



European Aviation Safety Agency
Safety Analysis and Research Department
Executive Directorate

2009

Annual Safety Recommendations review



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Annual Safety Recommendations review

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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 2009. 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 basic principles governing the investigation of accidents and serious incidents are included in the Directive 94/56/EC of 21 November 1994. This Directive is compliant with international recommended practises as described in Annex 13 to the Chicago Convention. According to those principles, accidents and serious incidents have to be investigated. Investigation reports and the related safety recommendations are communicated to the competent 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 the 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 of 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 to its activities.

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 2009 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 Accidents Investigation Boards have addressed to EASA in 2009. 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 2009 to safety recommendations and shows the safety concerns that have been managed and their follow-up.



2 Overview of Safety Recommendations in 2009

2.1 Safety recommendations received in 2009

During the year 2009, 108 final safety recommendations¹ were received by EASA. These safety recommendations were related to 51 different occurrences².

The total annual number of the final safety recommendations that the Agency has received so far, is shown in Chart 1.

As observed, in 2009 the number of final safety recommendations increased by 90% in relation to 2008.

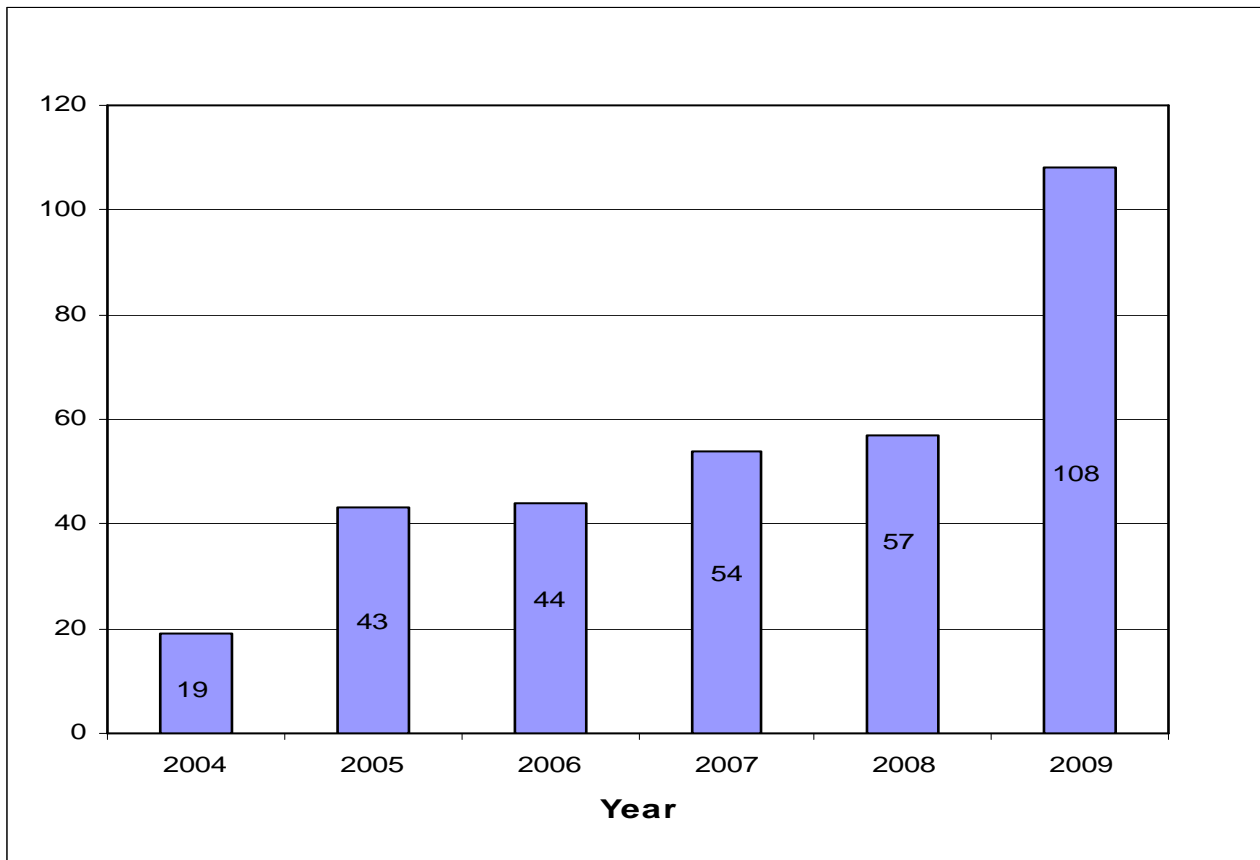


Chart 1: Final Safety Recommendations per year

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

¹ Safety recommendation which has taken its final form, usually contained in an investigation report.

²The number of safety recommendations which have been addressed to EASA but are still in a draft form, is not included.



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 2009

In 2009, Accident Investigation Boards of 18 different States addressed final safety recommendations to EASA.

With the exemption of 4 countries (USA, Canada, Ecuador, and Malaysia), which addressed to EASA 7 final safety recommendations accounting for 6% of the total amount, the remaining part was issued by EASA Member States. This part accounts for 94%.

2.3 Trends of investigated occurrences giving way to safety recommendations in 2009, 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 occurrences addressed in 2009 to the Agency, for which safety recommendations were issued, has been done.

In chart 2, the outcome of the distribution of investigated occurrences by aircraft mass group shows two main categories which are the aircraft below 2 250 kg (30%) and the large aircraft, with a mass from 27 000 kg until 272 000 kg and above (38%).

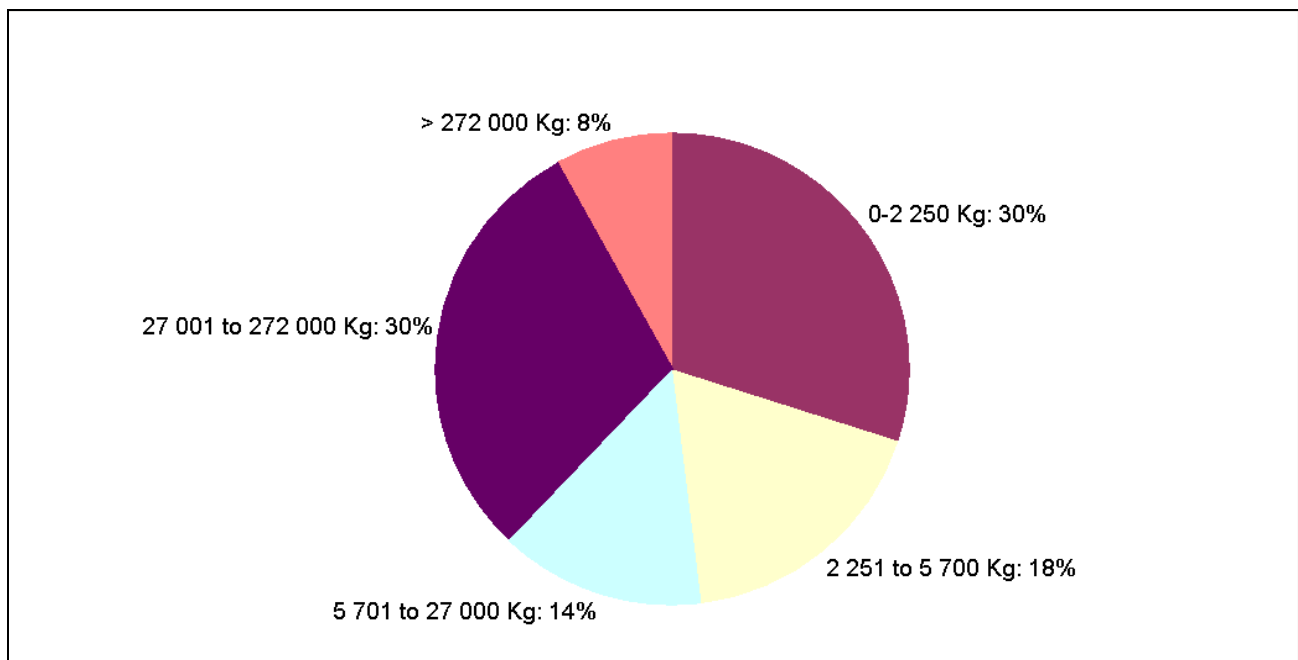


Chart 2 Occurrences by aircraft mass group

As shown in Chart 3, the majority of events are related to commercial air transport operations. In General Aviation, only aircraft not referred into Annex II of the Basic Regulation are considered.

