polar air in the peninsula, the temperature was low, the air humidity was high and it was snowing).

**Safety Recommendation SPAN-2006-024:** It is recommended that the Spanish Civil Aviation Authority (DGAC) ask commercial aerial transport companies to carry out specific periodic training courses on flight in adverse meteorological conditions that, at least, would cover aspects such as:

- Conditions of ice formation and how to recognise them.
- Types of ice.
- Formation of ice on the aircraft.
- Recovery procedures.
- Procedures in icing conditions on the ground.

**Reply:** Since the Basic Regulation of EASA [Regulation (EC) No 216/2008] extended the duties of the Agency, this Safety Recommendation issued by the Spanish Accident Investigation Board was redirected from the Spanish National Aviation Authority (AESA, formerly DGAC) to EASA. The Agency published its proposals regarding operational requirements in the Notice of Proposed Amendment (NPA) 2009-02. This NPA contains training provisions for flight in expected or actual icing conditions for the flight crew (FC), cabin crew (CC), and dispatch [based on existing Joint Aviation Requirements on operations (JAR-OPS) 1 Section 2 material], in particular the following proposed acceptable means of compliance (AMC) and guidance material (GM):

"AMC1-CAT.OP.AH.255 Ice and other contaminants – flight procedures

**FLIGHT IN EXPECTED OR ACTUAL ICING CONDITIONS**

3. Training for dispatch and flight in expected or actual icing conditions. The content of the operations manual should reflect the training, both conversion and recurrent, which flight crew, cabin crew and all other relevant operational personnel require in order to comply with the procedures for dispatch and flight in icing conditions:

a. For the flight crew, the training should include:

i. instruction on how to recognise, from weather reports or forecasts which are available before flight commences or during flight, the risks of encountering icing conditions along the planned route and on how to modify, as necessary, the departure and in-flight routes or profiles;

ii. instruction on the operational and performance limitations or margins;

iii. the use of in-flight ice detection, anti-icing and de-icing systems in both normal and abnormal operation; and

iv. instruction on the differing intensities and forms of ice accretion and the consequent action which should be taken.

b. For the cabin crew, the training should include;

i. awareness of the conditions likely to produce surface contamination; and

ii. the need to inform the flight crew of significant ice accretion.

...

GM2-CAT.OP.AH.250 Ice and other contaminants – ground procedures

...

**6. Training**

The operator's initial and recurrent de-icing and/or anti-icing training programmes (including communication training) for flight crew and those of its personnel involved in the operation who are involved in de-icing and/or anti-icing should include additional training if any of the following is introduced:

a. a new method, procedure and/or technique;

b. a new type of fluid and/or equipment; or

c. a new type of aircraft."

**Category:** Unknown - **Status:** Open

<b>Registration</b>	<b>Aircraft Type</b>	<b>Location</b>	<b>Date of event</b>	<b>Event Type</b>
OE-LMM	DOUGLAS - DC9	Lanzarote Airport, Spain	06/06/2007	Serious incident

**Synopsis of the event:** The crew started its day at Barajas Airport on 5 June 2007 at around 06:55 local time. The flights scheduled for that day were Madrid-Lanzarote-Barcelona and then back to Madrid as passengers. The aircraft assigned for the flight was an MD-83, s/n 53377, registration OE-LMM. During the night, the maintenance crew had performed the Service check and the Daily check, which are required every 72 and 24 hours, respectively.

**Safety Recommendation SPAN-2009-029:** It is recommended that the EASA evaluate the methods and procedures used by Austrocontrol to issue AOCs and to track the conditions in place at operators required to maintain the AOC.

**Reply:** The last EASA full-scope standardisation visit (by the Operations Standardisation Team) to Austria was conducted in December 2008. This visit included inter alia the state safety oversight and surveillance functions; personnel qualification and training; authorisation and approval obligations, and was followed up by a visit in July 2010. In the future, EASA will continue to make the best use of the information available to identify potential deficiencies and risk areas when preparing a standardisation visit to national authorities and undertakings.

**Category:** Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
EC-HFP	DOUGLAS - DC9	Madrid-Barajas Airport, Spain	20/08/2008	Accident

**Synopsis of the event:** On 20 August 2008, 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-2009-002:** It is recommended that the Federal Aviation Administration (FAA) of the United States and the European Aviation Safety Agency (EASA) require the manufacturer, the Boeing Company, to include in its Aircraft Maintenance Manual (AMM) for the DC-9 and MD-80 series, in the Troubleshooting Manual (TSM) for the MD-90 series, and in the

Fault Isolation Manual (FIM) for the 717 series, specifically identified instructions to detect the cause and to troubleshoot the fault involving the heating of the RAT temperature probe while on the ground. (REC 01/09)

**Reply:** The European Aviation Safety Agency (EASA), in accordance with the primary certification authority, the Federal Aviation Administration (FAA) does not believe that the Maintenance Manual is the sole source for trouble-shooting maintenance issues with the airplane. The Maintenance Manual has specific steps for the more common issues encountered and was never intended to cover all issues. It is noted that the manufacturer revised Aircraft Maintenance Manual (AMM) for DC-9, MD-80 and the Troubleshooting Manual for the MD-90 series of airplanes, in order to better clarify instructions to troubleshoot the heating of the Ram Air Temperature (RAT) probe while on the ground. The related references are the following ones:

1) Aircraft Maintenance Manual MD-80

Sec.30-30-00 "Pitot and static - Maintenance practices" from page 501 to page 512 were revised on 01 February 2011;

Sec.30-30-01 from page 201 to page 203 and from 205 to 207 was revised on 01 February 2011;

Sec.27-00-00 "Indicating and warning system" from page 1 to page 3, page 201, from 216 to 221 and from 502 to 506 were revised on 01 February 2011;

2) Task card MD-80 SWS - ME 80-021-SWS page 2 was revised on 01 February 2009;

3) Task card - Service check 05-001-02-01 from page 1 to page 6 was revised on 01 February 2009;

4) Maintenance Check Manual Doc. ME-0061:

TR ME-0061-040 from page 1 to page 5 was revised on 12 March 2009;

TR ME-0061-047 Task card 0713 was revised on 18 June 2010.

However, it is thought that the Maintenance Manual, used in conjunction with the wiring diagrams, is sufficient to troubleshoot faults associated with heating of the RAT probe on the ground. As a result, no further action is planned.

**Category:** Partial Agreement - **Status:** Closed

**Safety Recommendation SPAN-2009-008:** It is recommended that the European Aviation Safety Agency and the Federal Aviation Administration (FAA) of the United States require the Boeing Company to evaluate the operating conditions, in-service life, reliability and failure modes of relays in position R2-5 of the ground sensing system in the DC-9, MD-80, MD-90 and B-717 series of airplanes and that it specify a maintenance program for this component based on the results of said evaluation.

**Reply:** It is recognized that the relay in position R2-5 of the ground sensing system in DC-9, MD-80, MD-90 and B-717 is not submitted to maintenance task or re-work activity once it is unshipped from the airplane. The requested re-evaluation of the reliability of the subject relay has been undertaken. The collected in-service feedback backs up the primary certification authority's, the Federal Aviation Administration's (FAA) position that the reliability of the relay is typical of any electro-mechanical relay and that there is nothing unique about the specific application that adversely affects its service life. The existing operational checks provide a high level of verification for this non-monitored component, and therefore no additional specific maintenance task is found necessary.

**Category:** Partial Agreement - **Status:** Closed

**Safety Recommendation SPAN-2009-009:** It is recommended to the European Aviation Safety Agency and to the Federal Aviation Administration (FAA) of the United States that the design of Takeoff Warning Systems (TOWS) be reviewed in transport airplanes whose certification standards did not require the installation of such systems or which, if they did require it, did not apply to them the guidelines and interpretation provided by AMC 25.703 in the case of the EASA, or circular AC 25.703 in the case of the FAA. The goal of this review should be to require that the TOWS comply with the applicable requirements for critical systems classified as essential in CS 25.1309 and FAR 25.1309.

**Reply:** The service experience of Take-off Warning System (TOWS) on Large Aeroplanes was reviewed by EASA. It was found that aircraft more recently certified under the current Certification

Specifications (CS) 25 provisions were satisfactory. This review indicated accidents and incidents have mainly occurred on legacy aircraft of the same vintage as the MD-82 [see EASA response to SPAN-2009-010]. A comprehensive study was made of these aircraft by the Federal Aviation Administration (FAA) in 1988: "Review of Take Off Configuration Warning Systems on Large Jet Transports, 29 April 1988". This covered all the major types in service at that time, and these constitute the aircraft now referred to as legacy types. It was found in particular that nuisance warnings were occurring during taxiing which led crews to disable the TOWS. As a result of the work conducted then, various Airworthiness Directives (AD) were issued which primarily mandated changes to eliminate nuisance warnings (e.g. FAA AD 89-13-04, FAA AD 90-03-18). In service experience indicates the modifications to address nuisance warnings have been successful. EASA has merged the events from the FAA review with events collected from the Accident/Incident Data Reporting (ADREP) database. 17 events have been identified where the TOWS was a factor in for the accident/incident. The number of cases where the TOWS was inoperative and the aircraft in a hazardous configuration at take-off is very low: since 1962, this represents 5 accidents and 2 incidents. There are however 3 accidents for which the TOWS status is unknown. The remaining events (7 accidents) are scenarios where the TOWS was operative but its design did not cover a key element of aircraft takeoff configuration. It can also be seen that these events only concern old aeroplane type designs [with old avionic architectures, without Electronic Centralized Aircraft Monitoring (ECAM) or Engine Indication and Crew Alerting System (EICAS)]. Since 1980, the types concerned are DC-8, MD-82, MD-83, B727, B737-200. The low incident/accident rate itself is considered sufficient to conclude that no unsafe condition exist. Therefore a general retrospective action to bring the reliability of the TOWS on legacy aircraft to the current requirement standard cannot be justified. Nevertheless, corrective actions have been implemented to correct specific type related design issues. EASA will continue to monitor the legacy aircraft through the continued airworthiness process, and will address specific design issues should they arise on any given aircraft type. In addition, EASA has issued a Safety Information Bulletin (SIB) recommending improvements to checklists, procedures and training (SIB 2009-10R1).

**Category:** Partial Agreement - **Status:** Closed

**Safety Recommendation SPAN-2011-018:** It is recommended that the United States Federal Aviation Administration (FAA) and European Aviation Safety Agency (EASA) require takeoff stall recovery as part of initial and recurring training programs of airline transport pilots.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation SPAN-2011-019:** It is recommended that the United States Federal Aviation Administration (FAA) and European Aviation Safety Agency (EASA) study and assess the stall recovery procedure in the flight manuals of large transport airplanes to include a check of the flap/slat lever and its adjustment, if required.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation SPAN-2011-020:** 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.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation SPAN-2011-021:** It is recommended that the European Aviation Safety Agency (EASA), in keeping with ICAO initiatives, introduce in its regulations the concept of critical phases of flight and define those activities considered acceptable during said phases.

**Reply:** The concept of "critical phases of flights" is embedded in the present rules applicable to Commercial Air Transport (CAT) by aeroplane (EU-OPS) and also in the future implementing rules as proposed in Opinion 04/2011. Critical phases of flight are defined in Annex I Definitions of Opinion 04/2011 as follows:

'Critical phases of flight' in the case of aeroplanes means the take-off run, the take-off flight path, the final approach, the missed approach, the landing, including the landing roll, and any other phases of flight as determined by the pilot-in-command or commander.

'Critical phases of flight' in the case of helicopters means taxiing, hovering, takeoff, final approach, missed approach, the landing and any other phases of flight as determined by the pilot-in-command or commander.

The proposed implementing rules specify in particular that

- the operators' procedure shall not require crew members to perform any activities during critical phases of flight other than those required for the safe operation of the aircraft (paragraph ORO.GEN.110(f))
- the commander doesn't permit any crew member to perform any activity during critical phases of flight, except duties required for the safe operation of the aircraft (paragraph CAT.GEN.MPA.105(a)(9)).

In addition, EASA is initiating rulemaking task RMT.0416/0417 [former OPS.009 (a) and (b)] to further specify "sterile flight deck" procedures and their relationship to critical phases of flight, and to review whether taxiing should be included in critical phases of flight for aeroplanes. It is considered that this addresses the safety recommendation.

**Category:** Agreement - **Status:** Closed

**Safety Recommendation SPAN-2011-022:** It is recommended that the European Aviation Safety Agency (EASA) and national civil aviation authorities, when evaluating operator training programs, expressly ensure that:

- the concept of sterile cockpit is stressed,
- the importance of adhering to said concept is stressed, along with the consequences of even minor distractions, and
- examples of accidents are included in which non-compliance with regulations involving the sterile cockpit was a relevant factor. (REC 22/11)

**Reply:** Rulemaking tasks RMT.0416 and RMT.0417 [former OPS.009(a) and OPS.009(b)] 'Sterile flight deck procedures' are on the Agency's Rulemaking Programme and were launched on 12 September 2011. This Safety Recommendation will be considered during the tasks.

**Category:** Unknown - **Status:** Open

**Safety Recommendation SPAN-2011-023:** It is recommended that the European Aviation Safety Agency (EASA) ensure that national authorities require commercial air transport operators to prohibit their crews from using portable personal electronic devices on the flight deck. (REC 23/11)

**Reply:** Opinion 04/2011 proposing implementing rules for commercial air transport operations includes the following requirement: CAT.GEN.MPA.140 Portable electronic devices. The operator shall not permit any person to use a portable electronic device (PED) on board an aircraft that could adversely affect the performance of the aircraft's systems and equipment, and shall take all reasonable measures to prevent such use. The requirement is a transposition of paragraph OPS 1.110 of EU-OPS. It applies to any person on board, including crew members. Associated Acceptable Means of Compliance and Guidance Material (AMC/GM) is currently being reviewed for the related Executive Director (ED) Decision which will be published once the proposed implementing rules of Opinion 04/2011 are adopted by the Commission. In addition, EASA has initiated a rulemaking task on sterile flight deck procedures [RMT.0416/0417, former OPS.009 (a) and (b)] that will evaluate the introduction of related operational procedures and best practices in the OPS rules in order to minimize the disturbance of flight crews during critical phases of flight. It is considered that this addresses the safety recommendation.

**Category:** Agreement - **Status:** Closed

**Safety Recommendation SPAN-2011-024:** It is recommended that the European Aviation Safety Agency (EASA) develop guidance material for the preparation, evaluation and modification of checklists associated with normal, abnormal and emergency procedures that is based on the criteria that govern safety management systems.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation SPAN-2011-025:** It is recommended that the European Aviation Safety Agency (EASA) clarify whether or not checklists are subject to the acceptance of national authorities and, if so, that it draft instructions so that said authorities apply uniform criteria and methodologies, such as methods for assessing the systems and procedures in use at the operators for managing checklists and quality assurance systems in general.

**Reply:** It is assumed that the safety recommendation relates to pilot checklists to be used during normal, abnormal and emergency situations.

EASA Opinion 04/2011 proposing implementing rules for commercial air transport operations includes the following requirement:

ORO.GEN.110 Operator responsibilities

(h) The operator shall establish a checklist system for each aircraft type to be used by crew members in all phases of flight under normal, abnormal and emergency conditions to ensure that the operating procedures in the operations manual are followed. The design and utilisation of checklists shall observe human factors principles and take into account the latest relevant documentation from the aircraft manufacturer.

Acceptable Means of Compliance (AMC) material containing the table of contents of the Operations Manual (derived from EU-OPS Appendix 1 to OPS 1.1045) specifies for Operations Manual (OM) Part-B the inclusion of checklists for normal, abnormal and emergency procedures. [The AMC will be part of an ED Decision that will be published once the related implementing rules of Opinion 04/2011 are adopted by the Commission.]. The OM needs to be provided to the competent authority when applying for an Air Operator Certificate (AOC) (refer to paragraph ORO.AOC.100(b)(6)). In addition, the operator shall submit a procedure to the authority describing how changes not requiring prior approval will be managed and notified to the competent authority (refer to paragraph ORO.GEN.115(b)). The change of checklists would fall under this procedure since checklists are not required to have a prior approval. The authority shall only issue the AOC when satisfied that the operator has demonstrated compliance with the rules (refer to paragraph ARO.OPS.100(a)). Additionally, the authority shall approve the procedure submitted by the operator defining the scope of such (minor) changes and describing how such changes will be managed and notified to the authority (refer to paragraph ARO.GEN.310(c)). For any amendment of the OM required to be notified to the authority in accordance with the procedure mentioned above, the operator must supply the competent authority with the intended amendments in advance of the effective date. (refer to ORO.MLR.100(g)(1)). EASA has developed authority requirements, Part-ARO, to be followed by competent authorities. These authority requirements oblige the authorities to establish a management system including (among other items) the documentation of all policies and procedures. Furthermore, ARO.GEN.300/305 specifies requirements for oversight that provide the basis for authorities to apply the appropriate frequency and in-depth checking of operators, their management system and procedures applied. A further need to standardise or harmonise authority procedures, in particular as regards specific items such as checklists, is therefore not considered necessary. It is considered that this addresses the safety recommendation.

**Category:** Agreement - **Status:** Closed

**Safety Recommendation SPAN-2011-026:** It is recommended that the European Aviation Safety Agency (EASA) perform investigations or studies intended to know the status of application and the real effectiveness of the current UE requirements applicable to Crew Resources Management (CRM). The results of these studies should permit to identify the weak points existing in this field and should contain proposals on how to strengthen them.

**Reply:** Rulemaking task RMT.0411 (former OPS.094) 'CRM Training' is on the Agency's Rulemaking Programme. This Safety Recommendation will be considered during the task.

**Category:** Unknown - **Status:** Open

**Safety Recommendation SPAN-2011-027:** It is recommended that the European Aviation Safety Agency (EASA) standardize the CRM training that must be provided to the operations inspectors of national authorities, and define the criteria that must be met by said inspectors in order to exercise their duties as inspectors in the area of CRM.

**Reply:** Rulemaking Task RMT.0441 [former OPS.087 (c)] on Crew Resource Management (CRM) training is identified in the Agency's Rulemaking programme and will address the safety recommendation.

**Category:** Unknown - **Status:** Open

**Safety Recommendation SPAN-2011-030:** It is recommended that the European Aviation Safety Agency (EASA) undertake regulatory initiatives intended to require commercial air transport operators to implement a program of line operations safety audits, as part of their accident prevention and flight safety programs.

**Reply:** The current regulation for commercial air transport operations by aeroplanes, Regulation (EC) 859/2008 (so-called EU-OPS) and related JAA Temporary Guidance Leaflet (TGL) 44 including Acceptable Means of Compliance (AMC) and Guidance Material (GM) already contains appropriate provisions on the Line Operations Safety Audit (LOSA). AMC OPS 1.035 Quality Systems asks the operator to cover actual flight operations during the quality inspection. In addition, OPS 1.965 Recurrent Training and Checking, Appendix 1 to OPS 1.965 and related AMC 1.943/1.945(a)(9), 1.955(b)(6), 1.965(e) Crew Resource Management (CRM) in TGL 44 contain appropriate provisions on CRM training and assessment. Furthermore, OPS 1.965, Appendix 1 to OPS 1.965 and related IEM OPS 1.965, specify the conditions and important factors to be observed when conducting and assessing the annual line check. These provisions are incorporated into the EASA rules for commercial air transport, as published with Opinion 04/2011. The related AMC/GM will be published as Executive Director (ED) Decision once the implementing rules are adopted by the Commission.

**Category:** Unknown - **Status:** Open

**Safety Recommendation SPAN-2011-031:** 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 (MEL), so as to avoid interpretation errors in its application.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation SPAN-2011-033:** It is recommended that the European Aviation Safety Agency (EASA) issue an interpretation regarding the need to identify the source of a malfunction prior to using the MEL, and that it assures that national authorities accept and apply the same standards with regard to their procedures for overseeing operators in their respective States.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation SPAN-2011-042:** It is recommended that the European Aviation Safety Agency (EASA) draft guidelines and instructions so that national authorities are better able to assess the general situation of commercial air transport operators that undergo notable changes, such as rapid expansions, a significant growth in their resources, or the opposite situation, a reduction in their activity or resources, such as through personnel layoffs, the purpose

being for authorities to constantly adapt their monitoring plans to consider their evaluation of these changes so as to proactively detect and assess risk factors that point to a possible degradation in safety level.

**Reply:** EASA Opinion 04/2011 proposing implementing rules for commercial air transport operations requires the operator to submit a procedure to the authority describing how changes not requiring prior approval will be managed and notified to the competent authority [refer to paragraph ORO.GEN.115(b)]. Notable changes, such as rapid expansions, a significant growth in their resources, or the opposite situation, a reduction in their activity or resources, such as through personnel layoff, would fall under this procedure since they are not required to have a prior approval. The authority shall approve the procedure submitted by the operator defining the scope of such changes and describing how such changes will be managed and notified to the authority [refer to paragraph ARO.GEN.310(c)]. Furthermore, ARO.GEN.300 and ARO.GEN.305 specify requirements for oversight that provide the basis for authorities to apply the appropriate frequency and in-depth checking of operators, their management system and procedures applied. Provision of further guidelines so that the national authorities are better able to assess the general situation of commercial air transport operators that undergo notable changes is therefore not considered necessary. This should be addressed by operator's procedure, approved by the competent authority, on managing changes not requiring a prior approval.

It is therefore considered that the intent of the safety recommendation is already addressed in EASA Opinion 04/2011.

**Category:** Agreement - **Status:** Closed

## SWEDEN

Registration	Aircraft Type	Location	Date of event	Event Type
SE-HSI	HUGHES - 369	Linetjakke, Sweden	04/08/2004	Accident

**Synopsis of the event:** The pilot took off with his helicopter with four passengers on board. Approximately half a minute after takeoff he thought that increasing force was needed to keep the helicopter neutral in the roll plane. He attempted to deal with the problem by, among other things, operating the trim control on the cyclic stick, but the force grew greater and greater. After a minute or so the force to the left had become so great that the pilot was obliged to support with his left hand and left knee to keep the helicopter in normal flying attitude, he had to abort the first attempt to land. On the second attempt the helicopter struck the ground hard and turned over.

**Safety Recommendation SWED-2005-002:** The Swedish CAA is recommended in collaboration with international civil aviation authorities, to seek the inclusion of maximum permitted cyclic stick and pedal craft forces in the design regulations also for small and large helicopters.

**Reply:** The issue of pilot stick and pedal forces has been included in the now active EASA Rulemaking Task 27&29.029. The aim is to introduce guidance material in Certification Specification (CS) 27 and 29 as part of the current revision programme.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
SE-HCM	HUGHES - 269B	Grundagsäteren, 25 km North of Idre, W län (Dalarna County), Sweden	22/11/2007	Accident

**Synopsis of the event:** The helicopter experienced a sudden loss of lift just after takeoff. It crashed and was destroyed. The two persons onboard suffered minor injuries.

**Safety Recommendation SWED-2009-001:** EASA rekommenderas att vidta de åtgärder som behövs för att förhindra avgörande effektförlust på kolmotorer till följd av blockering av ljuddämpares utlopp.

**Reply:** EASA issued Safety Information Bulletin No.: 2010-19 on 02 June 2010 "Exhaust Mufflers Inspection for piston engine Helicopters and Aeroplanes".

**Category:** Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
SE-IVF	CASA - C212	the Northern basin of Falsterbo canal, Skåne county, Sweden	26/10/2006	Accident

**Synopsis of the event:** CASA C-212 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.

**Safety Recommendation SWED-2010-003:** It is recommended that EASA take steps so that the existing flight recording systems on board large aircraft, such as FDR, QAR, etc., are developed further so that they can also be used to inform pilots, while recording the data, about possible overloading during operation.

**Reply:** Accident flight recorders are designed for the purpose of recording essential information useful in the case of an accident or an incident, and the Agency does not agree that they should be required to incorporate in-flight alerting functions. The design requirements from the aircraft Certification Specifications, and the flight crew compliance with the Aircraft Flight Manual operating limitations and procedures, normally ensure that no overload situation may be encountered. In addition, pilots directly feel abnormally high load factors. Therefore the Agency does not agree that flight crews operating civil transport aircraft need a real-time overload alerting system. Instead, the load factor information can be best used by the maintenance personnel after the flight, if recorded and made available to them. This is one of the benefits of a flight data monitoring programme. However, Kustbevakningen (KBV = Swedish Coastguard) aircraft are operated for maritime surveillance, and therefore, they are not subject to European operations (EU-OPS) rules. Neither the EU-OPS requirement of carrying a regulatory flight data recorder nor the EU-OPS requirement of implementing a flight data monitoring programme applies to KBV aircraft. Nevertheless, EASA recognises the benefits of flight data monitoring for all aircraft.

**Category:** Disagreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
SE-GBL	PIPER - PA34	Göteborg City Airport, Sweden	06/07/2009	Accident

**Synopsis of the event:** The pilot took off from Säve for a private flight to Sindal in Denmark. After take-off the pilot was unable to retract the landing gear. After repeated attempts at both retraction and extension, the pilot left the landing gear lever in the extended position and requested a return to land back at Säve. On the initiative of air traffic control a fly-by was carried out for visual assessment from the control tower. However a definitive statement concerning the landing gear status could not be given from the tower. The pilot then continued with an approach for landing. The indications in the aircraft showed that none of the landing gear wheels were down and locked. When interviewed the pilot stated that he thought this was an incorrect indication, which was why he did not use the emergency landing gear extension system. He said that he had never practised emergency extension of the landing gear while undergoing proficiency checks (PC). When the aircraft touched down all three landing gear struts folded and the aircraft slid along the asphalt runway before coming to a halt 1,000 metres along it. No fire broke out and those on board - who with help from the rescue services were able to leave the aircraft themselves - were not injured.

**Safety Recommendation SWED-2010-007:** Ensure that, in connection with e.g. the ARC review that existing checklists and emergency checklists are in accordance with AFM and found in a legible condition

**Reply:** The assessment and approval of the checklists is currently part of the certification and oversight tasks of the National Aviation Authorities.

**Category:** Not Responsible - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
SE-GEE	DE HAVILLAND - DHC6	Gryttjom airfield, Uppsala county, Sweden	03/06/2009	Accident

**Synopsis of the event:** The pilot intended to take off with 21 parachutists on board the aircraft. He did not notice anything abnormal, neither during the preparations for take-off nor during the initial taxiing. After taxiing for a few minutes at low speed, suddenly the right main landing gear broke, whereupon the aircraft tipped over to the right and the right wing struck the ground. The aircraft then slowed down, turned somewhat to the right, and stopped. No person onboard was injured.

**Safety Recommendation SWED-2010-009:** It is recommended that EASA and the Swedish Transport Agency, in conjunction with the manufacturer, consider the need for supplementing the present maintenance system in respect of crack formation in the landing gear.

**Reply:** Transport Canada as the primary certification authority of the aircraft type concurs with the recommendation. Transport Canada is presently working with the airworthiness certificate holder, Viking Air Limited, to enhance the requirements for the DHC-6 series aircraft main landing gear leg inspection. It is expected that the revision to the maintenance system will be completed in the near future.

**Category:** Agreement - **Status:** Closed

**Safety Recommendation SWED-2010-009:** It is recommended that EASA and the Swedish Transport Agency, in conjunction with the manufacturer, consider the need for supplementing the present maintenance system in respect of crack formation in the landing gear.

**Reply:** Viking Air has proposed a new inspection schedule for the undercarriage Viking Process Specification (VPS) 44.03 and this has been accepted by Transport Canada. In addition, the Instructions for Continued Airworthiness (ICA) Temporary Revisions (TR) for the inspection schedule and maintenance manual have also been accepted.

**Category:** Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
SE-DZB	EMBRAER - EMB145	Malmö/Sturup airport, Skåne county, Sweden	09/11/2008	Incident

**Synopsis of the event:** This aviation event involved two separate incidents, where the first was a loss of cabin pressure and the other reduced aircraft separation. The aircraft, an Embraer 145, had taken off from Gothenburg/Landvetter Airport for a scheduled flight to Prague. When the cruise altitude at FL 370 (approx. 11,300 metres) had been reached, the warning system indicated a fault in one of the systems that supplied air to, among other things, the pressure cabin. The pilots had started to take measures in accordance with the emergency checklist when the other system generated a warning and shut down. The pilots observed that the cabin pressure reduced rapidly, and they donned their oxygen masks and reported to air traffic control that they were starting an "Immediate descent". The pilots did not activate the transponder emergency code. The aircraft was cleared to FL150 due to other traffic. When the aircraft was handed over to the next air traffic controller who handled the lower airspace, information was received that the aircraft had requested a descent to FL150, which was not the case. When the aircraft reported descent to FL100, on the

new frequency there was not enough time for the air traffic controller to plan a traffic redirection that would comply with the separation rules. The first incident was caused by deficiencies in the air conditioning system in respect of automatic shutdown. The second incident was caused by a lack of co-ordination between the air traffic controllers. A contributory factor was the poor quality of radio communications between the aircraft and air traffic control.