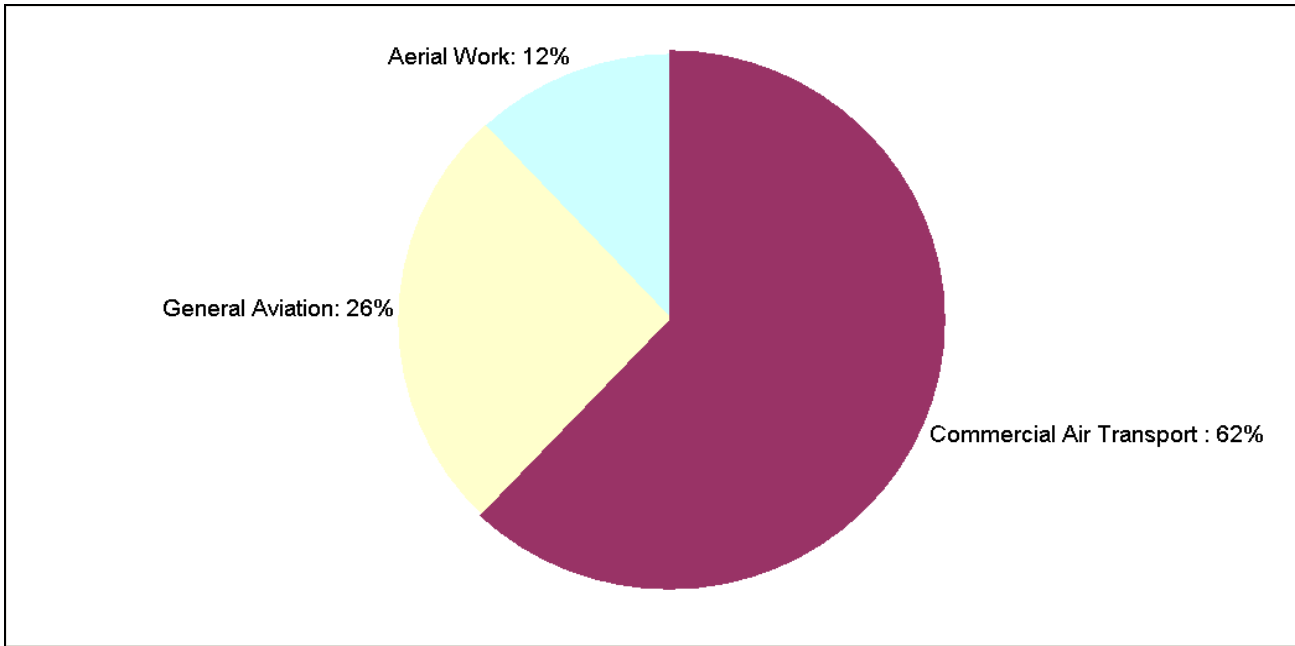


Chart 3 Occurrences by type of operation

Categorising occurrences by event type (Chart 4) indicates that the majority of events were related to the operation of the aircraft, rather than a failure of an aircraft system or component.

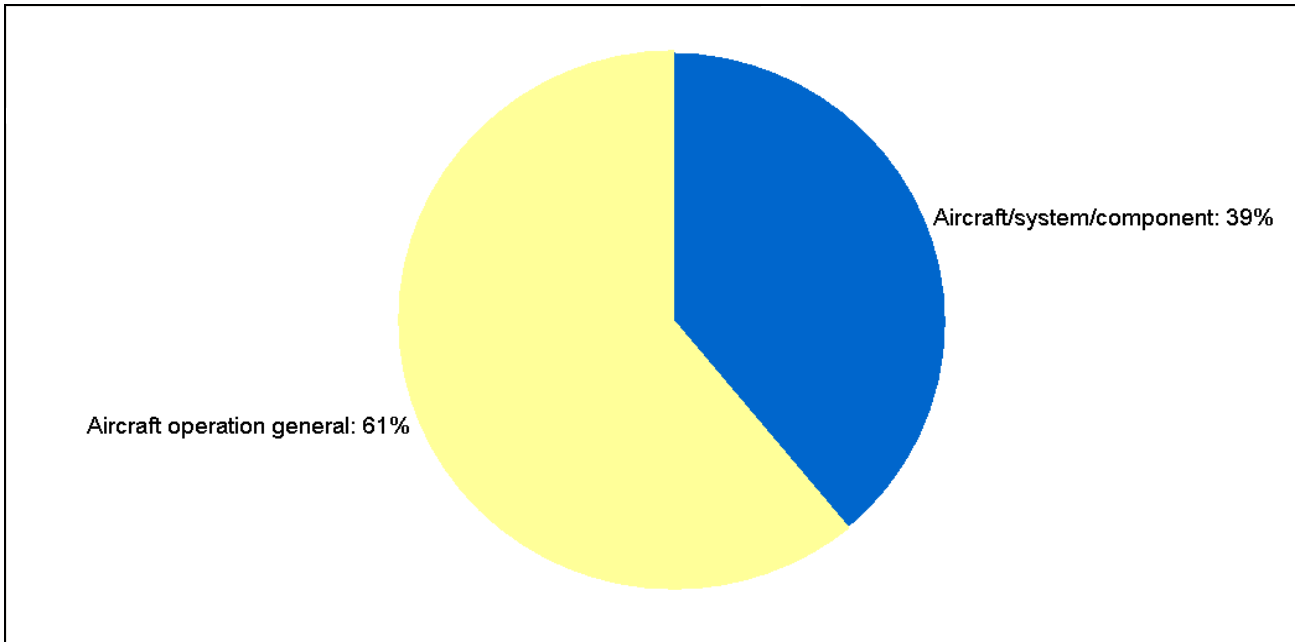


Chart 4 Occurrences by event type

The outcome of this general presentation of occurrences by categorisation provides a good picture of the occurrences' context. Associated to the literature review of safety recommendations addressed to EASA, this overview can give the main trends of the safety recommendations issued in 2009.



These main trends are related to Rulemaking, design and icing issues. In the field of Rulemaking, it has to be mentioned that recurrent safety actions are expected on improving flight recorder design and serviceability.

2.4 Thematic distribution of final recommendations received in 2009

Compared to 2008, the thematic distribution of the final safety recommendations covers a wider range of safety concerns identified by the Accident Investigation Boards during the investigation process. This range of concern is taken into account by several units that have 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

C – Rotorcraft, balloons, airships

C – Propulsion

C – Flight Standards

C – Experts section

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 – Organizations

S – SAFA coordination



S - Standardisation

As shown in Chart 5, the final safety recommendations whose content was related to certification issues corresponded to 49%. 43% had a rulemaking character. The remaining 8% came within the field of Safety Analysis & Research.

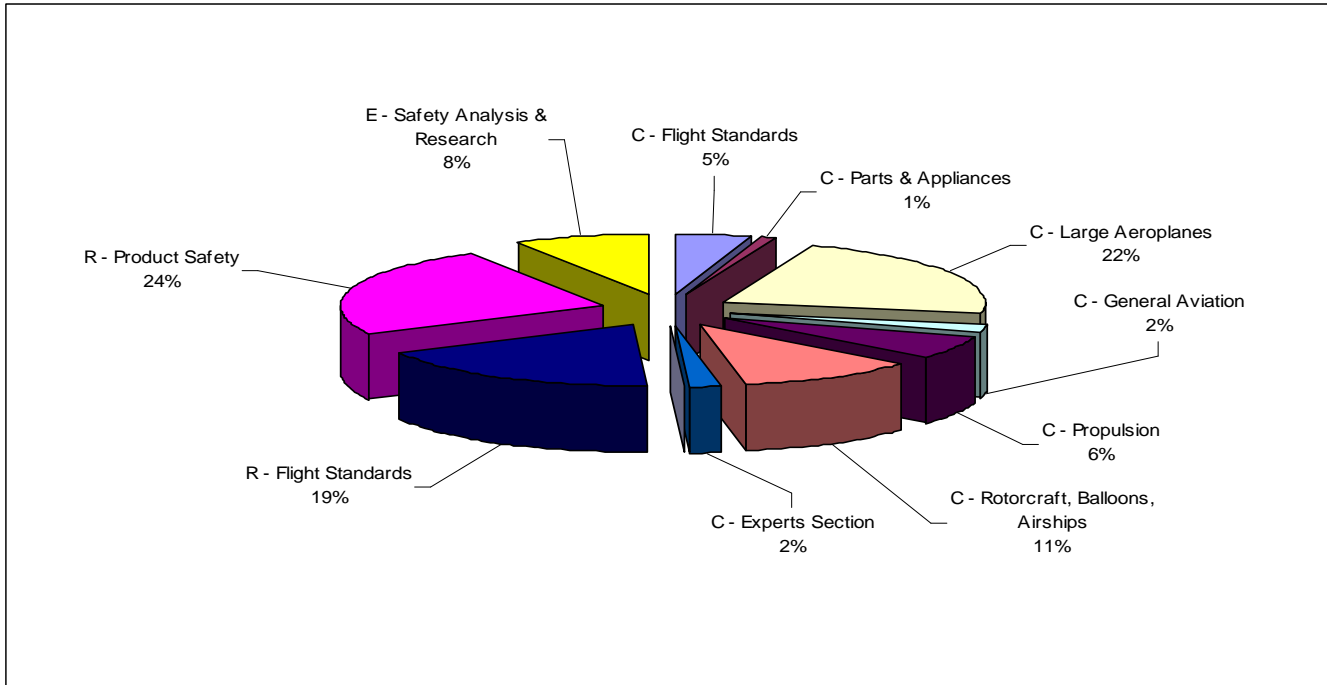


Chart 5: Thematic distribution of Final Safety Recommendations in 2009

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 2009

In 2009, EASA replied to 118 final safety recommendations, concerning 69 different events. The final safety recommendations that were reviewed and replied had been received in the years 2004 (3%), 2005 (4%), 2006 (5%), 2007 (9%), 2008 (15%) and 2009 (64%).

In March 2009 a new procedure establishing a formal first reply within 90 days of receipt of the safety recommendation has been put in place. Whenever a progress is made, a new updated reply is provided until the closure of the safety recommendation.

Only when the final safety recommendation is closed, the final assessment is given using the definitions of classification categories³ given in Annex C.

Thus, in 2009, EASA agreed with the final safety recommendations made by the Accident Investigation Boards in 57% of the cases. Furthermore, in 23% of the cases EASA partially agreed with the final safety recommendations made, while in another 20% the final safety recommendations were not agreed with, as depicted in Chart 6.

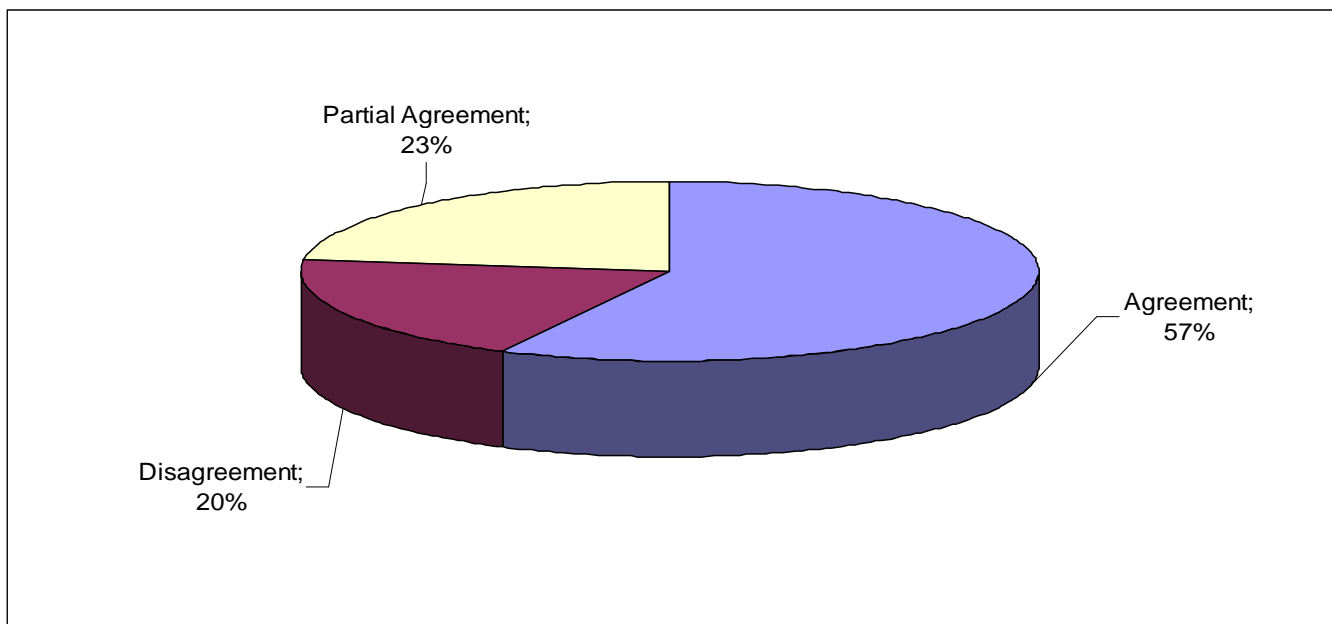


Chart 6: Categories of replies to Final Safety Recommendations in 2009

3.2 Status of final safety recommendations replied in 2009

As far as the status of the safety recommendations replied in 2009 is concerned, 61 (50%) final safety recommendations were classified as closed, while another 61 (50%) remained open, as it

³ These definitions of classification categories have been developed in co-operation with the European Accident Investigation Agencies and are part of a wider set of internal procedures and actions undertaken, in order to better organise the handling of safety recommendations.



was assessed that further actions were required in order to fully address the final safety recommendations made, as displayed in Chart 7.

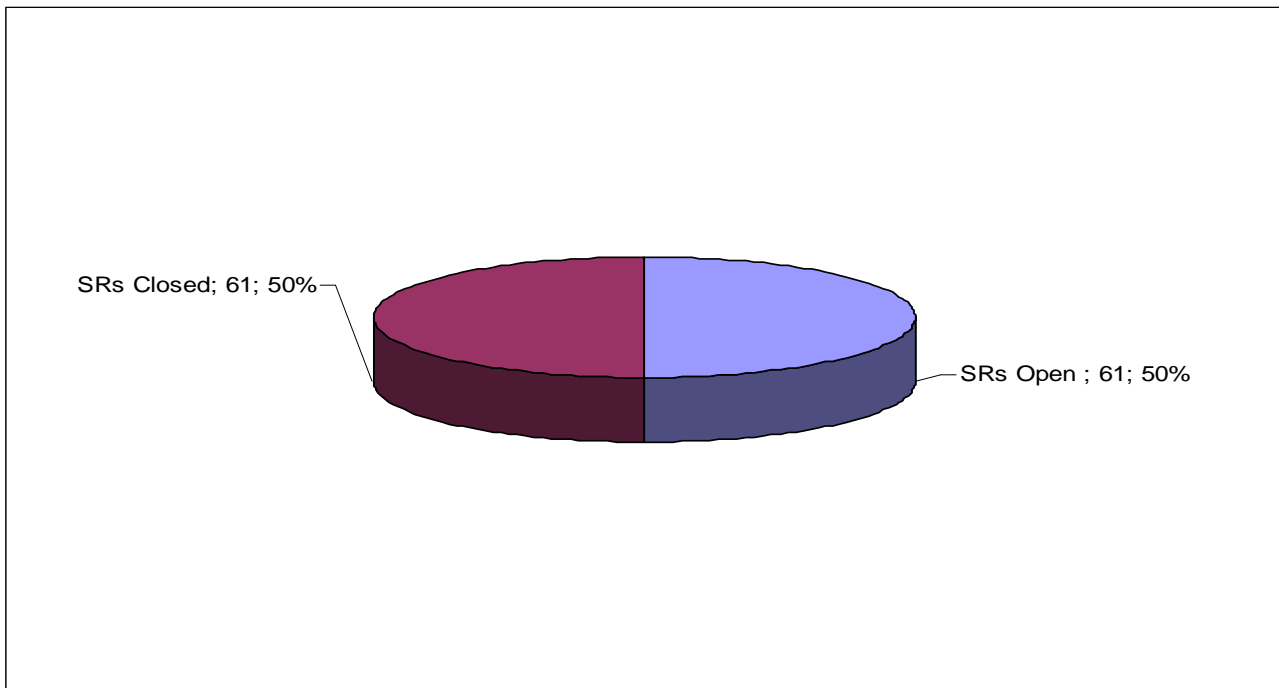


Chart 7: Status of Final Safety Recommendations replied in 2009

3.3 Concluding actions

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

As shown in Chart 8, in the majority of the closed final safety recommendations classified as "agreement" or "partial agreement" (80%), it was determined that considering a modification in Continuing Airworthiness by adding or modifying Rule Directives would be the best way to address the safety recommendation.

It should be reminded that such rule changes require significant amount of 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. Consequently, the proportion of recommendations related to rule changes is increasing every year.