**Safety Recommendation SWED-2010-017:** It is recommended that EASA investigates the conditions for that transponders in the future will be equipped with a quick selection feature for the emergency code 7700.

**Reply:** The Agency reviewed safety databases (the European Central Repository (ECR) and the International Civil Aviation Organisation (ICAO) Accident Incident Data Reporting System (ADREP) Database) in order to identify the frequency of events involving the pilots' failure or inability to select code 7700 in an emergency situation. There was no occurrence found. In addition to the absence of a safety argument based on statistics, the Agency considered that a quick selection feature could even have a negative safety effect by causing spurious alerts during normal flights. This Safety Recommendation was also considered by the European Organization for Civil Aviation Equipment (EUROCAE) working group (WG) 49 when preparing the revision of the EUROCAE Document (ED) 73C [Minimum Operational Performance Specifications (MOPS) for Secondary Surveillance Radar Mode S Transponders]. The group reached the same conclusion as described above. Therefore the Agency concludes that there is no justification to equip transponders with a quick selection feature for code 7700.

**Category:** Partial Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
SE-JME	EUROCOPTER - EC120	Flatruet, Jämtlands county, Sweden	28/10/2009	Accident

**Synopsis of the event:** The pilot took off from the company's base in Östersund for a commercial air transport with several planned stops in the mountain districts west and southwest of the starting location. After a first stop on Helags mountain station, the pilot flew south towards Funäsdalen. After passing Flatruet's highest point after approximately 1 km into the flight the pilot heard a loud bang and very strong low-frequency vibrations were felt in the helicopter. It was not possible to read the instruments and parts of the interior fittings had become detached. The altitude was 500-700 feet above the ground and the pilot realized that the vibrations were linked to the main rotor speed. He decided to conduct an autorotation and turned 180° right towards a snow-covered moor and adjusted altitude to 20 foot and hovering. Touchdown was calm and soft on the intended landing area. The time from the loud bang to the landing on the moor was less than 30 seconds. After examination of the helicopter, a large open crack in the main rotor hub was discovered along with several cracks in the tail section and the tail boom. The ELT2 was not activated during the landing. The accident was caused by the fact that the maintenance system for the helicopter model did not detect this type of defect because the time from initiation of the crack to final fracture is shorter than the inspection interval.

**Safety Recommendation SWED-2011-002:** It is recommended that EASA works towards a more sensitive method aimed at detecting any defects in the main rotor hub at an earlier stage than those described in EASA AD No. 2010-0026-E proposed measures.

**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.

**Category:**Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
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SE-IDT	PIPER - PA32R	Älvsbyn/Högheden Airfield, BD County, Sweden	01/10/2010	Accident
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**Synopsis of the event:** The flight was a private flight from Bromma Airport to Älvsbyn/Högheden Airfield. After a two and a half hour flight the pilot decided to hold over Älvsbyn Air-field for 30 minutes because of ground fog. When the ground fog dissipated, landing procedures began in the form of a right-hand circuit to runway 04. According to the pilot, the approach was carried out with full flaps and a final speed 70-75 knots, followed by a steep descent after passing a curtain of trees located just before the beginning of the runway. The landing took place well into the runway. According to witnesses, touch-down occurred about 450 metres past the beginning of the runway. The pilot commenced to go-around at a late stage. After the go-around the aircraft became airborne immediately before the end of the runway, flew into a young mixed forest 10 meters after the end of the runway and ended up on a railway track 90 metres away.

**Safety Recommendation SWED-2011-004:** It is recommended that EASA ensure that safe methods to identify and abort an unsafe visual approach, at an earlier stage (i.e. 300 feet) than that provided in appendix 9, part 4 of the proposed PART-FCL, be included in future training plans for flight training.

**Reply:** Commission Regulation (EU) No 1178/2011 of 03 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council, includes, in Appendix 9 details of the training, skill tests and proficiency checks for Multi-crew Pilot licence (MPL), Airline Transport Pilot Licence (ATPL), type and class ratings and proficiency checks for Instrument Ratings. The flight test tolerances provided with every proficiency check in Appendix 9 do not exclude test scenarios as described in the Safety Recommendation. The practical exercise in Section 4 (e.g. exercise/test item 4.6 for single-pilot aeroplanes) requires a go-around at minimum height as a mandatory check item. It is up to the discretion of the examiner to decide at which altitude this exercise will be flown. As a general principle for all approaches the candidate has to demonstrate good judgement and airmanship. This means also that the abort of an approach might be initiated at an earlier stage. During the initial flight training the training syllabus already includes different exercises focussing on the landing techniques and possible problems during visual approaches. Some examples are provided:

Acceptable Means of Compliance (AMC) 1 to Appendix 3 of Commission Regulation (EU) No 1178/2011, provides in chapter A. ATP integrated course "Aeroplanes in 4.1 Phase 1 and in 4.2 Phase 2, several exercises to provide pilots with the necessary knowledge. AMC1-FCL.210.A Flight instruction for the private pilot licence aeroplanes provides in Exercise 8 "Descending", in Exercise 9 "Turning", Exercise 13 "Circuit Approach and Landing" (with a specific sub-category missed approach/go-around/mislanding) and in Exercise 12/13E "Emergencies" (with a sub-category for mislanding/go-around/mislanded approach) several exercises to provide pilots with the necessary knowledge and skill. In addition to this AMC1-FCL.235 contains the content of the skill test for the Private Pilot Licence PPL(A). A test item called "go-around from low height" is included as exercise 4.6. Taking all the given examples into account, this Safety Recommendation has been addressed during the drafting of Commission Regulation (EU) No 1178/2011 and associated AMC material, which will be published in an upcoming Executive Director (ED) Decision.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
SE-JBU	HUGHES - 369	north - north-west of Klutsjön, Dalarna county, Sweden	01/07/2009	Accident

**Synopsis of the event:** This particular flight concerned reindeer herding by helicopter. After about an hour and a half of flight without any problems, a loud bang was heard, the helicopter shook and the engine stopped dead. At that moment the helicopter was almost hovering, at low

speed, about 10-12 metres above the ground. The pilot maintained the collective pitch control position and concentrated on holding the helicopter stable horizontally by using the cyclic pitch control and the pedals. The helicopter immediately began to lose height. Just before it touched the ground, the pilot tried to reduce the sink rate by moving the collective pitch control to its highest position. He found that this action had no noticeable effect; instead the helicopter struck the ground hard on a mire with low horizontal speed but at a high sink rate. The right side landing skid sank deeper into the bog than the left side skid and was partially broken. This caused the helicopter to tip over to the right, whereupon the main rotor blades struck the ground. After the impact, the helicopter stood partly on its skids, leaning to the right. Those on board could leave the helicopter without assistance.

**Safety Recommendation SWED-2011-006:** It is recommended that the EASA and the Swedish Transport Agency prescribe measures that would lead to phasing out of Splined Adapters of the earlier design sooner than March 2012. (RL 2011:03 R1)

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation SWED-2011-007:** It is recommended that the EASA and the Swedish Transport Agency ensure that the engine manufacturer investigates the risk that fretting damage and fatigue fractures on Splined Adapters could be caused by non-linearity in the engine drive shaft line as a result of loose studs in the stud and nut coupling between the compressor and the gearbox, and if this is so, to initiate the necessary maintenance measures in order to eliminate such a risk. (RL 2011:03 R2)

**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.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
LN-KKD	BOEING - 737	Arlanda airport, Stockholm County, Sweden	20/12/2009	Incident

**Synopsis of the event:** The flight was a regular flight with passengers from Stockholm/Arlanda airport to Nice in France. 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-2011-010:** The European Aviation Safety Agency is recommended to consider the need for improved initial and recurrent training of crews in emergency situations on the ground, especially before the aircraft is ready for flight, and consequences of failures of electrical systems that affect the aircraft's internal communication systems.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation SWED-2011-011:** 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.

**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.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
SE-RAC	EMBRAER - EMB145	Umeå Airport, AC County, Sweden	19/09/2010	Serious incident

**Synopsis of the event:** During a regular flight from Gothenburg to Umeå, the co-pilot began to suffer from stomach pains during the flight. The co-pilot's condition worsened during the final approach when the co-pilot vomited and, for a short period of time, lost consciousness. The situation meant that the commander during the final approach and landing had to carry out the co-pilot's work assignments as the co-pilot was incapacitated. After landing, the commander contacted the company's operative management and was advised to discuss the continued flight duty with the co-pilot. They agreed to carry out the return flight to Gothenburg as the co-pilot felt better. During the flight, the co-pilot's stomach pains returned and the co-pilot vomited on two occasions. When the aircraft had landed, the co-pilot went to the hospital. At Sahlgrenska University Hospital, the co-pilot was later diagnosed as having acute appendicitis. According to medical and operative instructions, flight duties should not commence if you are aware of a deteriorating health condition which can affect the exercise of duty. However, there are no instructions or recommendations – either in the company's manuals or in the regulatory framework – with regard to the termination of active flight duty following an incident when a member of the cockpit crew has become incapacitated. The incident that occurred, whereby the co-pilot flew the aircraft as an active pilot after having been incapacitated, was due to the fact that the condition of the pilot's health had been incorrectly evaluated. Contributing factors are shortcomings in the regulatory framework in EU-OPS with regard to continued flight duty following incapacitation.

**Safety Recommendation SWED-2011-013:** Ascertain that the instructions relating to the incapacitation of the cockpit crew are supplemented with restrictions for continued flight duty following the occurrence of an incident.

**Reply:** OPS 1.085 of Annex III of REGULATION (EC) No 1899/2006 on the harmonisation of technical requirements and administrative procedures in the field of civil aviation (EU-OPS) states:

- (a) A crew member shall not perform duties on an aeroplane:
- (a) if applicable medical requirements are not fulfilled, or if he/she is in any doubt of being able to accomplish his/her assigned duties;
- (b) if he/she knows or suspects that he/she is suffering from fatigue, or feels unfit to the extent that the flight may be endangered.

ANNEX IV of REGULATION (EC) No 216/2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, states:

7.g. A crew member must not perform allocated duties on board an aircraft when under the influence of psychoactive substances or alcohol or when unfit due to injury, fatigue, medication, sickness or other similar causes.

8.b. The operation for commercial purposes and the operation of complex motor-powered aircraft must only be undertaken in accordance with an operator's operations manual. Such manual must contain all necessary instructions, information and procedures for all aircraft operated and for operations personnel to perform their duties. Limitations applicable to flight time, flight duty periods and rest periods for crew members must be specified. The operations manual and its revisions must be compliant with the approved flight manual and be amended as necessary.

These requirements have been transposed in Opinion 04/2011:

Annex IV Part-CAT, CAT.GEN.MPA.100 Crew responsibilities: (c) The crew member shall not perform duties on an aircraft: (5) if he/she knows or suspects that he/she is suffering from fatigue as referred to in 7.f. of Annex IV to Regulation (EC) No 216/2008 or feels otherwise unfit, to the extent that the flight may be endangered.

Annex III Part-ORO, ORO.GEN.110 Operator responsibilities: (f) The operator shall establish procedures and instructions for the safe operation of each aircraft type, containing ground staff and crew member duties and responsibilities for all types of operation on the ground and in flight.

The upcoming ED Decision to EASA Opinion 04/2011 will include in AMC3-OR.OPS.MLR.100 Operations Manual – General CONTENTS – COMMERCIAL AIR TRANSPORT OPERATIONS Part A, Chapter 1 Organisation and Responsibilities, Subchapter 8 Operating Procedures:

8.3.14 Incapacitation of crew members. Procedures to be followed in the event of incapacitation of crew members in-flight. Examples of the types of incapacitation and the means for recognising them should be included.

Further to these rules, the requirements on medical fitness for pilots state in JAR-FCL 3.040 (a): Holders of medical certificates shall not exercise the privileges of their licences, related ratings or authorisations at any time when they are aware of any decrease in their medical fitness which might render them unable to safely exercise those privileges. This requirement has been transposed into Part-MED (Annex IV to the future Regulation Aircrew) that awaits final adoption in the Commitology procedure (Refer Opinion 04/2010).

Part-MED will also contain MED.A.020 (b):

In addition, licence holders shall, without undue delay, seek aero-medical advice when they: (4) have been suffering from any significant illness involving incapacity to function as a member of the flight crew. All rules mentioned above require crew members not to exercise the privileges of their licences when medically unfit to fly and advise Operators to provide instructions for crew members on how to proceed in cases of medical incapacitation in-flight. Furthermore, rulemaking task RMT.0292 (former OPS.005 b) 'Updating EASA OPS implementing rules' is on the Agency's Rulemaking Programme inventory and it will consider developing GM to ORO.GEN.110(f) on how operators should instruct crew members on how to proceed after the occurrence of temporary in-flight incapacitation of crew members.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
SE-JKF	AEROSPATIALE - AS350	south-west of Stockholm/Arlanda airport, Uppsala county, Sweden	09/01/2009	Accident

**Synopsis of the event:** The pilot intended to land the helicopter on Stockholm/Arlanda airport in order to pick up passengers for a taxi flight. Shortly after the speed reduction before landing the chip warning system for the helicopter tail rotor gearbox was activated. The pilot noted that the helicopter tended to turn to the left. When the helicopter reached the airport he could not maintain the heading. The helicopter turned left though applying full deflection to the right pedal. By increasing the speed through reducing the altitude and at the same time reducing the engine power the pilot managed to stop the turn but experienced big difficulties to control the helicopter's route. When the helicopter some minute later was located above a small wooded area and the pilot couldn't see a suitable place for an emergency landing he decided to try to land the helicopter on a small glade in the terrain. During this manoeuvre the helicopter entered an uncontrolled yaw. After

collision with some small trees the helicopter impacted to the ground hard. On impact the helicopter turned over. The pilot was able to get out of the helicopter by himself.