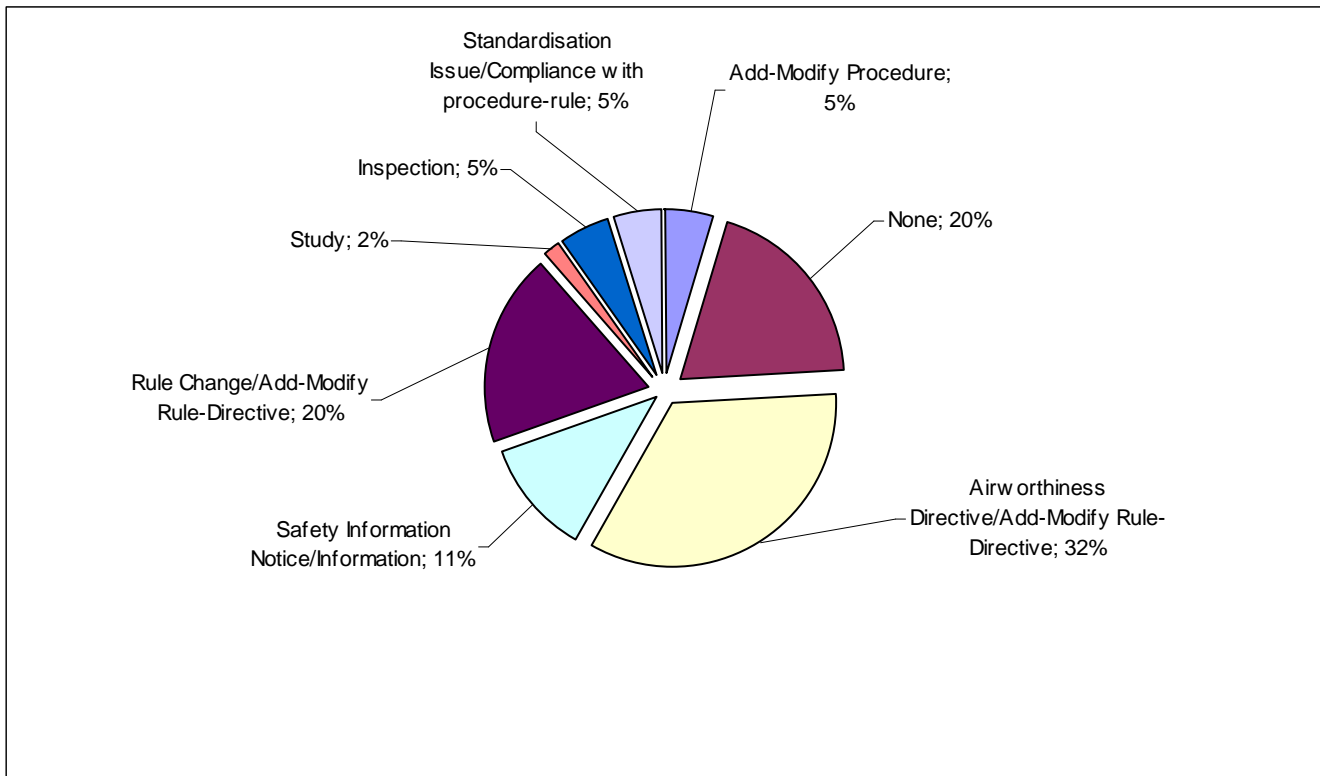


Chart 8: Concluding actions in 2009

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 20% of these final safety recommendations, it was found that no action was needed to be taken by EASA. This is the case when the safety recommendation was disagreed and closed.

Conclusions

In the year 2009, the number of final safety recommendations addressed to EASA has almost doubled since last year, as well as the number of replies.

It is expected that in the future the number will increase further, following the expansion of EASA's competences.

The majority of the final safety recommendations has been addressed to EASA by the Accident Investigation Boards of the Member States.

The largest part of the final safety recommendations received in 2009 was related to certification issues.



4 Annex A: Replies to Recommendations in 2009

All responses made in 2009 to Final Safety Recommendations are listed below. They are sorted by country of origin and grouped by occurrence.

AUSTRALIA ¹

Registration	Aircraft Type	Location	Date of event	Event Type
VH-KTV	CESSNA - 172	West Australia	22/02/2002	Accident

Synopsis of the event: A Cessna 172P (C172) aircraft, VH-KTV and a foreign registered TL Ultralight Sting aircraft, OK-GUU39, converged and collided at low altitude in the vicinity of the threshold of runway 24 right (24R) at Jandakot, WA. The occupants of both aircraft were uninjured. The TL Ultralight Sting (GUU39) was substantially damaged and the C172 sustained only minor damage.

Final Safety Recommendation ASTL-2005-001: The ATSB recommends that as a priority the EASA liaise with the US FAA and the ICAO to develop an international standard for the marking on all aircraft with rocket-assisted recovery parachute systems to ensure that they fully alert persons to the hazards and the danger areas on the aircraft.

Reply: In response to the safety recommendation, as advised in EASA D (2006) E2/JVI/53715 the recommendation has been addressed to and also responded by ICAO.

As a result of the ICAO investigation, ICAO published the State Letter AN 6/26-05/46 dated 12 August 2005, warning states of the danger of rocket- assisted parachute systems and amendments to the Manual of Aircraft Accident and Incident Investigation (Doc 9756 part III - Advance edition). The ICAO Airworthiness Panel concluded that requiring a warning placard would increase safety, however in some conditions associated with aircraft accidents such a warning placard would not be visible until personnel are within the danger zone, hence the mandatory carriage of such a placard would be of limited benefit.

As a result of the above ICAO State Letter and Airworthiness Panel review, the Agency considers that no further action is required.

Category: Agreement - **Status:** Closed

¹ The countries whose Accident Investigation Agencies issued the safety recommendations are presented in alphabetical order.

**AUSTRIA**

Registration	Aircraft Type	Location	Date of event	Event Type
OE-EXF	AEROSPATIALE SA315	- Sölden	05/09/2005	Accident

Synopsis of the event: During a cargo sling operation, the external cargo loads was released in flight and hit a cableway.

Final Safety Recommendation AUST-2005-001: The Aircraft manufacturer shall release a time limit for the usage of P/N PB220. This time limit shall be chosen in a way to assure a proper function of the switch until its removal.

Reply: EASA accepts the Flugunfalluntersuchungsstelle finding that the accident could have been caused by inadvertent operation of the P/N PB220 switch. However, an investigation of the switch design, including an assessment of old switches of the same part number from SA315 helicopters, has been carried out by the switch manufacturer Goodrich. This investigation was supported by Eurocopter and Bureau d'Enquêtes et d'Analyses pour la sécurité de l'aviation civile (BEA) and concluded that the switch is unlikely to have been the cause of the inadvertent cargo release. In addition to the investigation of the switch, Eurocopter have discussed the configuration of Lama s/n 2278 with the operator. At the time of the accident the configuration included a mechanical release handle supplemental type certificate (STC) held by company ERC and a hook STC held by the company On Board. It has been determined by Eurocopter that the combination of these STCs with the SA315 helicopter can present problems with adjustment of the length of the mechanical release system cable. Depending on the mechanical release system configuration and the load on the hook, the release position of the handle can vary significantly. The operator stated that following the STC installation instructions results in an incorrect setting of the cargo release position.

On the basis of the information provided to date by the Flugunfalluntersuchungsstelle, BEA, DGAC and Eurocopter, the Agency has concluded that there is insufficient information to fully understand all of the factors which may have contributed to this accident. Accordingly, in the absence of satisfactory evidence to determine the cause of this accident, EASA is not in a position to introduce a mandatory time limit on the P/N PB220 switch.

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

Registration	Aircraft Type	Location	Date of event	Event Type
OE-FCL	DIAMOND - DA42	Sankt Pantaleon	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.



Final 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: 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

Final Safety Recommendation AUST-2009-009: Gesamtanalyse der Auswirkungen der Acceptable Means of Compliance (AMC), der Certification Review Items (CRI) bzw. der Special Conditions im Rahmen von Zertifizierungen von Luftfahrzeugen/Triebwerken/Propeller nach Certification Specifications 23 (CS-23), Certification Specifications Engines (CS-E) bzw. Certification Specifications Propeller (CS-P):

Im Rahmen der Zertifizierungen von Luftfahrzeugen/Triebwerken/Propellern nach CS-23/CS-E/CS-P können und werden aus verschiedenen Gründen (z.B. weil die CS-23/CS-E/CS-P noch keine Regelungen enthalten, die dem Stand der Technik entsprechen, auf Wunsch des Herstellers o.a.) oft zahlreiche CRI's bzw. Special Conditions festgelegt, die Teil der genehmigten Zertifizierung werden. Auch wenn einzelne AMC's, CRI's bzw. Special Conditions unproblematisch erscheinen, besteht dennoch die Möglichkeit, dass diese im Zusammenwirken mit anderen AMC's, CRI's bzw. Special Conditions im Betrieb des Gesamtluftfahrzeuges zu kritischen Störungen führen können.

Im Rahmen von Zertifizierungen von Luftfahrzeugen, Triebwerken und Propellern nach CS- 23, CS-E beziehungsweise CS-P sollten die AMC's, CRI's und Special Conditions in Bezug auf mögliche Auswirkungen auf das Gesamtluftfahrzeug einer Gesamtanalyse unterzogen werden.

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

Final 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: 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



Final 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: 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

Final 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. Flugunfall vom 20. September 2007 Seite 8 von 9. 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: 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

Final Safety Recommendation AUST-2009-013: Qualifikation von Teilen ausfallkritischer Systeme für Luftfahrzeuge nach CS-23:

In Luftfahrzeugen der Typen DA 40 und DA 42, die mit TAE Triebwerken der Type Centurion 1,7 und 2,0 betrieben werden, wurden Teile (z.B. Kabel, Stecker usw.) insbesondere in ausfallkritischen Systemen festgestellt, die keinen luftfahrtspezifischen Normen entsprechen.

In Luftfahrzeugen, die den Certification Specifications Nr. 23 (CS-23) unterliegen, sollten für ausfallkritische Systeme ausschließlich Teile verwendet werden dürfen, die luftfahrtspezifischen Normen entsprechen (z.B. Kabel, Stecker usw.), wenn nicht im Zuge der Zertifizierung die entsprechenden gleichwertigen Qualifikationen nachgewiesen wurden.