**Safety Recommendation SWED-2011-014:** It is recommended that EASA strives for a review of the emergency checklists for the affected types of helicopter so that landing is recommended as soon as practically possible when the chip warning system for the tail rotor gearbox is activated.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation SWED-2011-015:** It is recommended that EASA considers suitable measures to minimise the risk of misinterpretation of the oil level in the tail rotor gearbox on this particular type of helicopter, and on other helicopters with similar visual measuring systems.

**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.

**Category:** Unknown - **Status:** Open

## TAIWAN

Registration	Aircraft Type	Location	Date of event	Event Type
B-HLH	AIRBUS - A330	Taipei International Airport, Taiwan	14/09/2008	Serious incident

**Synopsis of the event:** On September 14, 2008 at 1614 Taipei local time, an Airbus A330-300 aircraft with registration number B-HLH, flew from Narita International Airport, Japan to Taipei/Taiwan Taoyuan International Airport (Taipei international Airport, TPE), Taiwan, Republic of China. The flight departed with 72 occupants on board including 59 passengers, 11 cabin crew members and 2 flight crew members. The aircraft encountered interruptions of the bleed air system supply at 38,544 ft during descent from flight level FL400. Flight crew members conducted an emergency descent and landed safely at Taipei international airport at approximately 1929. The aircraft was not damaged and none of the 72 occupants were injured.

**Safety Recommendation TAIW-2011-006:** The DGAC France to require manufacturer to modify or redesign the ThC grid filter to reduce the risk of A330 dual bleed system failure. The manufacturer should evaluate the maintenance program for ThC shop-in service or overhaul interval before the new design or modification come to effect.

**Reply:** The recommended modification and evaluation have been already performed at the time of the issuance of the Aviation Safety Council report. The details of the undertaken actions are described in Chapter 4.2 of the report.

**Category:** Agreement - **Status:** Closed

**Safety Recommendation TAIW-2011-007:** The DGAC France to require manufacturer to review air dual bleed fault and emergency descent procedures and revise related inconsistent procedures accordingly. (ASC-ASR-10-08-010)

**Reply:** The procedure is being reviewed and changes are to be introduced in the November 2011 revision of the Flight Crew Operating Manual.

**Category:** Agreement - **Status:** Closed

**Safety Recommendation TAIW-2011-008:** The DGAC France to require manufacturer considering to take the in-service fleet events and family fleet problem solving experiences into Product Safety Process account and form the problem solving task force in an earlier time as proactive risk mitigation measure.

**Reply:** EASA in the scope of the Continued Airworthiness gets regular feedback from the manufacturers of the status of reported deficiencies in accordance with requirements laid down in Part 21 (paragraph 21A.3 and the associated guidance material). In the context of this continuing airworthiness oversight, it is usual practice to take into account in-service fleet events and solutions brought to other aircraft family for events similar to those investigated. Regarding the specific need to monitor trends of in-service events, Airbus has a process in place described in their Procedure 'AP 2020' addressing continued airworthiness, to perform trend monitoring of events having a criticality classified below 'hazardous' (typically, 'major'). This process is based on a "tracking file" tool and will be further reinforced through an update of AP 2020 planned for the end of the year 2011.

**Category:** Partial Agreement - **Status:** Closed

## UNITED KINGDOM

Registration	Aircraft Type	Location	Date of event	Event Type
G-UKFI	FOKKER - F28	Manchester Airport, United Kingdom	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-2002-042:** The CAA and JAA should review the design, contrast and conspicuity of wing surface markings associated with overwing emergency exits on all relevant Public Transport aircraft, with the aim of ensuring that the route to be taken from the wing to the ground is marked unambiguously.

**Reply:** In the current Certification Specifications CS-25, paragraph CS 25.810 (c) requires that an escape route is established for each over-wing emergency exit; the escape route must meet given minimum criterion of width, reflectance and surface-to-marking ratio. The Agency accepts to review ways of improvement of these specifications and a dedicated Rulemaking Task (25.075) has been provisioned in the Rulemaking Programme Inventory.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2002-043:** 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:** CAT.OP.MPA.170 Passenger briefing in the EASA Opinion 04/2011 on air operations, published 01 June 2011, requires the safety briefing card to contain picture-type instructions to indicate the exits likely to be used by passengers. This rule reflects EU-OPS 1.285 (a)(2) which has been in force since 2008. EU-OPS will be repealed and replaced by the European Regulation for Air Operations. Rulemaking task RMT.0293 [former OPS.005 (b)] 'Updating EASA OPS implementing rules' is on the Agency's Rulemaking Programme. During this task the acceptable means of compliance (AMC) on passenger briefings will be reviewed to ensure that, for aircraft with overwing exits, the safety card requires to clearly depict the emergency escape route(s) from the cabin, via the wing, to the ground.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2002-044:** The CAA and JAA should review the requirements for flight and cabin crew training in respect of the operation of all available exits, to ensure that crew members are familiar with the operating procedures, and opening characteristics, in both the normal and emergency modes of operation.

**Reply:** Appendix 1 to OPS 1.1010(c) (EU-OPS) provides that: "An operator shall ensure that:  
1. each cabin crew member operates and actually opens each type or variant of normal and emergency exits in the normal and emergency modes, including failure of power assist systems where fitted. This is to include the action and forces required to operate and deploy evacuation slides. This training shall be conducted in an aeroplane or representative training device; and  
2. the operation of all other exits, such as flight deck windows is demonstrated".

Additionally, Appendix 1 to OPS 1.1015 provides that:

"(b) An operator shall ensure that every 12 calendar months the programme of practical training includes the following: [...]"

3. touch-drills by each cabin crew member for opening normal and emergency exits for passenger evacuation; [...]

(c) An operator shall ensure that, at intervals not exceeding three years, recurrent training also includes:

1. each cabin crew member operating and actually opening each type or variant of normal and emergency exit in the normal and emergency modes, including failure of power assist systems where fitted. This is to include the action and forces required to operate and deploy evacuation slides. This training shall be conducted in an aeroplane or representative training device;
2. demonstration of the operation of all other exits including flight deck windows; [...]"

Those requirements were transferred in the draft Part CC for the aircraft type-specific training (CC.TRA.125 and related AMC) and in the draft Part OR (OR.OPS.CC.135 and related AMC) for recurrent training, as published in NPA 2009-02. For flight crew, Appendix 1 to OPS 1.965 (a)(3)(ii) provides that: "Every year the emergency and safety equipment training programme must include instruction on the location and use of all types of exits". Additionally, Appendix 1 to OPS 1.965 (a)(3)(iii) provides that: "Every three years the programme of training must include [...] actual operation of all types of exits". Similarly, those requirements were transferred in the draft AMC1-OR.OPS.FC.230, paragraph 1.b. Considering the above the Agency deems that there is no need to review the requirements. It is then within the competences of the Member States to check compliance with these rules.

**Category:** Disagreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
EC-FXI	DOUGLAS - DC9	Liverpool Airport, United Kingdom	10/05/2001	Accident

**Synopsis of the event:** The aircraft carried out an automatic landing at Liverpool at 1232 hrs with the first officer (FO) being the pilot flying. The right main landing gear collapsed on touchdown and the commander took over control shortly afterwards. The aircraft continued travelling along the runway, maintaining approximately the centreline, and came to rest with the right wing in contact with the ground. A successful passenger evacuation was carried out using the forward escape slides and the left overwing emergency exit.

**Safety Recommendation UNKG-2003-044:** It is recommended that the Joint Aviation Authorities amend the relevant sections of JAR-OPS 1 with a view to requiring that all aircraft fitted with a Cockpit Voice Recorder record, without interruption, the audio signals received from each boom and mask microphone in use.

**Reply:** Since July 2008, EU-OPS has superseded JAR-OPS 1. EU-OPS 1.700, 1.705 and 1.710 contains more specific requirements regarding CVR recording. Related provisions have been transposed in to the proposed OPS rules as per the Agency Opinion 04-2011. Thus, Annex IV paragraph CAT.IDE.A.185 (c) states:

- "(c) The CVR shall record with reference to a timescale:[...]
- (3) the aural environment of the flight crew compartment, including without interruption:
- (i) for aeroplanes first issued with an individual CofA on or after 1 April 1998, the audio signals received from each boom and mask microphone in use;
  - (ii) for aeroplanes referred to in (a)(2) and first issued with an individual CofA before 1 April 1998, the audio signals received from each boom and mask microphone, where practicable; [...]"

The Agency believes that this requirement covers the intent of the recommendation.

**Category:** Agreement - **Status:** Closed

**Safety Recommendation UNKG-2003-048:** It is recommended that the CAA, JAA and the FAA should provide guidance as to the recommended best practice for the evacuation of infants and small children down escape slides with minimum delay.

**Reply:** The Agency will publish a Safety Information Bulletin to raise awareness of crew members, operators, national aviation authorities on the recommended practices for the 'evacuation of infants and small children down escape slides with minimum delay'.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
G-BXKD	AIRBUS - A320	London Gatwick Airport, West Sussex, United Kingdom	15/01/2005	Incident

**Synopsis of the event:** The left nose wheel detached from the aircraft during the takeoff from London (Gatwick) Airport. Airport staff saw the wheel fall off and the flight crew were notified by Air Traffic Control (ATC). After holding for two hours, to burn off fuel and reduce the landing weight, the aircraft landed safely at Gatwick. The nose wheel detached as the result of the partial seizure of the outer wheel bearing, most probably caused by water contamination of the grease in the bearing. Four safety recommendations have been made.

**Safety Recommendation UNKG-2005-072:** The European Aviation Safety Agency should ensure that Airbus undertakes a further investigation into the failure of the nose wheel bearings on the A319/320/321 series of aircraft.

**Reply:** EASA in the scope of the Continued Airworthiness gets regular feedback from the manufacturers on the status of reported deficiencies. In the light of the preceding and of the recommendations sent by Civil Aviation Safety Investigation Authorities, the EASA ensures that corrective actions are introduced. The specific case of reported failures of the nose wheel bearings on the A319/A320/A321 series of aircraft has been investigated by Airbus and outcomes have been shared with the Agency (Airbus note ref. D06029358).

**Category:** Agreement - **Status:** Closed

**Safety Recommendation UNKG-2005-073:** The European Aviation Safety Agency should ensure that the preventive measures identified by Airbus are introduced into the A319/320/321 series of aircraft to a timescale commensurate with the risk.

**Reply:** EASA in the scope of the Continued Airworthiness gets regular feedback from the manufacturers on the status of reported deficiencies. In the light of the preceding and of the recommendations sent by Civil Aviation Safety Investigation Authorities, the EASA ensures that all corrective actions are introduced to a timescale commensurate with the risk. The specific case of reported failures of the nose wheel bearings on the A319/A320/A321 series of aircraft has led to preventive measures. Airbus has asked the nose landing gear (NLG) wheel supplier to review the NLG bearings installation and to define improvements to prevent grease starvation or contamination. This has resulted in the definition of an improved bearing seal featuring a "double lip" seal and a new retaining ring for both bearings. All wheels manufactured after September 2005 have this new seal. This new seal assembly is proposed for in-service aircraft through Goodrich Service Bulletin (SB) 3-1531-32-4 and can only be fitted on Goodrich wheels part number (PN) 3-1531. Airbus SB 32-1118 that has been issued on 30 March 1994 introduces wheels PN 3-1531. Goodrich wheels PN 3-1470 are no more produced; the current wheels in production since main serial number (MSN) 378 have PN 3-1531. According to operator reports, among the 377 aircraft delivered with wheel PN 3-1470, 54 aircraft have embodied SB 32-1118 and additional 89 embodiments are planned. Through the continued airworthiness process the EASA will ensure the consideration of the introduction of this new wheel and seal on attrition basis.

**Category:** Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
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G-BXLI	BELL - 206	Priors Park Wood, 5 nm south of Taunton, Somerset, United Kingdom	22/01/2005	Accident
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**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:** 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:** Rulemaking tasks RMT.0271 and RMT.0272 [former MDM.073 (a) and (b)] 'Recorders for small aircraft' are identified in the Agency's Rulemaking Programme inventory and they address the intent of the Safety Recommendation.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
D-CPRW	DORNIER - 328	Isle of Man, United Kingdom	28/11/2005	Incident

**Synopsis of the event:** The aircraft had a covering of frost and was de-iced/anti-iced using a heated mixture of Type II+ de-icing fluid and water. The commander commenced the takeoff run and at the calculated rotation speed pulled the control column aft. The aircraft did not appear to rotate in response to the control input and he abandoned the takeoff. The aircraft was brought to a stop on the runway. The probable cause of the incident was the incorrect V1/VR speed selected. Contamination must have been present on the tail surfaces because the aircraft would not rotate at the 'normal' rotation speed for its configuration and load but it was not possible to determine whether the contaminant was ice or thickened fluid. The problem may have occurred because fluid was sprayed from the trailing edge towards the leading edge. Two safety recommendations were made.

**Safety Recommendation UNKG-2006-072:** The Joint Aviation Authorities should contact all Dornier 328 Type Rating Training Organizations within JAA Member States and emphasise the need to train pilots to use icing speeds following de-icing/anti-icing with thickened fluids, even when in non-icing conditions.

**Reply:** EASA issued on 23 February 2011, the Safety Information Bulletin (SIB) 2010-26R1 "Potential Performance Degradation of Anti-icing Fluids - Reduced Holdover Times". This SIB is meant to address the intent of the Safety Recommendation.

**Category:** Partial Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
G-BOMG	BRITTEN NORMAN - BN2B	7.7 NM NW of Campbeltown Airport, United Kingdom	15/03/2005	Accident

**Synopsis of the event:** The Glasgow based Islander aircraft was engaged on an air ambulance task for the Scottish Ambulance Service when the accident occurred. The pilot allocated to the flight had not flown for 32 days; he was therefore required to complete a short flight at Glasgow to regain currency before landing to collect a paramedic for the flight to Campbeltown Airport on the Kintyre Peninsula. Poor weather at Campbeltown Airport necessitated an instrument approach. There was neither radar nor Air Traffic Control Service at the airport, so the pilot was receiving a Flight Information Service from a Flight Information Service Officer in accordance with authorised procedures. After arriving overhead Campbeltown Airport, the aircraft flew outbound on the approach procedure for Runway 11 and began a descent. The pilot next transmitted that he had completed the 'base turn', indicating that he was inbound to the airport and commencing an approach. Nothing more was seen or heard of the aircraft and further attempts at radio contact were unsuccessful. The emergency services were alerted and an extensive search operation was mounted in an area based on the pilot's last transmission. The aircraft wreckage was subsequently located on the sea bed 7.7 nm west-north-west of the airport; there were no survivors.