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-GNMJ	AEROSPATIALE AS350	- Kamarang, Guyana	06/02/2005	Accident

Synopsis of the event: At 1725 local time, the pilot of the Eurocopter AS 350 B2 helicopter (registration C GNMJ, serial number 2829) with a 120-foot longline attached, entered a stable, out-of-ground-effect hover to begin coiling the longline onto the ground below the helicopter. As the pilot gradually descended, and at a height of about 10 feet above ground level, he experienced significant binding in the flight controls. The pilot was unable to rectify the control binding and had considerable difficulty maintaining attitude and altitude control of the helicopter. During 15 seconds of random, uncontrolled hover flight, the helicopter turned and climbed to about 20 feet above ground level, whereupon the pilot retarded the throttle lever, causing the main rotor rpm to decay rapidly. As a result, the helicopter descended quickly, struck the ground, bounced, and landed upright, causing substantial damage to the skids, the tail boom, and the main rotor head. The pilot was not injured and the impact forces were insufficient to activate the emergency locator transmitter.

Final Safety Recommendation CAND-2009-001: The Board recommends that: The European Aviation Safety Agency, in coordination with other involved regulatory authorities and industry, ensure that the AS 350 helicopter hydraulic cut-off (HYD CUT OFF) switch is capable of handling the inductive electrical load of the circuit.

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

**DENMARK**

Registration	Aircraft Type	Location	Date of event	Event Type
TF-FIR	BOEING - 757	Denmark N56°30,7 E010°07,7	11/01/2007	Incident

Synopsis of the event: A few minutes after the descent was initiated from FL370 (37000 ft) the left hand off-wing escape slide separated from the aircraft. The aircraft landed in EKCH and it was confirmed that the left off-wing escape slide was missing. The left stabilizer was damaged by the slide when it separated from the aircraft.

Final Safety Recommendation DENM-2007-001: Ensure that the aircraft manufacturer change the "Emer Doors, L and R Wing Slide" advisory light message level from advisory to warning and revises the cockpit crew checklist procedure (the Boeing 757 Operations Manual/Quick Reference Handbook) to include and ensure an immediate flight crew action.

Reply: The Engine Indicating And Crew Alerting System (EICAS) alert-level message for a 757 wing slide access door is assessed as advisory-level alert. An advisory-level alert is classified as an alert which requires routine crew awareness. The alert message is not a direct indication of a deployed over-wing escape slide. Rather, the message indicates the wing slide door is not closed, latched, and locked.

As such, Boeing has assessed the message level of advisory to be appropriate and this is agreed by EASA.

In addition, the Boeing-published WING SLIDE checklist contained in the 757 Quick Reference Handbook (QRH) does already contain the recommended flight crew response in the event a confirmed in-flight wing-slide deployment and no further improvement is found necessary.

Category: Disagreement - **Status:** Closed

Final Safety Recommendation DENM-2007-002: Ensure that the aircraft manufacturer evaluates the possibility of a physical or visual verification of the locking of the off-wing escape slide carrier and door lock system.

Reply: Boeing Service Bulletin (SB) 757-25-0298 has been released. It gives instructions:

- to change the latch fittings to provide positive locking of the off-wing escape slide compartment door,
- to change the witness mark placards on the door frame of the maintenance access door.

These changes address the safety recommendation because they enhance the existing visual and physical indications of a secure escape slide compartment by eliminating the possibility that the door fittings will be partially engaged and the door appearing flush with the fuselage.

It is the Agency's understanding that the FAA has planned to issue an AD that will require retrofit of this Service Bulletin.

Category: Agreement - **Status:** Closed

Final Safety Recommendation DENM-2007-003: Ensure that the aircraft manufacturer revises the work task card to ensure proper locking of the off-wing escape slide system.

Reply: Boeing has revised the Aircraft Maintenance Manual (AMM) sections related to the off-wing escape slide system to clarify the correct opening and closing of the compartment.

The applicable AMM sections are also being revised for aircraft that will be modified by SB 757-25-0298.

Category: Agreement - **Status:** Closed



Registration	Aircraft Type	Location	Date of event	Event Type
LN-RDK	DE HAVILLAND - DHC8	Aalborg Airport (EKYT)	09/09/2007	Accident

Synopsis of the event: The accident flight was a scheduled domestic flight from Copenhagen Airport, Kastrup (EKCH) to Aalborg Airport (EKYT). During the approach to EKYT the flight crew selected the landing gear down and did not get the appropriate down and locked indication for the right main landing gear (MLG). After a number of unsuccessful attempts to achieve the appropriate down and lock indication the flight crew declared an emergency. Approximately two seconds after touchdown on runway 26R the right MLG collapsed.

There were a total of seven minor injuries amongst the four crew and 69 passengers on board. The accident occurred in daylight and under visual meteorological conditions (VMC).

Final Safety Recommendation DENM-2009-001: It is recommended to review the design, the certification and the maintenance program of the MLG retraction/extension actuator and rod end.

Reply: The recommended review has been completed by Transport Canada, authority of the State of Design for the DHC-8-400 aircraft, and has resulted in the issuance of Airworthiness Directive (AD) CF-2007-20 which is presently at revision 2, dated 6 February 2009. This AD requires repetitive inspections of the Main Landing Gear retraction actuator and its modification to an improved design.

EASA has accepted the results of this review and adopted AD CF-2007-20 revision 2.

Category: Agreement - **Status:** Closed

Final Safety Recommendation DENM-2009-002: It is recommended to review the landing gear abnormal and emergency procedures contained in the manufacturer's Airplane Flight Manual and Quick Reference Handbook.

Reply: A review of the Aircraft Flight Manual (AFM) was completed as a result of the safety recommendation and the following changes were made:

- Under section 4.21 'Landing Gear Malfunctions', an introductory note has been added to the conditions for use of the alternate landing gear extension procedure in case of "any landing gear retraction or extension malfunction which would not be covered by a specific procedure".
- The new procedure of Section 4.21.2 'All Landing Gear Fail to Retract' was added, which instructs the crew to select landing gear down and land at the nearest suitable airport.

The manufacturer's Quick Reference Handbook (QRH) revision 21, dated 09 October 2008, was reviewed to confirm that the AFM latest additions were incorporated. The Agency considers that the above modifications meet the intent of the recommendation mentioned above.

Category: Agreement - **Status:** Closed



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 IBE 6463 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.

Final 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: 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

Final Safety Recommendation ECUD-2009-003: PARA EASA

Que las autoridades de certificación se aseguren de que las barras LAL cumplan con lo establecido en las regulaciones sean instaladas en los aviones en servicio.

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

**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 September 19, 2004, at 1430 UTC, a Lake L-4-200, OH-AKF, was destroyed when it collided with the water on Lake Akaslompolo, Kolari, Finland. The pilot and passenger received fatal injuries and the airplane was destroyed. The flight originated at Lake Jerisjarvi, Muonio, Finland with a destination of River Ounasjoki, Rovaniemi, Finland.

Final 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.

Category: Unknown - **Status:** Open

Final Safety Recommendation ESTO-2008-002: Commission also recommends that FAA or EASA will introduce a requirement for deployable ELT for helicopters operating on passenger flights over water.

Category: Unknown - **Status:** Open

Final 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.

Category: Unknown - **Status:** Open



FINLAND

Registration	Aircraft Type	Location	Date of event	Event Type
OH-HAY	HUGHES - 269C	Vuomaselkä	21/09/2005	Accident

Synopsis of the event: In the vicinity of Vuomaselkä reindeer round-up corral in Sodankylä municipality, about 7 km south-west from Kakslauttanen occurred an accident for a Hughes 259C helicopter registration sign OH-HAY, owned by a commercial flying company, on Wednesday September 21st 2005, at 10.25 Finnish time. The helicopter fell down on the ground from low altitude and was substantially damaged. The pilot and the accompanying observer were slightly injured.

Final Safety Recommendation FINL-2007-002: The European Aviation Safety Agency, EASA, and the Federal Aviation Administration, FAA; should take action so that all intake outer valve spring seats P/N LW10077 of production lot 17328 33-04 of Textron-Lycoming engine HIO-360-D1A shall be replaced by corresponding spring seats of another production lot.

Reply: According to Lycoming the failure of the valve spring seat was caused by operation of the engine in non approved overspeed conditions and therefore an action to replace all intake outer valve spring seats P/N LW10077 of the specified lot is not justified. EASA agrees with Lycoming's position.

Category: Disagreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
OH-CAU	CESSNA - 172	Porvoo motorway	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, 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.

Final Safety Recommendation FINL-2009-001: The investigation commission recommends that the EASA take action to establish whether JET A1 can safely be used as fuel in diesel engine-equipped aircraft, and if it can, the required 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

Final Safety Recommendation FINL-2009-002: The investigation commission recommends that the EASA consider whether a new type certificate test be required for TAE engine high-pressure fuel pumps, using such JET A1 fuel which meets the lowest permissible lubricity value set for jet engine fuel.

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



Final 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: 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
	Various types	Various locations	Various dates	Various events

Scope of the study: The readout of Flight Data Recorders (FDR), whether performed in France or elsewhere, often brings to light a variety of problems such as aircraft operators having incomplete, outdated or inappropriate documents or not having the relevant documentation at all. Sometimes this significantly delays the validation of the readout work.

However, rapidly obtaining complete and accurate data after an accident or an incident is often critical for the technical investigation and, in a broader way, to air transport safety. Data extracted from FDRs help to determine causes and to develop appropriate preventive measures.

There are no single guideline documents relating to FDR regulations. Several international and French texts touch on these aspects, though not always in a coherent fashion.

In order to get a complete picture of the problems encountered, the BEA has produced this study, based on the analysis of known issues and on consultations with French aircraft operators. Its objective is to increase awareness among the various actors of the importance of FDRs for accident prevention and to recommend improvements.

Final Safety Recommendation FRAN-2005-004: The BEA recommends that the DGAC ensure, in cooperation with the JAA, that European regulations be updated to meet the standards of ICAO Annex 6 in terms of necessary corrective actions when a mandatory parameter is not correctly recorded or the chronological recording structure does not match the history of the flights performed.

Reply: Attachment D to ICAO Annex 6 Part I provides guidance for a proper maintenance of the recorders. Relevant provisions exist in EUROCAE Annex I-A to ED-112. NPA (Notice of Proposed Amendment) 2009-002, dealing with Implementing Rules for Air Operations of Community Operator, contains provisions [GM OPS.GEN.505 c) and d)] which should satisfy the intent of the safety recommendation.

Category: Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
F-HAPC	AVIONS ROBIN - R2120	Ferrières en Brie	09/09/2006	Accident

Synopsis of the event: On September 9, 2006, at 13h50 UTC time, a Robin R 2120 U, registered F-HAPC, suffered a power loss during initial climb at Ferrières en Brie, France. The pilot performed an emergency landing in a field and the airplane was destroyed.

A post accident examination of the engine was conducted and revealed no particular malfunctions. However, disassembly of the carburettor revealed that the polymer float contained fuel.

Final Safety Recommendation FRAN-2007-002: That the EASA, in liaison with the FAA, make arrangements to withdraw the polymer float and perform a reliability study on the new one.

Reply: EASA issued Safety Information Bulletin 2009-04 to recommend replacement of the polymer floats and will monitor the reliability of the new floats on the basis of aircraft or engine in-service occurrences that would be reported to EASA.

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



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

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

Final Safety Recommendation FRAN-2007-004: Le BEA recommande que: l'AESA évalue la capacité des systèmes automatiques de poussée équipant les différents types d'avion de transport à assurer une gestion satisfaisante de poussée dans les conditions mises en évidence lors de l'enquête.

Reply: 1) For new aircraft designs, this Safety Recommendation is addressed as a result of Amendment 4 to CS-25 dated 27 December 2007. CS-25 Amendment 4 introduces a revised CS25.1329; in particular Paragraph (g) of this requirement states that:

"Under any condition of flight appropriate to its use, the flight guidance system must not:

- produce unacceptable loads on the aeroplane (in accordance with CS25.302), or
- create hazardous deviations in the flight path.

This applies to both fault-free operation and in the event of a malfunction, and assumes that the pilot begins corrective action within a reasonable period of time."

A flight guidance system is defined as a system consisting of one or more of the following elements:

- a) autopilot,
- b) flight director,
- c) automatic thrust control,

and any interactions with stability augmentation and trim systems.

2) For already certified designs EASA has performed a review of in-service experience, looking for occurrences where the behaviour of the autothrust or autothrottle might have been an aggravating factor during a windshear encounter. No such occurrences could be found. Also in the case of the A340 F-GLZC incident, it is noted that the capacity of the autothrust system to manage the thrust during the windshear encounter was not found to be deficient. There is therefore not enough evidence available to justify a design review of existing certified autothrust/autothrottle systems.

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

Registration	Aircraft Type	Location	Date of event	Event Type
F-OIQI	DE HAVILLAND - DHC6	Moorea, French Polynesia	09/08/2007	Accident

Synopsis of the event: L'avion décolle de l'aérodrome de Moorea pour un court vol à destination de Tahiti Faa'a. Il s'élève normalement jusqu'à une altitude estimée entre trois et quatre cents pieds puis le pilote rentre les volets et ajuste les paramètres moteurs. Il perd alors le contrôle en tangage de l'avion après la rupture du câble de la commande à cabrer de la profondeur. L'avion se met à piquer brusquement et percute la surface de l'eau à environ sept cents mètres du rivage.



Final Safety Recommendation FRAN-2007-008: Le BEA recommande à l'AESA et à Transports Canada que les câbles de commande de gouverne en acier inoxydable soient interdits sur les DHC6, du moins jusqu'à ce que l'amélioration des connaissances sur leur comportement permette de déterminer de nouvelles exigences réglementaires et de mettre en place des procédures d'entretien appropriées.

Reply: Following this accident and given the uncertainties on the maintenance program applied by the operator on the aircraft involved, the Agency has released Safety Information Notice 2007-38 on 10 October 2007 recommending all operators to inspect the control cables and report findings to their National Authority. It was followed by a Transport Canada Service Difficulty Alert No. AL-2007-03 emphasizing the replacement time of one year in a salty environment (revised EASA SIN 2007-38R1).

In December 2007, Transport Canada and EASA agreed on a cable survey conducted by Viking Air amongst operators engaged in high cycle/hour ratio operations. Viking sent out All Operator Message DHC-AOM-27-002 and Elevator Control Cable Wear Survey – 001 to 27 DHC-6 operators. The survey results were reviewed in February 2008 by Transport Canada and EASA and it was concluded that no unsafe condition was revealed through the survey findings.

However, the following recommendations were made:

- a) Operators to use stainless steel cable in a marine or saline environment.
- b) Viking to add a statement in the Instructions for Continued Airworthiness (ICA) specifying that the flooring between STA 332.0 and STA 376.0 be removed when replacing control cables to ensure they are rigged correctly.
- c) Viking to incorporate the inspection procedure specified in Service Bulletin 6/523 into the ICA.
- d) Viking to incorporate a Special Inspection (SI), at a 125 hour interval, for those aircraft operated in tropical marine or tropical saline environment. The SI would be targeted to areas most susceptible to wear.

Those recommendations were implemented through Temporary Revisions issued by Viking Air to the Instructions for Continued Airworthiness in April 2008 and the DHC6 OEM recommended maintenance program on 15 September 2008.

Following the release of the final investigation report including this safety recommendation, Transport Canada reviewed all flight control cable related Service Difficulty Reports. The status presented in March 2009 showed that, since significant improvements to the maintenance program were done after the 1995 DHC6 accident (rupture of a carbon steel control cable), nearly no Service Difficulty Report on control cables were reported.

In addition, a flight control cable return program has been established through Service Letter DHC6-SL-27-002 on March 18, 2009. This return program is applicable to any control cable that, due to wear or corrosion, has been removed prior to the OEM recommended service life limit.

Transport Canada issued Service Difficulty Alert No. AL 2007-03R1 on 10 June 2009 to emphasise the revisions to the Instructions for Continued Airworthiness and to support the flight control cable return program.

EASA has issued Safety Information Bulletin 2009-37 on 16 September 2009 for the same purposes. In addition, the EASA SIB recommends that all flight control cables that are replaced at their mandatory replacement time of 12 months or 5 year, be inspected, and that any finding of damaged, worn or corroded flight control cable, beyond the acceptance criteria, be reported to Viking Air.

Furthermore, the accident investigation report concludes that wear alone (as observed on the accident aircraft cables) is not sufficient to explain the control cable failure.

An additional high tensile overload is therefore envisaged in the investigation report as an additional significant causal factor.

The action of the gust lock mechanism protecting the control cables from overload was investigated as well as the difficulty to inspect control cables and to check their rigging.

During an EASA inspection of a DHC6-400 prototype at Viking in July 2009, it was validated that the elevator control system is easy to rig and inspect. In addition, the analysis of the maximum



elevator deflection necessary to introduce overload on cables when the gust lock is engaged shows that overload is possible only if the rear stop fails, which is not a finding from the accident investigation.

Transport Canada, being State of Design authority for the DHC-6 aircraft, expressed their view that the Instructions for Continued Airworthiness checks as recommended by the OEM existing at the time of the accident were and are sufficient to preclude the operation of an aircraft with control cables in an unsafe condition. Transport Canada believes that, neither the evidence provided in this investigation, or the present in-service history, support the above mentioned safety recommendation; therefore no additional action will be taken by Transport Canada in response to this recommendation.

In conclusion, based on all actions and investigations carried out by Transport Canada and EASA, the Agency has not determined the existence of an unsafe condition that would warrant an Airworthiness Directive to mandate the replacement of all stainless steel cables.

Several improvements have been made to the Instructions for Continued Airworthiness and the Agency will continue to monitor, in cooperation with Transport Canada, the future service experience of DHC6 flight control cables.