**Safety Recommendation UNKG-2006-101:** The European Aviation Safety Agency and Joint Aviation Authorities should review the UK Civil Aviation Authority's proposal to mandate the fitment of Upper Torso restraints on all seats of existing Transport Category (passengers) aeroplanes below 5700 kg being operated for public transport, and consider creating regulation to implement the intent of the proposal.

**Reply:** The EASA Opinion 04/2011 on air operations, published 01 June 2011, requires aeroplanes with a maximum certificated take-off mass of less than 5 700 kg and with a maximum passenger seating configuration of less than 9, operated for Commercial Air Transport (CAT), to be fitted with a seat belt with upper torso restraint system for each passenger seat. If the maximum passenger seating configuration is 9 or more, a seat belt but no upper torso restraint system is required [refer to paragraph CAT.IDE.A.205(a)(3) and (4)].

**Category:** Partial Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
TF-CSB	DORNIER - 328	Sumburgh Airport, Shetland, United Kingdom	11/06/2006	Incident

**Synopsis of the event:** During a visual approach to Sumburgh Airport, the aircraft encountered worsening weather conditions and inadvertently flew into close proximity with the terrain. The crew were alerted to the situation by on-board equipment, but the commander did not respond to the 'PULL UP' warnings it generated. The approach was continued and a safe landing made at the airport. The investigation identified a number of organisational, training and human factors issues which contributed to the crew's incorrect response to the situation.

**Safety Recommendation UNKG-2006-130:** The Joint Aviation Authorities should review the training requirements for flights crews operating aircraft required to be equipped with a predictive terrain hazard warning function, with a view to ensuring that such crews are adequately trained in its use, interpretation and response.

**Reply:** Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council, covers Ground Proximity

Warning System training. The upcoming Executive Director (ED) Decision related to EASA Opinion 04/2011 on air operations will contain Guidance Material (GM) for Terrain Awareness Warning System (TAWS) [ie Enhanced Ground Proximity Warning System (EGPWS)] Flight Crew training programmes. Rulemaking task RMT.0188 and RMT.0189 [former FCL.002 (a) and (b)] 'Updating EASA Implementing Rules', will transpose the Joint Aviation Authorities (JAA) learning objectives, which explicitly include training on EGPWS, into the European regulations structure.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
JY-JAR	AIRBUS - A320	Leeds Bradford Airport, United Kingdom	18/05/2005	Accident

**Synopsis of the event:** While landing on RWY 14 at Leeds Bradford Airport the aircraft touched down just beyond the end of the marked touchdown zone with autobrake set to low. Manual wheel braking commenced shortly after touchdown but soon afterwards, at a groundspeed of around 70kt, the brakes ceased operating for about 17 seconds. A pronounced dip in the runway surface initially prevented the pilots from seeing the runway end. When it became apparent to the commander that it would not be possible to stop before the end of the runway, he deliberately did not select alternate braking, as this would have caused loss of nosewheel steering, but instead used nosewheel steering to turn the aircraft sharply to the right. The aircraft skidded sideways and came to a halt with its nosewheels off the runway, shortly before the end of the paved surface and the start of a steep down slope.

**Safety Recommendation UNKG-2007-015:** The European Aviation Safety Agency should require the expeditious replacement of the long hollow titanium tachometer driveshaft in the braking systems of the A320 family of aircraft with a driveshaft of improved design.

**Reply:** EASA in the scope of the Continued Airworthiness gets regular feedback from the manufacturers of the status of reported deficiencies. In the light of the preceding and of the recommendations sent by Civil Aviation Safety Investigation Authorities, the EASA ensures that corrective actions are introduced. The specific case of reported loss of braking on Airbus A320 series of aircraft has been investigated by Airbus and conclusions for the whole fleet have been shared with the Agency (ref. Airworthiness Review Sheet 32.0071). A modification has been developed to replace the "hollow titanium" shaft by a "plain steel tapering" drive shaft in production. These will be replaced at a time of maintenance when wear and tear is detected to be present.

**Category:** Partial Agreement - **Status:** Closed

**Safety Recommendation UNKG-2007-016:** The European Aviation Safety Agency should require the replacement of software Standards 7 or 9 with Standard 9.1 or a proven later version, in those remaining A319 and A320 brake and steering control units not yet so modified.

**Reply:** EASA issued Airworthiness Directive (AD) 2008-0048 "Landing Gear – Braking and Steering Control Unit (BSCU) – Modification / Replacement" on 28 February 2008 mandating the modification or replacement of the BSCU standard 7, 9 and 9.1 by BSCU standard 10 on A319, A320 and A321 aircraft.

**Category:** Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
G-MEDG	AIRBUS - A321	Khartoum Airport, Sudan	11/03/2005	Accident

**Synopsis of the event:** The aircraft was attempting to land at Khartoum by night in conditions initially reported as blowing sand but which were in fact consistent with a forecast dust storm. Runway 36 was in use but the ILS on this runway was out of service. The pilots commenced the approach with the autopilot engaged in managed modes (i.e. the approach profile being determined by the FMGC instead of pilot selections). The aircraft began its final descent 0.6 NM later than the pilots were expecting. The handling pilot changed the autopilot mode in order to select an increased rate of descent. The aircraft passed through its Minimum Descent Altitude with neither pilot having established the required visual references for landing. Each pilot believed, mistakenly, that the other pilot was in visual contact with the runway approach lights. When the confusion between the two pilots became apparent, the Enhanced Ground Proximity Warning System (EGPWS) "TERRAIN AHEAD, PULL UP" audio warning was triggered. The handling pilot initiated a go-around the minimum recorded terrain clearance achieved during the recovery manoeuvre was 121ft.

**Safety Recommendation UNKG-2007-044:** The European Aviation Safety Agency, in conjunction with industry, should review the current TAWS system design criteria (ETSO-C151a), and installation certification criteria, with particular emphasis on the timeliness of alerting when close to the runway. Revisions to these standards arising from this review should apply retrospectively to all aircraft currently covered by the TAWS mandate.

**Reply:** 1. The agency issued a revised European Technical Standard Order (ETSO) C151b already in December 2007, ensuring harmonisation with the Federal Aviation Administration (FAA). Therein improvements in the final segment approach test scenarios were introduced. This implements the recommendation for new designs.

2. For aircraft already fitted with Terrain Awareness and Warning System (TAWS), in the Agency's opinion the cost of retrofit would be disproportionate with respect to the further reduction of risk.

3. As additional information, it could be noted that presently the Agency has underway rulemaking task RMT.0099 (formerly 20.006b) to transpose Joint Aviation Authorities General Temporary Guidance Leaflet (JAA GEN TGL) into EASA Acceptable Means of Compliance (AMC). This includes TGL12 on additional guidance for the installation of TAWS equipment highlighting the requirement to ensure that the delay between the position sensor and the TAWS system should be kept to a minimum. Issue 3 of the Terms of Reference (ToR) has been published on 06 February 2009.

**Category:** Partial Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
G-BHCP	CESSNA - F152	Meden Vale, Nottinghamshire, United Kingdom	28/01/2006	Accident

**Synopsis of the event:** After approximately 20 minutes of flight the engine rpm started to decrease, with the engine running unevenly and producing severe vibration prior to stopping. The pilot successfully landed the aircraft in a field, with no injury to the occupants. An engineering examination revealed that the No 4 cylinder had separated from the engine due to a fatigue crack that had originated from an external surface corrosion pit.

**Safety Recommendation UNKG-2007-091:** It is recommended that the European Aviation Safety Agency (EASA) amend EASA Part 145 (and Part M as necessary) to require that maintenance and overhaul records that are referred to in airframe, engine and propeller log books, and component record cards, are deemed to be part of that log book or record card and are retained until the aircraft, engine, propeller or component has been destroyed or permanently removed from service.

**Reply:** This issue will be evaluated as part of rulemaking task RMT.0276 (former MDM.076) 'Technical records' which is on the Agency's Rulemaking Programme.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
G-JMTT	PIPER - PA28R	9 NM south of Oban (North Connel) Airport, Argyll, United Kingdom	09/04/2007	Accident

**Synopsis of the event:** On April 9, 2007, a Piper PA-28R-201T airplane, registration G-JMTT, impacted a hill top near Oban, Scotland, United Kingdom. The pilot and two passengers sustained fatal injuries. The flight originated from Connel Airfield, Oban, Scotland, United Kingdom.

**Safety Recommendation UNKG-2008-004:** The European Aviation Safety Agency (EASA) should mandate compliance with vacuum pump maintenance and replacement requirements, to ensure that aircraft fitted with vacuum-driven Attitude Indicators can be safely operated in Instrument Meteorological Conditions when such aircraft are certified to do so.

**Reply:** According to EU Regulations, only Airworthiness Directives (ADs) and requirements contained in the Airworthiness Limitation Section (ALS) of the Instructions for Continuing Airworthiness (ICAs) issued by the Design Approval Holder are considered mandatory. Other ICAs and information other than ICAs (such as the Service Letter SL58A described in the Accident Investigation Report) are not considered mandatory. Nevertheless, this non mandatory information needs to be evaluated and taken into account by the aircraft operator/owner when defining the Aircraft Maintenance Programme. The Agency understands that this may pose a safety problem if this "non-mandatory" information is deemed to be critical for the continuing airworthiness of the aircraft. However, it is the opinion of the Agency that this concern is not limited only to the particular case of vacuum-driven Attitude Indicators, but also to other components and maintenance tasks. As a consequence, the opinion of the Agency is that any rule change needs to be evaluated with a wider scope in mind, and this is what is currently being done through rulemaking task RMT.0252 (former MDM.056) 'Instructions for Continuing Airworthiness'. Furthermore, in this task the evaluation is being performed together with the Federal Aviation Administration (FAA) and Transport Canada (TCCA) in order to harmonize approaches.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
G-BLUN	AEROSPATIALE - SA365	app. 450 m S-SE of the North Morecambe gas platform, Morecambe Bay, Irish Sea, United Kingdom	27/12/2006	Accident

**Synopsis of the event:** The helicopter departed Blackpool at 1800 hrs on a scheduled flight consisting of eight sectors within the Morecambe Bay gas field. The first two sectors were completed without incident but, when preparing to land on the North Morecambe platform, in the 2 dark, the helicopter flew past the platform and struck the surface of the sea. The fuselage disintegrated on impact and the majority of the structure sank.

**Safety Recommendation UNKG-2008-033:** It is recommended that the European Aviation Safety Agency ensure that research into instrument landing systems that would assist helicopter crews to monitor their approaches to oil and gas platforms in poor visual flying conditions and at night is completed without delay.

**Reply:** One research project conducted by the Galileo Supervisory Authority (GSA) entitled 'Helicopters Deploy Global Navigation Satellite System (GNSS) in Europe (HEDGE)' and supported by the Civil Aviation Authority of the United Kingdom (definition of flight procedure) addresses the issue of off-shore operations in poor visual conditions through the provision of horizontal and vertical guidance from a GNSS sensor used in combination to other sensors. The Agency is regularly informed on the project results.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2008-036:** It is recommended that the European Aviation Safety Agency (EASA) investigate methods to increase the conspicuity of immersion suits worn by the flight crew, in order to improve the location of incapacitated survivors of a helicopter ditching.

**Reply:** The Agency Executive Director (ED) Decision 2006/04/R dated 11 July 2006 provides standards for:

- helicopter crew and passenger integrated immersion suits (i.e. immersion suit incorporating the functionality of a lifejacket): European Technical Standard Order (ETSO) 2C502,
- helicopter crew and passenger immersion suits for operations to or from helidecks located in a hostile sea area: ETSO 2C503,
- helicopter constant-wear lifejackets for operations to or from helidecks located in a hostile sea area: ETSO 2C504.

Immersion suits and lifejackets must be provided with a passive light system of retro-reflective material complying with the specification of International Maritime Organisation's (IMO) International Convention for the Safety of Life at Sea (SOLAS) 83 Chapt.III, Resolution A.658(16), Annex 2 or equivalent. Minimum area shall be per International Organization for Standardisation (ISO) Standard 15027-1:2002 paragraph 4.12. In addition, integrated immersion suits and lifejackets (worn in combination with an immersion suit) shall be fitted with a flashing survivor locator light that meets the standard defined by ETSO C85a. It is agreed by the Agency that conspicuity of immersion suits and lifejackets can be improved through passive systems. Infra-red reflecting materials could provide the expected benefits and the Agency has been informed that some search and rescue (SAR) and military helicopters are equipped with infra-red search lights. The Agency contacted IMO and ISO to know whether initiatives are planned to include infra-red reflectivity in future editions of the Annex 2 to the IMO Resolution or of ISO 15027-1. IMO replied that no action is planned and that this could be initiated in the future by a request from an IMO Member State (request to the IMO Maritime Safety Committee). Considering that the IMO Resolution is commonly used for maritime and aviation applications, the Agency will wait for a revision of the IMO Resolution before revising the relevant ETSOs. We suggest that the AAIB UK, in cooperation with the responsible body in the UK, submit a proposal to the next session of the IMO Maritime Safety Committee. If and once the IMO decides to revise its Resolution, the Agency will take action to update its ETSOs.

**Category:** Partial Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
G-AVRP	PIPER - PA28	0,5 NM south-west of Isle of Wight/Sandown Airport, United Kingdom	05/08/2007	Accident

**Synopsis of the event:** The aircraft departed from Runway 23, with four people on board, on a flight to Pontivy, France. Its takeoff ground roll was noticeably long and, having lifted off, G-AVRP climbed to about 50 ft agl and maintained that height as it flew over rising ground beyond the end of the runway. As it approached trees at the top of the rising ground, the aircraft was seen to pitch up and clear the trees before its nose dropped and it descended out of sight. The aircraft struck another line of trees and crashed into a field. The aircraft rapidly caught fire. It was established that the aircraft's predicted performance, at its estimated takeoff weight and in the prevailing conditions, should have enabled a successful departure. Its failure to do so may have been the

result of reduced engine power, a tailwind component, a greater takeoff weight than estimated, an incorrect piloting technique during takeoff or a combination of some or all of these factors.

**Safety Recommendation UNKG-2008-051:** It is recommended that the European Aviation Safety Agency amend that part of the Regulations dealing with Continuing Airworthiness so that aircraft under their jurisdiction will require a periodic performance assessment.

**Reply:** A request to European Safety Investigation Authorities was made on 26 October 2009, asking for any available data related to accidents/incidents involving aircraft with Maximum Take-off Weight (MTOW) less or equal to 2250 kg, during which a reduction in the expected/predicted aircraft performance resulted in being identified as a contributing factor to an event. This survey was focused on performance lessening due to ageing. The result was that none of the Safety Investigation Authorities identified ageing performance degradation leading to similar accidents/incidents. However, as a recognition to the issue deserving further attention Rulemaking Task 21.055 was included in the Agency's Rulemaking Programme under which the issue is planned to be revisited and relevant risks analysed in view of the more recent development.

**Category:** Disagreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
G-XLAC	BOEING - 737	Runway 27, Bristol International Airport, United Kingdom	29/12/2006	Serious incident

**Synopsis of the event:** Resurfacing and re-profiling work was taking place on parts of the runway at BIA as part of a major project to resurface the manoeuvring area pavements, and sections of the runway surface were ungrooved 'base course' asphalt. From 14 November 2006, there were reports from flight crew of a variety of problems related to the friction characteristics of the temporary runway surface, though no serious incidents occurred until 29 December 2006. On that day, the flight crew of G-XLAC experienced poor stopping performance during landing. Later that day, the flight crew of G-BWDA experienced stopping and lateral control difficulties during landing, and the aircraft departed the runway surface and came to rest on the grass area at the side of the runway. Later still, the flight crew of G-EMBO experienced lateral control difficulties during landing, and the aircraft partially left and then regained the runway. On 3 January 2007, another flight crew, also operating G-XLAC, experienced poor stopping performance. The airport was subsequently closed whilst grooves were cut in the base course. After it re-opened there were no further incidents.

**Safety Recommendation UNKG-2008-076:** The European Aviation Safety Agency should require operators to ensure that flight crews are provided with guidance material on aircraft performance when operating on a runway that is notified as "may be slippery when wet", or has sections thereof notified as "may be slippery when wet".

**Reply:** The Agency considers that the recommendation should not be separated from other important elements contained in the report (the incidents were due to a combination of three factors that are difficult to weigh separately like runway re-surfacing at the concerned airport, wet conditions and strong crosswind). Furthermore the issue is recognised to be multidisciplinary, as it relates to how runway conditions are assessed and reported (aerodrome operator responsibility), how aircraft performance calculations are consequently adapted (certification and operational task) and how the information and guidance is provided to the flight crew (operational task). Therefore, this Safety Recommendation will be included in the RMT.0296 [former OPS.008 (a)] and RMT.0297 [former OPS.008 (b)] 'Review and harmonisation with Federal Aviation Administration (FAA) of Aeroplane Performance for CAT', which is on the Agency's Rulemaking Programme inventory.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
G-CHCF	AEROSPATIALE - AS332	Aberdeen Airport, United Kingdom	20/11/2007	Serious incident

**Synopsis of the event:** A Training Captain was conducting an Operational Proficiency Check (OPC); the pilot under training was required to demonstrate a clear area rejected takeoff. The helicopter was equipped with a Training Idle System (TIS) which was in use to simulate a failure of the left engine. The helicopter took off along Runway 16 at Aberdeen; at about 28 kt the commander simulated a failure of the left engine and the takeoff was rejected. The pilot flared the helicopter to reduce speed and descended towards the runway. As the collective control lever was raised to reduce the rate of descent, the overspeed protection system shut down the right engine. Main Rotor RPM (Nr) decayed rapidly and the helicopter touched down firmly before rpm could be restored. The right engine free-wheel unit had failed causing that engine to overspeed; this was contained by the overspeed protection system shutting down the engine.

**Safety Recommendation UNKG-2009-004:** It is recommended that the European Aviation Safety Agency should review the accuracy of Flight Manual information covering Training Idle Systems fitted to all helicopter types or models. They should ensure that the information on the system, the behaviour of the helicopter and the correct pilot technique to be employed in the event of the operating engine failing are correctly documented.

**Reply:** EASA recognise that the Rotorcraft Flight Manual (RFM) Supplement addressing the Training Idle System in the AS332L2 could be improved and have agreed the necessary changes with Eurocopter, which have led to the issuance of EASA approval ref. 10033666 for the Normal Revision RN5 of AS332L2 RFM SUP.3, OEI (One Engine Inoperative) flight training procedures. The training mode systems in other contemporary helicopters have been approved at the time of certification or validation and in the absence of any reports of service difficulties, EASA cannot justify the substantial effort required to conduct a systematic review of all such systems, nor to impose all Type Certificate Holders to undertake reconsideration of their RFMs. EASA do, however, agree to take into account the lessons learned from this accident investigation should a training mode RFM Supplement be revised and offered for approval.

**Category:** Partial Agreement - **Status:** Closed

**Safety Recommendation UNKG-2009-005:** It is recommended that the European Aviation Safety Agency should require that when a helicopter is fitted with a Training Idle System, or similar system, the effects of a failure of the operating engine are determined during the flight test and certification process.

**Reply:** A Category A helicopter has the demonstrated capability to cope with the consequences of an engine failure at any point in the flight envelope. In the event of an engine failure in normal operations, the remaining engine has to accelerate from the All Engines Operating (AEO) condition to the full One Engine Inoperative (OEI) power level. However, when this helicopter is being operated with training mode engaged, an engine failure has already been simulated, with both engines artificially limited to a reduced power level. An actual engine failure in this condition means that the remaining engine has to accelerate from the restricted power state of Training which can be idle in the case of the AS332L2, or approximately 50% of OEI maximum power in the case of other types. More time will inevitably be required for full OEI power to be available in the training case and, hence, a completely safe landing or fly away cannot be guaranteed throughout the flight envelope. There will be windows of exposure where the outcome could be severe. Attempts to explore these areas of exposure during flight test carry an unacceptably high risk factor and are, instead, considered analytically. This fact is recognised in current EASA certification policy (i.e. EC175 on-going certification with dedicated Certification Review Item on Engine Training Mode) which is to require the provision of adequate safety devices to minimise the consequences of an actual engine failure with training mode selected, and is also reflected in typical operational practice which is to require that such training flights are conducted with minimum crew, in carefully briefed exercises.

**Category:** Partial Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
G-YMMM	BOEING - 777	London Heathrow, United Kingdom	17/01/2008	Accident

**Synopsis of the event:** Whilst on approach to London (Heathrow) from Beijing, China, at 720 feet agl, the right engine of G-YMMM ceased responding to autothrottle commands for increased power and instead the thrust reduced to 1.03 Engine Pressure Ratio (EPR). Seven seconds later the left engine thrust reduced to 1.02 EPR. This reduction in thrust led to a loss of airspeed and the aircraft touching down some 330 m short of the paved surface of Runway 27L at London Heathrow. The investigation identified that the reduction in thrust was due to restricted fuel flow to both engines.

**Safety Recommendation UNKG-2008-048:** It is recommended that the Federal Aviation Administration and the European Aviation Safety Agency should take immediate action to consider the implications of the findings of this investigation on other certificated airframe / engine combinations.

**Reply:** EASA has approached Type Certificate Holders who initially reported no occurrence of similar issues. Rationales were based on the fact that temperature on the Fuel to Oil Heat Exchanger (FOHE) remained positive, or that the heat exchanger is fitted with a by-pass allowing fuel flow if blocked. In the mean time, two new in-service events (A330 with Trent 700) have further reinforced the view that the issue really lays with a type of FOHE, installed on the Trent 500, 700, 800, and some IAE V2500 engines. The Airworthiness Directives (AD) No.: 2009 - 0142 "Engine - Fuel System, Fuel-to-oil Heat Exchanger (FOHE) - Replacement" and AD No.: 2009-0257 have been respectively issued on 13/07/2009 and 03/12/2009 to require modification of the FOHE for the Trent engines listed above. Regarding the V2500, Airbus has provided justification, showing the heat management function of the engine shall alleviate any risk. For new projects, a Certification Review Item (Special Condition or Interpretative Material) is systematically raised, independently of the engine type, to ensure the applicant addresses the issue.

**Category:** Agreement - **Status:** Closed

**Safety Recommendation UNKG-2009-030:** It is recommended that the Federal Aviation Administration and the European Aviation Safety Agency conduct a study into the feasibility of expanding the use of anti-ice additives in aviation turbine fuel on civil aircraft.

**Reply:** The Agency identified for project launch during the period 2011-2013 the study on "Fuel anti-Ice additives for civil jets" and for which the purpose is the evaluation of generalised use of fuel anti-ice additives onto commercial aircraft. These projects will address the intent of the Safety Recommendation.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2009-031:** It is recommended that the Federal Aviation Administration and the European Aviation Safety Agency jointly conduct research into ice formation in aviation turbine fuels.

**Reply:** The project "Water in Aviation fuel under cold temperature Conditions" (WAFCOLT) launched in 2010 addresses a survey on existing data (including manufacturers data) and laboratory testing for the formation and characterisation of ice crystals in aviation jet fuel. The scope of the study covers the review and analysis of existing data on water/ice presence in aviation turbine fuels (Jet A-1 and A) followed by small-scale testing of a set of fuel samples to characterise the formation of ice crystals and their properties in generic environment(s) representative of atmospheric conditions encountered during long-haul flights. This project addresses the intent of the Safety Recommendation.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2009-032:** It is recommended that the Federal Aviation Administration and the European Aviation Safety Agency jointly conduct research into ice accumulation and subsequent release mechanisms within aircraft and engine fuel systems.

**Reply:** EASA coordinates with the Federal Aviation Administration (FAA) a plan of actions, which encompasses several dedicated research studies relating to system-level tests on ice accumulation. The Agency identified the project "Ice accretion and release in fuel systems" as to be launched in the near term future. A main element of the project will be Scale-level testing in an environmental chamber to observe ice accumulation and shedding in representative aircraft fuel system components. This project will address the intent of the Safety Recommendation.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
G-OJMC	AIRBUS - 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:** 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:** Feasibility of such system has not yet been demonstrated. This item has been proposed to be added to the European Organization for Civil Aviation Equipment (EUROCAE) Technical Work Programme. It is expected that a working group of experts will review the state of the art on the feasibility of such system. If it appears that technology is available, then the working group would propose a standard.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2009-081:** It is recommended that the European Aviation Safety Agency establish a requirement for transport category aircraft to be equipped with a 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:** No standard exists and the feasibility of such system has not yet been demonstrated. Nevertheless this item has been proposed to be added to the European Organization for Civil Aviation Equipment (EUROCAE) Technical Work Programme. It is expected that a working group of experts will review the state of the art on the feasibility of such system. If it appears that technology is available, then the working group would propose a standard. The EASA does not intend to establish a certification specification at this time.

**Category:** Partial Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
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G-MEDA	AIRBUS - A320	Addis Ababa Airport, Ethiopia	31/03/2003	Serious incident
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**Synopsis of the event:** A British Mediterranean Airbus A-320 aircraft, registration G-MEDA 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 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).

**Safety Recommendation UNKG-2010-024:** It is recommended that the European Aviation Safety Agency and the Federal Aviation Administration study the issues relating to the use of TAWS so that where data source problems are identified by the system the flight crew can be alerted.

**Reply:** Terrain Awareness and Warning System (TAWS) is not part of the aircraft navigation systems and it shall not be used as mitigation means to detect navigation system or data problems. The TAWS certification policy assumes that the signal received from the ground station, VHF Omnidirectional radio Range (VOR) is correct, and ground stations shall be adequately monitored and controlled by the responsible bodies (Airport and Air Traffic Control).

**Category:** Disagreement - **Status:** Closed

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.

**Safety Recommendation UNKG-2010-027:** 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 is coordinating with the National Aviation Authorities (NAAs) with a view to facilitating the development of Health and Usage Monitoring System (HUMS) for helicopter rotating systems. A review of the status of helicopter rotor health monitoring has already been published by the Civil Aviation Authority of the United Kingdom (UK CAA) in CAA Paper 2008/05. However, the results of this work are inconclusive and further development of sensing techniques and technologies required. Additional research is on-going in the UK CAA Research Plan and further development will be communicated in due time.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
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G-BYXR	GROB - G115	Drayton, Oxfordshire, United Kingdom	14/06/2009	Accident
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**Synopsis of the event:** A Grob 115E Tutor aircraft was undertaking a cadet air experience flight from RAF Benson. The visibility was good and the aircraft was conducting aerobatics, in uncontrolled airspace, when it collided with a glider. The left wing of the Tutor struck the fin of the glider causing the tail section to break away. The glider pilot parachuted to safety. The Tutor entered a spiral / spinning manoeuvre before diving steeply into the ground. The Tutor pilot and cadet were both fatally injured. The Tutor pilot had a long term medical condition which restricted the movement of his head and affected his ability to conduct an effective look-out; this condition also made him more vulnerable to impact fractures of the spine. Following the collision it is probable that the Tutor remained controllable, suggesting that the pilot had become incapacitated. The cadet's harness had been released and the canopy operating handle had been moved to the open position before the Tutor impacted the ground. The canopy jettison mechanism had not been operated.

**Safety Recommendation UNKG-2010-034:** It is recommended that the European Aviation Safety Agency review the certification of the canopy jettison system on the Grob II 5 E, to ensure that it complies with the requirements of CS 23.807 with specific regard to the jettison characteristics up to Design Diving Speed and simplicity and ease of operation.

**Reply:** The review of the canopy jettison system was carried out by Grob Aircraft by reference to their report "SR-G115E-520002" dated 5 March 2009. This report details the compliance with 23.807(b)(5),(c) for post-Mod MÄM1078-107 (Major Change) canopies.

**Category:** Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
G-TGUN	AERO - AT3	Old Sarum Airfield, Wiltshire, United Kingdom	12/06/2009	Serious incident

**Synopsis of the event:** After engine start the aircraft moved forwards and to the left and struck a fuel bowser, despite the pilot applying pressure to the toe brakes. It is probable that the parking brake lever had inadvertently been moved to the ON position without hydraulic pressure being applied to the brakes at the time. This rendered the toe brakes inoperative, and prevented the pilot from being able to stop the aircraft.

**Safety Recommendation UNKG-2010-053:** It is recommended that the European Aviation Safety Agency (EASA) require that the AERO AT-3 brake system be modified such that the toe brakes remain functional regardless of whether the parking brake is off or on.