Category: Disagreement - **Status:** Closed

Final Safety Recommendation FRAN-2007-009: Le BEA recommande à l'AESA et à Transports Canada qu'il soit effectué, au vu des enseignements de cette enquête, une revue de la conception et de l'expérience en service des autres aéronefs sur lesquels des câbles en acier inoxydable sont utilisés pour les commandes primaire afin de déterminer les mesures qui pourraient apparaître utiles à la sécurité.

Reply: Based on all actions and investigations carried out by Transport Canada and EASA as explained in the reply provided for Safety Recommendation FRAN-2007-008, it has been determined that extending the review of design and in-service history of the stainless steel cables on other aircraft types is not warranted. Transport Canada and EASA will continue to monitor the service experience of stainless steel control cables as documented in investigation reports and reportable occurrences, and take action as appropriate.

Category: Disagreement - **Status:** Closed

Final Safety Recommendation FRAN-2007-013: Le BEA recommande que l'AESA considère l'opportunité de prendre en compte le jet blast dans le processus de certification des aéronefs.

Reply: The Agency considers it impractical that loads resulting from jet blast should be addressed by the aircraft Certification Standards. Furthermore, ICAO Annex 14 Aerodromes and the ICAO Aerodrome Design Manual part 2 (Doc 9157) provide adequate criteria and guidance on the design and layout of aerodromes in order to mitigate and minimise the risk of damage caused by jet blasts and consequently no further action will be undertaken.

Category: Disagreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
Various	Various types	Study on public transportation turbulences in	Various dates	Various events

Scope of the study: Les phénomènes de turbulences occasionnent régulièrement des blessures graves parmi le personnel de cabine et les passagers, ainsi que des dommages à la structure de l'avion. Dans certains cas, ils provoquent des blessures mortelles.



Cette étude s'intéresse aux accidents et incidents de transport public survenus en croisière au cours desquels les turbulences rencontrées sont d'origine atmosphérique. Sont donc exclus les événements pour lesquels une action sur les commandes est la cause principale des accélérations rencontrées et ceux engendrés par des turbulences de sillage. Dans ce cadre, le BEA a recensé quarante-huit occurrences entre 1995 et 2007 survenues en France ou à l'étranger à des avions exploités, immatriculés ou construits en France. Dix-neuf de ces occurrences pour lesquelles le dossier est particulièrement complet, ont été utilisées pour identifier les facteurs contributifs dans ce type d'événements.

Pour réaliser cette étude, le BEA a également utilisé des informations fournies par Météo France, la DGAC (DSNA et DCS), Eurocontrol, Airbus ainsi que plusieurs exploitants français.

Dans cette étude, les circonstances des accidents ou incidents et le rôle joué par les différents acteurs sont analysés afin d'en tirer des enseignements de sécurité. Les aspects relatifs au contrôle aérien et aux prévisions météorologiques sont abordés dans le contexte français actuel.

Final Safety Recommendation FRAN-2008-001: Le BEA recommande que l'AESA et Eurocontrol veillent à la mise en œuvre de systèmes de communication d'informations météorologiques par liaison de données permettant leur centralisation et leur redistribution vers les postes de pilotages et les positions de contrôle.

Reply: The concept of the provision of AIS/MET Services (Aeronautical Information Services and Meteorological Services) and data distribution including the use of datalink is part of the Single European Sky ATM (Air Traffic Management) Research (SESAR) work programme. As the concept and technology improves, the Agency will develop the required regulatory material.

Category: Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
F-WWCJ	AIRBUS - A340	Toulouse Blagnac airport	15/11/2007	Accident

Synopsis of the event: Le 15 novembre 2007, l'Airbus A 340-600 F-WWCJ faisait l'objet d'essais au point fixe sur l'aérodrome de Toulouse Blagnac. L'essai en cours consistait à tester différents systèmes avec des techniciens de la compagnie aérienne qui avait commandé l'avion. Il se déroulait moteurs en fonctionnement sans cales de roue. A l'issue de ces tests, après avoir arrêté et inspecter les moteurs, les techniciens les ont redémarrés pour un nouveau point fixe à puissance élevée, pour rechercher l'origine de suintements d'huile. Environ trois minutes après la mise en puissance, l'avion a commencé à avancer. Le technicien en place gauche a perçu le mouvement et a informé le technicien d'essais en place droite. Ce dernier a agi sur les freins situés aux palonniers puis a relâché le frein de parc. Le DFDR montre ensuite un relâchement de l'ordre de freinage au palonnier. L'avion continuant d'avancer, il a essayé de dévier sa trajectoire en utilisant le volant de direction. Le train avant s'est rapidement mis en travers alors que l'avion accélérât.

L'avion a heurté le plan incliné du mur anti-souffle. Sa partie avant s'est brisée et a basculé de l'autre côté. Il s'est écoulé treize secondes entre le début de mouvement de l'avion et le choc avec le mur.

Final Safety Recommendation FRAN-2008-002: Le BEA et le BEAD-Air recommandent: que l'AESA et le CEV évaluent les procédures utilisées lors des essais au sol et des vols de livraison clients, et contrôlent leur bonne application.

Reply: Actions as recommended are being considered in cooperation with CEV and Airbus.

Category: Unknown - **Status:** Open



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

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

Final Safety Recommendation FRAN-2009-001: Le BEA recommande que tout en veillant à maintenir les exigences opérationnelles relatives au contrôle du dégivrage avant le vol, l'AESA s'attache à faire évoluer les spécifications de certification pour demander l'analyse du comportement des avions lorsque les surfaces d'ailes sont contaminées au sol et pour garantir le maintien des marges de sécurité acceptables en cas de contamination légère.

Reply: A new rulemaking task has been created and added to the EASA rulemaking inventory list. The objective of this task is to propose new CS-25 provisions which will require applicants to perform an analysis of the on-ground wings contamination effect on Takeoff performance degradation. The contaminants to be considered in the analysis should be: slight ice contamination that is difficult to detect by visual observation; contamination of the upper wing caused by cold soaked fuel phenomenon; residual ice contamination present after wing de-icing procedure; de-icing fluids residue.

The applicant would have to demonstrate that the effect on Takeoff performance degradation is not hazardous. If a hazardous effect is possible, then measures shall be put in place to alleviate the risk.

Category: Unknown - **Status:** Open

Final Safety Recommendation FRAN-2009-002: Le BEA recommande que l'AESA impose l'installation du dispositif de réchauffage au sol des bords d'attaque sur la flotte Fokker 28.

Reply: EASA has published AD (Airworthiness Directive) 2009-0008 on 12 January 2009, which requires installation of the On Ground Wing Leading Edge Heating System (OGWLEHS) within 24 months of the effective date of the AD (26 January 2009). Note that this AD states that the OGWLEHS does not replace the required procedures to prevent take-off with contaminated wings. This is important since it is known that in the majority of ground ice accidents the aircraft were not de-iced because the mindset of the pilots was such that they did not consider ground ice.

Category: Agreement - **Status:** Closed

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

Synopsis of the event: The 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. After about an hour of flight, the airplane 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). A short time after overflying the initial approach point, during a phase of flight at low speed, the crew lost control of the airplane, which crashed into the sea.

Final 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: 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

Final 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: 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

Final 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 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
A6-BSM	LOCKHEED - L1011 385	Paris Charles de Gaulle Airport	04/07/2005	Incident

Synopsis of the event: After difficulties during boarding, the airplane took off late. A short time after retracting the landing gear, the crew heard a series of thumps and noticed that engine 3 TGT was increasing. They applied the FIRE OR SEVERE DAMAGE procedure, performed an aerodrome circuit and landed.

The investigation showed that the engine had suffered from a serious sustained (pop) surge. This was caused by a combination of wear to the compressor blades, damage caused by an object passing through the intermediate and high-pressure compressor stages and the stresses induced by this phase of takeoff.

The investigation also showed that the airplane was in bad overall condition and that the absence of a framework for documentation made it impossible for the operator to ensure appropriate follow-up of maintenance operations.

The investigation showed that, in general, there were numerous failings in the operation. The safety inspections performed at several levels did not enable these failings to be corrected. Nor did they prevent the airplane from being flown in Europe.

Final Safety Recommendation FRAN-2009-006: Le BEA recommande que: l'AESA impose au personnel de cabine des compétences minimales en langue anglaise, ainsi que dans l'une au moins des langues du pays d'origine ou de destination.



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-GVPD	BEECH - C90	Besançon - La Vèze	18/10/2006	Accident

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

Final Safety Recommendation FRAN-2009-007: Le BEA recommande que l'AESA étudie l'élargissement des conditions imposant la présence d'un équipage à deux pilotes en transport public.

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

Final Safety Recommendation FRAN-2009-008: Le BEA recommande que l'AESA élargisse les conditions d'obligation d'emport d'enregistreurs de vol en transport public.