**Reply:** There are a number of other aircraft designs with similar characteristics and the advantage of having toe brakes operative while the parking brake is 'on' is not clear. The design of the parking brake lever has been improved to reduce the chances of inadvertent selection (EASA minor modification approval number 10032661).

**Category:** Disagreement - **Status:** Closed

**Safety Recommendation UNKG-2010-054:** It is recommended that the European Aviation Safety Agency (EASA) require AERO Sp to update the Flight Manual for the AERO AT-3 to explain the operation of the braking system clearly and to include a warning that the toe brakes become inoperative when the parking brake lever is selected on.

**Reply:** The Type Certificate Holder (TCH), AERO, has issued revisions to the AT-3 AFM to clarify the recommended explanations and warnings.

**Category:** Agreement - **Status:** Closed

**Safety Recommendation UNKG-2010-055:** It is recommended that the European Aviation Safety Agency (EASA) require AERO Sp to provide warning placards, to be installed in all affected AERO AT-3 aircraft, which state that the toe brakes become inoperative when the parking brake lever is selected on.

**Reply:** The aircraft is fitted with placards that warn of incorrect use and advise the pilot of the status of the 'parking brake'.

**Category:** Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
CS-DFE	DASSAULT - FALCON2000	Biggin Hill Airport, Kent, United Kingdom	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:** 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 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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2010-062:** 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 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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2010-063:** 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:** 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.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
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D-ACHA	BOMBARDIER - CL600 2B19	stand 60L, Manchester Airport, United Kingdom	13/11/2008	Serious incident
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**Synopsis of the event:** Whilst a technician was rectifying an under-inflated tyre, a pressure of approximately six times the normal tyre pressure was developed. The tie bolts on the wheel failed, the assembly exploded and the technician was seriously injured.

**Safety Recommendation UNKG-2010-070:** It is recommended that the European Aviation Safety Agency review the number of occurrences of the overpressure failure of tyres or wheels on Large Aeroplanes and consider retrospectively applying the requirements of CS 25.731, the Certification Specifications for Large Aeroplanes for Overpressure Burst Protection on wheels.

**Reply:** The Agency reviewed the International Civil Aviation Organisation (ICAO) Accident Incident Data Reporting System (ADREP) Database for accidents/incidents in which tyre overpressure/over-inflation resulted in tyre burst and/or wheel disintegration. Only four events were recorded over the last past forty years, including the event subject to this safety recommendation; two of them are classified as accidents, and two as serious incidents. One of them resulted in a fatality of the mechanic. The causes of those events were identified as unauthorised tyre inflation, operation of unfamiliar tools or wrong placards. The report also mentions two events acknowledged by a large aircraft manufacturer. Although it is probably not possible to determine the actual rate of such events (because most of them, occurring on ground when the aircraft is not in operation, do not meet the definition of an accident or serious incident per ICAO Annex 13), the available information indicate a very low order of magnitude. Based on this status, the Agency cannot justify a retroactive regulation to impose the standard of Certification Specification (CS) 25.731(d). Meanwhile, the Agency is preparing and will publish soon a Safety Information Bulletin (SIB) to remind operators of the importance that:

- New wheels are being produced with pressure relief devices installed,
- Tyre inflation should only ever be performed by trained and approved personnel,
- Tyres should be inflated using only the equipment designed and approved for this use,
- Tyres should be inflated according to the instructions provided by the Aircraft Maintenance Manual.

**Category:** Partial Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
G-EZJK	BOEING - 737	West of Norwich, Norfolk, United Kingdom	12/01/2009	Serious incident

**Synopsis of the event:** A flight control manual reversion check was being conducted as part of a post maintenance check flight. During the check, the aircraft pitched rapidly nose-down, descending approximately 9,000 ft before control was recovered. A number of maintenance and airworthiness check issues were identified.

**Safety Recommendation UNKG-2010-072:** It is recommended that the European Aviation Safety Agency review the regulations and guidance in OPS 1, Part M and Part 145 to ensure they adequately address complex, multi-tier, sub-contract maintenance and operational arrangements. The need for assessment of the overall organisational structure, interfaces, procedures, roles, responsibilities and qualifications/competency of key personnel across all sub-contract levels within such arrangements should be highlighted.

**Reply:** Operation and Maintenance Rules (AMC.OPS.1.035) already require operations and maintenance organisations to include their subcontracted activities under their quality system. However, the rulemaking task 145.012 'Part-145 Single and Multiple Release', initiated in 2006, already tried to address this issue. However, as described in the Opinion 06/2010 issued by the Agency on 29 November 2010, this task did not generate any change to the regulations or to the

acceptable means of compliance (AMC) or guidance material (GM) due to the opposition to the proposed changes from a significant number of competent authorities and stakeholders and to the fact that the task was mainly addressing Part-145 responsibilities and an additional new focus needed to be placed also on the Continuing Airworthiness Management Organisation (CAMO) responsibilities. As a consequence, a rulemaking task has been created, RMT.0217 (former M.029) 'Additional guidance on the CAMO responsibilities' which will cover Part-145 and CAMO responsibilities and addresses the intent of this recommendation. In addition, rulemaking task RMT.0251 (former MDM.055) 'Embodiment of Safety Management System (SMS) requirements into and adaptation of Regulation (EC) No 2042/2003 for the implementation of a State Safety Plan' will mandate implementation of hazard identification and risk management, where any hazards stemming from such complex, multi-tier constellations should also be identified and assessed. This is further supported by using the same approach throughout operational and Continuing Airworthiness/Maintenance rules when it comes to implementing a Safety Management System (SMS) (same/similar rules for operators, CAMOs and Part 145s).

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2010-073:** It is recommended that the European Aviation Safety Agency require AOC operators to have, and comply with, a detailed procedure and a controlled test schedule and record of findings for briefing, conducting and debriefing check flights that assess or demonstrate the serviceability or airworthiness of an aircraft.

**Reply:** The Agency is initiating a Rulemaking Task on a Multi Disciplinary Measure (MDM.097) to address the continuing airworthiness and operational aspects, including crew competence, of maintenance check flights [this new task will jointly combine the task on maintenance (M.009) and operations (OPS.075) in relation with maintenance check flights as described in the rulemaking plan for 2011]. This safety recommendation will be considered during the development of this Rulemaking Task. In the meantime, the Agency plans to issue a Safety Information Bulletin (SIB) providing information and recommendations for the performance of functional check flights, which include maintenance check flights.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2010-075:** It is recommended that the European Aviation Safety Agency provide guidance on minimum crew proficiency requirements and recommended crew composition and training for those undertaking check flights that assess or demonstrate the serviceability or airworthiness of an aircraft.

**Reply:** The Agency is initiating a Rulemaking Task on a Multi Disciplinary Measure (MDM.097) to address the continuing airworthiness and operational aspects, including crew competence, of maintenance check flights [this new task will jointly combine the task on maintenance (M.009) and operations (OPS.075) in relation with maintenance check flights as described in the rulemaking plan for 2011]. This safety recommendation will be considered during the development of this Rulemaking Task. In the meantime, the Agency plans to issue a Safety Information Bulletin (SIB) providing information and recommendations for the performance of functional check flights, which include maintenance check flights.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2010-076:** It is recommended that the European Aviation Safety Agency provide guidance to National Airworthiness Authorities on monitoring continuing airworthiness.

**Reply:** Rulemaking task RMT.0216 (former M.027) 'Guidance Material related to the Aircraft Continuing Airworthiness Monitoring' is on the Agency's Rulemaking Programme.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
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G-BYWH	GROB - G115	RAF Leeming, North Yorkshire, United Kingdom	12/09/2009	Accident
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**Synopsis of the event:** During the rollout from a three aircraft 'stream' landing, the pilot and passenger of the rear aircraft had to apply full brake pressure to avoid a collision with the aircraft in front. Although the aircraft did not collide, the resulting loads experienced by the wing structure supporting the landing gear, caused it to fail in overload. Subsequent analysis of the failed structure identified possible manufacturing issues, which may have contributed to the failure.

**Safety Recommendation UNKG-2010-078:** It is recommended that the European Aviation Safety Agency in cooperation with the Luftfahrt-Bundesamt (LBA) conduct an audit of Grob Aircraft AG's design and quality standards, manufacturing processes and facilities to ensure that they meet current regulatory standards.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2010-079:** It is recommended that the European Aviation Safety Agency require Grob Aircraft AG to introduce an inspection of all G115E aircraft to ensure their structural integrity complies with regulatory airworthiness standards and that design assumptions relating to fabrication techniques and material properties used during aircraft certification remain valid.

**Reply:** EASA has reviewed the design of the Grob 115E aircraft and confirms that the aircraft complies with its certification basis; that is, application of brakes in accordance with the Approved Flight Manual at groundspeeds within the normal operating envelope will not result in structural failure.

**Category:** Disagreement - **Status:** Closed

**Safety Recommendation UNKG-2010-080:** It is recommended that the European Aviation Safety Agency in conjunction with the Federal Aviation Administration review the Grob G115E aircraft design to ensure that rapid, full and continuous application of the brakes at groundspeeds within the normal operating envelope does not result in failure of the aircraft's structure.

**Reply:** EASA has reviewed the design of the Grob 115E aircraft and confirms that the aircraft complies with its certification basis; that is, application of brakes in accordance with the Approved Flight Manual at groundspeeds within the normal operating envelope will not result in structural failure.

**Category:** Agreement - **Status:** Closed

**Safety Recommendation UNKG-2010-081:** It is recommended that the European Aviation Safety Agency consider the introduction of a specific requirement, for CS 23 certified aircraft, to ensure that theoretical maximum landing gear dynamic loads under braking, calculated during the design process, are validated by dynamic testing and the capacity of the aircraft structure to withstand them is demonstrated as part of the certification process.

**Reply:** The design addresses full use of brakes within the normal operating envelope. It is confirmed that the structure of the aircraft was designed to withstand the loads generated by a normal braking event. Regarding amendment of CS-23, characterising vibration frequencies and amplitudes would be complex to determine or establish because there are many variables. Selecting an appropriate representative test condition would not demonstrate a significant safety benefit. In addition, light aircraft often land on grass surfaces, which will further broaden and complicate the input to the problem because the roughness will be complex to characterise.

**Category:** Disagreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
G-DBZZ	PZL BIELSKO - SZD24	Bicester Airfield, Oxfordshire, United Kingdom	08/08/2010	Accident

**Synopsis of the event:** During the second winch launch of the day, the wings of the glider separated from the fuselage. The pilot sustained fatal injuries in the resulting impact. The investigation determined that when the aircraft was rigged, the lower bevel bolt of the wing main fitting had not fully engaged with the lower lug stack of the main spar joint and it was not possible to detect this condition. As a consequence, when the glider became airborne, the partially secured joint was unable to sustain the wing bending moments associated with the winch launch and the lower bevel bolt failed. This allowed the lower attachment lugs to disengage and the wings to fold upwards and separate from the fuselage.

**Safety Recommendation UNKG-2011-003:** It is recommended that the European Aviation Safety Agency require that the Type Certificate holder of the Foka 4 introduce a means of determining that the lower bevel bolt is fully engaged in the lower lug stack during rigging.

**Reply:** This accident stems from inadequate training, using the wrong tool and the wrong rigging procedure. This sailplane type has been flying safely for fifty years and the recommendation implies a design deficiency which is not justified. Use of the correct procedures and the correct tool ensures that the lower bevel bolt is fully engaged in the lower stack during rigging. The Agency has issued Safety Information Bulletin (SIB) 2011-11 on 25 May 2011. This addresses all models of the SZD-24, -32 and -36 sailplanes and all other types that may have similar wing attachment philosophy. The service experience of the last 50 years shows that there is no design deficiency with this aircraft type.

**Category:** Partial Agreement - **Status:** Closed

**Safety Recommendation UNKG-2011-004:** It is recommended that the European Aviation Safety Agency require that the Type Certificate holders of aircraft with a similar wing attachment philosophy to the Foka 4 ensure that there is a means of determining that both the bevel bolts are fully engaged in the lug stack during rigging.

**Reply:** The Agency partially agrees this recommendation but disagrees with the involvement of 'type certificate holders of aircraft with similar wing attachment philosophy to the Foka 4'. The Agency accepts, however, the principle of the recommendation and has issued Safety Information Bulletin (SIB) 2011-11 on 25 May 2011. This addresses all models of the SZD-24, -32 and -36 sailplanes and all other types that may have similar wing attachment philosophy.

**Category:** Partial Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
SX-BIO	DE HAVILLAND - DHC8	Bristol International Airport, United Kingdom	24/04/2010	Serious incident

**Synopsis of the event:** After a base maintenance check at Exeter the aircraft was flown uneventfully to East Midlands to be repainted. During the return flight to Exeter the right engine suffered a significant oil leak and lost oil pressure, so the flight crew shut it down. Subsequently, the crew noticed the left engine also leaking oil, with a fluctuating oil pressure, so they initiated a diversion to Bristol, where they landed safely. The oil leaks were traced to damaged O-ring seals within the oil cooler fittings on both engines. Both oil coolers had been removed and refitted during the base maintenance check at Exeter. It was probably during re-installation that the O-ring seals were damaged. A number of factors led to this damage and to missed oil leak checks.

**Safety Recommendation UNKG-2011-018:** It is recommended that the European Aviation Safety Agency expand the advisory or guidance material in Annex II (Part 145) of European Commission Regulation (EC) No. 2042/2003 on how approved maintenance organisations should manage and monitor the risk of maintenance engineer fatigue as part of their requirement to take human performance limitations into account.

**Reply:** As part of the implementation of the International Civil Aviation Organisation (ICAO) standards on "Safety Management System" (SMS), maintenance organisations will be required to implement a system to identify hazards, to assess associated risks and to take appropriate mitigation action [ICAO standard 8.7.3.3 (Annex 6 Part I)]. The Agency will address the relevant ICAO SMS standards for Regulation (EC) No. 2042/2003 by means of Rulemaking Task MDM.055. In the framework of this Rulemaking Task the Agency will identify the need for additional requirements, acceptable means of compliance and guidance material to properly consider human factors in maintenance and continuing airworthiness management. Maintenance staff fatigue will be addressed as part of this review.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
G-CJCC	CESSNA - 680	London Luton Airport, United Kingdom	30/09/2010	Serious incident

**Synopsis of the event:** The aircraft was operating a commercial passenger flight from London Luton Airport, United Kingdom, to Milas-Bodrum Airport, Turkey. It departed with a full fuel load of approximately 11,000 lbs. As it passed FL300 for FL320 in the climb, the DC EMER BUS L amber Crew Alerting System (CAS) message appeared. The crew referred to the Emergency/Abnormal Procedures checklist and, from the observed indications, concluded that there was a fault on the left main electrical bus. They completed the required action items, which included selecting the left generator to OFF. They elected to return to Luton as the weather there was favourable and it was only 20 minutes flying time. When the left generator was selected OFF, a number of systems lost power, including the flaps, the left fuel quantity indication and the commander's Primary Flight Display (PFD). The commander handed control to the co-pilot, who remained the handling pilot for the rest of the flight. As the flight progressed, the co-pilot became aware that an increasing amount of right aileron control input was required to maintain a wings-level attitude. A flapless landing was completed at Luton Airport without further incident. When the aircraft was powered up again, all systems appeared to operate normally, including the left fuel quantity indication. The left tank fuel quantity indication was approximately 5,500 lbs (corresponding to full) and the right tank indication was approximately 3,300 lbs. The crew confirmed that they had not selected the fuel cross-feed during the flight.

**Safety Recommendation UNKG-2011-026:** It is recommended that the European Aviation Safety Agency ensures that design organisations under their jurisdiction responsible for approvals affecting Flight Data Recorder (FDR) installations, hold the documentation required for decoding the FDR data, and that the documentation is to a suitable standard and available to operators.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2011-027:** It is recommended that the European Aviation Safety Agency review their certification requirements, guidance and procedures to ensure that controlled documentation, sufficient to satisfy operator flight data recorder documentation requirements, are explicitly part of the type certification and supplemental type certification processes where flight data recorder installations are involved.

**Reply:** Part 21 (Annex to Commission Regulation (EC) 1702/2003) and CS-25 (Certification Specifications for Large Aeroplanes) require the type certificate (TC) [or supplemental type certificate (STC)] holder to provide instructions for continued airworthiness and this is considered applicable to flight data recorders (FDR). Nevertheless the Agency accepts to review ways of improvement of the certification specifications to better indicate that the TC (or STC) holder has to provide the adequate documentation to the operator or owner of the aircraft, which should include:

- the necessary information to convert FDR raw data into engineering units, and
- FDR maintenance requirements.

This subject will be treated as part of rulemaking task RMT.0268 (former MDM.068) dealing with revision of FDR and cockpit voice recorder (CVR) certification specifications. This task is currently part of the Agency's Rulemaking Programme inventory.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2011-029:** It is recommended that the European Aviation Safety Agency provides guidance detailing the standards for the flight data recorder documentation required for the certification of systems or system changes associated with flight data recorders.

**Reply:** In response to Safety Recommendation UNKG-2011-027 the Agency accepts to review ways of improvement of the certification specifications to better indicate that the type certificate (TC) [supplemental type certificate (STC)] holder has to provide the adequate flight data recorder (FDR) documentation to the operator or owner of the aircraft. This subject will be treated as part of rulemaking task RMT.0268 (former MDM.068) dealing with revision of FDR and cockpit voice recorder (CVR) certification specifications. In this framework, the Agency will also review the existing FDR documentation standards and will provide guidance in the certification specifications.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
G-REDU	EUROCOPTER - EC225	132 NM east of Aberdeen, offshore, United Kingdom	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:** 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:** 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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2011-059:** It is recommended that the European Aviation Safety Agency reviews the acceptability of crew-operated ON/OFF controls which can disable mandatory helicopter audio voice warnings.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2011-061:** It is recommended that the European Aviation Safety Agency ensures that helicopter performance is taken into consideration when determining the timeliness of warnings generated by Helicopter Terrain Awareness and Warning Systems.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2011-062:** It is recommended that the European Aviation Safety Agency reviews the frequency of nuisance warnings generated by Terrain Awareness and Warning System equipment in offshore helicopter operations and takes appropriate action to improve the integrity of the system.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2011-063:** It is recommended that the European Aviation Safety Agency, in conjunction with the Federal Aviation Administration, defines standards governing the content, accuracy and presentation of obstacles in the Terrain Awareness and Warning System obstacle database for helicopters operating in the offshore environment.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2011-064:** It is recommended that the European Aviation Safety Agency establishes the feasibility of recording, in crash-protected memory, status indications from each avionic system on an aircraft.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2011-065:** It is recommended that the European Aviation Safety Agency considers amending certification requirements for rotorcraft, that are certified in accordance with ditching provisions, to include a means of automatically inflating emergency flotation equipment following water entry.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2011-066:** It is recommended that the European Aviation Safety Agency modifies European Technical Standard Order (ETSO) 2C70a and ETSO 2C505 to include a requirement for multi-seat liferafts, that do not automatically deploy their Sea Anchor, to include a label, visible from within the inflated liferaft, reminding the occupants when to deploy the Sea Anchor.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2011-068:** 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:** 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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2011-069:** It is recommended that the European Aviation Safety Agency, in conjunction with the Federal Aviation Administration, review the design requirements and advisory material for helicopters to require 'delethalisation' of the fuselage to prevent damage to deploying and floating liferafts following a survivable water impact.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2011-070:** It is recommended that the European Aviation Safety Agency ensures that a requirement is developed for all emergency equipment, stowed in deployable survival bags, to be capable of being easily accessed and utilised by the gloved hands of a liferaft occupant whilst in challenging survival situations when a liferaft may be subject to considerable motion in cold, wet and dark conditions.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNKG-2011-071:** It is recommended that the European Aviation Safety Agency reviews the location and design of the components and installation features of Automatically Deployable Emergency Locator Transmitters and Crash Position Indicator units, when required to be fitted to offshore helicopters, to ensure the reliability of operation of such units during and after water impacts.

**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.

**Category:** Unknown - **Status:** Open

**UNITED STATES**

<b>Registration</b>	<b>Aircraft Type</b>	<b>Location</b>	<b>Date of event</b>	<b>Event Type</b>
N106US	AIRBUS - A320	the Hudson River about 8,5 miles from La Guardia Airport, New York, USA	15/01/2009	Accident

**Synopsis of the event:** On January 15, 2009, about 1527 eastern standard time, 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-2010-090:** Require manufacturers of turbine-powered aircraft to develop a checklist and procedure for a dual-engine failure occurring at a low altitude.

**Reply:** Current Certification Specification (CS) 25.1585 (a) (3) requires that operating procedures be furnished for "emergency procedures for foreseeable but unusual situations in which immediate and precise action by the crew may be expected to substantially reduce the risk of catastrophe". Acceptable Means of Compliance (AMC) 25.1581 on Aeroplane Flight Manual further states that Emergency Procedures should include the procedures for handling situations such as: Multiple engine failure, Crash landing or ditching, etc. EASA has reviewed the above mentioned applicable requirements and consider that they are adequate. The development of a specific procedure for handling a case of multiple engine failure at low altitude is considered to be impractical due to the variety of potential scenarios and the short time available for the crew to assess the situation, determine the appropriate procedure to follow, and execute such a procedure. The existence of such a procedure could potentially have also a negative impact, if the crew needs time and cognitive resources to determine first which procedure best applies to the situation.

**Category:** Disagreement - **Status:** Closed

**Safety Recommendation UNST-2010-092:** 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.

**Reply:** Airbus is redesigning the vertical beam such that it would break instead of penetrating the floor of the aft cabin. The modification is proposed as product improvement by Airbus. In consideration of the event and the related impact that was outside the assumptions required by the applicable regulations, EASA agreed that there is no established unsafe condition under the criteria of Part 21A.3B for the current design. Therefore, the incorporation of this design change will not be mandated by EASA; however, it will be made available for retrofit. This reply will be updated once the design change is approved and a retrofit service bulletin available.

**Category:** Unknown - **Status:** Open

<b>Registration</b>	<b>Aircraft Type</b>	<b>Location</b>	<b>Date of event</b>	<b>Event Type</b>
N14053	AIRBUS - A300	Belle Harbor, New York, United States of America	12/11/2001	Accident

**Synopsis of the event:** On November 12, 2001, about 0916:15 eastern standard time, an Airbus Industrie A300-605R, N14053, crashed into a residential area of Belle Harbor, New York, shortly after takeoff from John F. Kennedy International Airport, Jamaica, New York. Flight 587 was a regularly scheduled passenger flight to Las Americas International Airport, Santo Domingo, Dominican Republic, with 2 flight crewmembers, 7 flight attendants, and 251 passengers aboard the airplane. The airplane's vertical stabilizer and rudder separated in flight and were found in Jamaica Bay, about 1 mile north of the main wreckage site. The airplane's engines subsequently separated in flight and were found several blocks north and east of the main wreckage site. All 260 people aboard the airplane and 5 people on the ground were killed, and the airplane was destroyed by impact forces and a postcrash fire. Flight 587 was operating under the provisions of 14 Code of Federal Regulations Part 121 on an instrument flight rules flight plan. Visual meteorological conditions prevailed at the time of the accident.

**Safety Recommendation UNST-2010-119:** The National Transportation Safety Board recommends that the European Aviation Safety Agency modify European Aviation Safety Agency Certification Specifications for Large Aeroplanes CS-25 to ensure safe handling qualities in the yaw axis throughout the flight envelope, including limits for rudder pedal sensitivity.

**Reply:** The Agency is participating in the Federal Aviation Administration (FAA) Aviation Rulemaking Advisory Committee (ARAC) group created to provide recommendations on this issue (notice published under Federal register Vol.76, No. 59, dated 28 March 2011). The group will review the need to revise existing certification specifications for large aeroplanes as well as the need to enforce retroactive measures for the already certificated aircraft. Based on these recommendations, FAA and the Agency will consider what actions are to be taken.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
N128CM	PILATUS - PC12	Bert Mooney Airport (BTM), Butte, Montana, United States	22/03/2009	Accident

**Synopsis of the event:** On March 22, 2009, about 1432 mountain daylight time, a Pilatus PC-12/45, N128CM, was diverting to Bert Mooney Airport (BTM), Butte, Montana, when it crashed about 2,100 feet west of runway 33 at BTM. The pilot and the 13 airplane passengers were fatally injured, and the airplane was substantially damaged by impact forces and a postcrash fire.

**Safety Recommendation UNST-2011-075:** The National Transportation Safety Board recommends that the European Aviation Safety Agency amend certification requirements for aircraft requiring fuel additives, including fuel system icing inhibitors, so that those limitations are highlighted by a warning in the limitations section of the airplane flight manual.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNST-2011-076:** The National Transportation Safety Board recommends that the European Aviation Safety Agency require all existing certificated aircraft (both newly manufactured and in-service aircraft) that require fuel additives, including fuel system icing inhibitors, to have those limitations highlighted by a warning in the limitations section of the airplane flight manual.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNST-2011-077:** The National Transportation Safety Board recommends that the European Aviation Safety Agency amend aircraft certification fuel placarding requirements so that aircraft requiring fuel additives, including fuel system icing inhibitors, have a fuel filler placard that notes this limitation and refers to the airplane flight manual for specific information about the limitation.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNST-2011-078:** The National Transportation Safety Board recommends that the European Aviation Safety Agency require all existing certificated aircraft (both newly manufactured and in-service aircraft) that require fuel additives, including fuel system icing inhibitors, to have a fuel filler placard that notes this limitation and refers to the airplane flight manual for specific information about the limitation.

**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.

**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
N453AE	EUROCOPTER - EC130	the Hudson River, New York, United States	07/07/2007	Accident

**Synopsis of the event:** On July 7, 2007, about 1651 eastern daylight time, Eurocopter EC-130-B4 helicopter, N453AE, experienced an in-flight separation of a section of one of the main rotor blades during flight and sustained substantial damage during an emergency descent and subsequent autorotation into the Hudson River, New York, New York. 1 The commercial pilot and seven passengers were uninjured. No flight plan was filed with the Federal Aviation Administration (FAA) for the 14 Code of Federal Regulations Part 135 and 136 sightseeing flight, nor was one required. 2 Visual meteorological conditions prevailed at the time of the accident.

**Safety Recommendation UNST-2011-037:** The National Transportation Safety Board makes the following safety recommendations to the European Aviation Safety Agency: Require Eurocopter to revise its aircraft maintenance manual for all helicopters equipped with part number 355A11-0020 and/or 355A11-0030 main rotor blades to include, as part of the daily flight-related check, specific visual inspections of the trailing edge of the blades' upper and lower skin surfaces for cracks and surface deterioration/disfiguration.

**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.

**Category:** Unknown - **Status:** Open

**Safety Recommendation UNST-2011-038:** The National Transportation Safety Board makes the following safety recommendations to the European Aviation Safety Agency: Once the Eurocopter aircraft maintenance manual is revised as described in Safety Recommendation A-11-37, notify operators of all Eurocopter helicopters equipped with part number 355A11-0020 and/or 355A11-0030 main rotor blades that they should revise their maintenance manuals to include specific daily visual inspections of the trailing edge of the blades' upper and lower skin surfaces for cracks and surface deterioration/disfiguration.

**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.

**Category:** Unknown - **Status:** Open

## 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.

## 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 issues 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.

**Concluding actions:** measures taken by the Agency for a safety recommendation as defined below:

- **Rule change/Add-Modify Rule-Directive:** Rulemaking action aiming at reviewing, developing or amending implementing rules / Acceptable Means of Compliance (AMC) / Guidance Material (GM).
- **Inspection:** Inspection conducted in the frame of the continued Airworthiness.
- **Airworthiness Directive/Add-Modify Rule-Directive:** Action on the continued Airworthiness including the issuance of an Airworthiness Directive (AD).
- **Safety Information Notice/Information:** Information sent through Safety Information Bulletin (SIB) or correspondence addressed to interested parties.
- **Training Issue/Training:** Action taken to promote or improve training.

- **Add Modify Procedure:** Action modifying Aircraft and / or Operation documentation.
- **Study:** Study or research project conducted.
- **Standardisation Issue/Compliance with procedure-rule:** Standardisation audit of Design Organisation Approval (DOA), Product Organisation Approval (POA), Maintenance Organisation Approval (MOA) and Air Operator Certificate (AOC) holders.
- **None:** No action is deemed necessary. This is the case when the safety recommendation is classified as disagreed, no longer applicable or not in the Agency's remit.