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
X-XXXX	AIRBUS - A300	en-route near Munchen	03/12/2002	Serious incident

Synopsis of the event: The aircraft with 189 passengers and 8 crewmembers on board took off at 10:40 hrs in Munich for a scheduled flight to Frankfurt. While climbing to cruise level with autopilot (AP2) engaged, the crew noticed during a routine check of the instruments that the allowed airspeed (V_{mo}) would be exceeded. As a countermeasure the preset speed was reduced and a higher climb rate selected on the AP panel. The AP was disengaged after it was noted that the airspeed increased further and the nose started to drop. Once the pilot took control of the a/c it was trimmed nose down. It was no longer in climb and the max allowed airspeed was exceeded by 16kt. A great amount of control forces had to be applied until the wrong trim could be corrected by means of the electrical trim device. Vertical acceleration was so great during the re-establishment of the original flight attitude that one crew member fell and injured herself slightly. The flight was continued with disengaged AP and no further incidents.

Final Safety Recommendation GERF-2004-025: EASA as the cognizant aircraft type certification authority should see that the Master Minimum Equipment List (MMEL) for Airbus A300/A310 aircraft does not permit flight operation with the Autopilot (AP) engaged when only one Pitch Trim System (PTS) is serviceable.

Reply: For the aircraft configuration impacted by the autotrim function misbehaviour, the MMEL dispatch conditions have been revised to request the check of the remaining Pitch Trim autotrim circuit before each flight.

Additional corrective actions were taken through issuance of CN F-2003-165(B) and CN F-2005-111.

EASA has reviewed the Airbus position and concurs that whatever the aircraft configuration, the MMEL allows a safe dispatch in case of 1 PTS inoperative.

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

Final Safety Recommendation GERF-2004-026: EASA as the cognizant type certification authority should see that the Criteria for Dispatch (JAR-MMEL/MEL, page 2-C-3, No. 3 dated 1 May 2000) are adopted in all aircraft manufacturers' Master Minimum Equipment Lists (MMEL), and that the latter are supplemented to clearly specify the circumstances where aircraft with unserviceable systems and/or unserviceable items of equipment may be used for flights departing from maintenance bases with appropriate maintenance facilities (home bases).

Reply: NPA (Notice of Proposed Amendment) 2009-001, dealing with "Operational Suitability Certificate" and "Safety Directives" contains provisions in 21A.62 which should satisfy the intent of the safety recommendation.

Category: Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
Several	No product	Various locations	15/04/2008	Accident

Synopsis of the event: During the investigation of aircraft accidents in the last few years, the German Federal Bureau of Aircraft Accidents Investigation (BFU) has determined that 406 MHz emergency locator transmitters (ELT) were activated in a crash and functional. However, the



satellite supported Cospas-Sarsat System was not able to receive their signals and locate the transmitters.

Final Safety Recommendation GERF-2009-019: The European Aviation Safety Agency (EASA) and the Federal Aviation Administration (FAA) should ensure that in case of new installations and refitting of 406 MHz emergency locator transmitters (ELT) in aircraft only ELTs with an additional internal antenna, or an external antenna designed in a way that the emission of the emergency signal is ensured after an accident are installed.

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
X-XXXX	EUROCOPTER - EC120	Aerodrome Bonn-Hangelar	29/01/2009	Accident

Synopsis of the event: In the scope of a training flight for obtaining the minimum type experience for flight instructors (JAR-FCL 2.330), emergency procedures were to be performed at the Bonn-Hangelar aerodrome. For this, two flight instructors started with the helicopter EC120B at 11:19 a.m. According to the statements of the pilots, the first two simulated engine failures were to be flown by the pilot sitting on the right side, and subsequently the pilot in command sitting on the left side was to execute the next ones. During his first simulated forced landing, he went round again, because, as he reported, it was difficult to reduce the throttle (fuel flow twist grip) at the left collective pitch lever for idle operation. During the next attempt, he initiated the simulated forced landing at approximately 1,200 ft MSL. After stabilizing the airspeed and the main rotor speed, the pilot on the right side reduced the throttle at the right collective pitch lever. The pilot sitting on the left side continued the autorotation in easterly direction towards the emergency landing point in the northern grass area. At a height of approximately 100 ft GND, the pilot initiated the flare. The other pilot supported him by announcing the indicated horizontal degree values from the artificial horizon.

During the flare, the sinking tendency was broken. The helicopter reduced the forward speed and touched the ground easterly of the designed landing area with less than 30 kt, with a slight "nose up" attitude of approximately five degrees. During the subsequent slide out there was a strong deceleration. The helicopter rolled slightly to the right side around the longitudinal axis, turned to the right around the vertical axis, and received a nose-down attitude. The nose of the helicopter touched the ground; the helicopter continued to move to the right and tilted to the left, where the main rotor blades hit the ground. The pilots stopped the engine manually, switched off the electric system with the emergency power off switch and left the helicopter through the right cockpit door without any injuries.

Final Safety Recommendation GERF-2009-024: The European Aviation Safety Agency (EASA) should induce the manufacturer of the helicopter EC 120 B to revise the skid landing gear. The tilting tendency to the front should be reduced and more ground clearance below the tail should be provided.



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
X-XXXX	BEECH - 300	Freiburg aerodrome	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 im 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 3 to 4 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.

Final Safety Recommendation GERF-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: 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
X-XXXX	BINDER - ETA	Flugplatz Büching by Ostheim	30/09/2003	Accident

Synopsis of the event: A number of sailplane spinning flights were conducted as part of the test-flying programme prior to application for the Type Approval Certificate. These took place without incident. The next test flight was a further spinning trial, this time with asymmetric distribution of fuel for the auxiliary motor.



Final Safety Recommendation GERF-2009-032: The European Aviation Safety Agency (EASA) should incorporate "maximum possible aerodynamic loads resulting from a combination of rudder deflection and yawing condition" into the certification specifications for designs of vertical fins of sailplanes and powered sailplanes.

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
X-XXXX	FOKKER - F28	Stuttgart Airport	14/09/2009	Accident

Synopsis of the event: On 14 September 2009, at 08:49 UTC, a F28 Mark 0100 (Fokker 100), conducted an emergency landing with a not completely extended main landing gear (MLG) at Stuttgart Airport (SIR).

On approach to Stuttgart the main landing gear failed to extend. After several unsuccessful attempts to lower the gear, an emergency landing was carried out. There were no injuries among the 73 passengers and 5 crew-members. The aircraft was substantially damaged.

Investigation revealed two pieces of hard plastic in the Check Valve, which was installed in the hydraulic return pressure line between the Pilot-and-Main Slide of the Main Landing Gear Selector Valve and the return system.

Final Safety Recommendation GERF-2009-033: The European Aviation Safety Agency (EASA) should ensure that the holder of the type certificate of the F28 Mark 0100 and Mark 0070 (Fokker 100/070) establish the mandatory installation of the modified Parking Brake Shut Off Valve (PBSOV) where not already installed.

Reply: EASA issued AD 2009-0220 "Landing Gear - Parking Brake Shut-off Valve (PBSOV) - Replacement" on 14 October 2009.

Category: Agreement - **Status:** Closed

Final Safety Recommendation GERF-2009-034: The European Safety Agency (EASA) should ensure that the holder of the type certificate of the F28 Mark 0100 and Mark 0070 (Fokker 100/070) has to establish the inspection of any associated hydraulic lines and components for the presence of pieces of material from the pre-mod Parking Brake Shut Off Valve (PBSOV) poppet seat remaining the system.

This action should be carried out on all aircraft type mentioned above, irrespective of which modification of PBSOV is installed.

Reply: EASA issued AD 2009-0220 "Landing Gear - Parking Brake Shut-off Valve (PBSOV) - Replacement" on 14 October 2009.

Category: Agreement - **Status:** Closed



GREECE

Registration	Aircraft Type	Location	Date of event	Event Type
5B-DBY	BOEING - 737	near Grammatiko	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.

Final Safety Recommendation GREC-2006-045: EASA/JAA and ICAO require aircraft manufacturers to evaluate the feasibility of installation of a CVR that records the entire flight.

Reply: The Safety Recommendation was studied in accordance with the rulemaking process. The Agency, after consulting its advisory bodies, considers that recording the entire flight is not expected to bring significant safety benefit, while it would induce high costs for operators.

Category: Disagreement - **Status:** Closed

Final Safety Recommendation GREC-2006-046: EASA/JAA and ICAO require all company communications with the aircraft (operations office, technical base/stations, and airport stations) to be recorded.

Reply: The Safety Recommendation was studied in accordance with the rulemaking process. The Agency, after consulting its advisory bodies, considers that recording all company communications with the aircraft is not expected to bring significant safety benefit, while it would induce significant costs for operators. In the future, data link communication is expected to provide additional information.

Category: Disagreement - **Status:** Closed

**HUNGARY**

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

Synopsis of the event: The Air Ambulance helicopter (registration HA-ECE, call sign MEDIC-14) flew a patient transportation mission on 31 July 2008 from Paks to Budapest.

The helicopter's mark disappeared from the radar screen at 13:43. Its last indicated position was 2.2 km 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.)

Final Safety Recommendation HUNG-2008-001: The IC recommends the flight safety authorities to take necessary steps to notify operators of EC 135 helicopters that unexpected in-flight engine shutdown could occur even when the DECU units they have installed on their aircraft are not on the recall list. Flight safety authorities may want to consider other measures at their discretion.

Reply: The calculated engine In-Flight Shut-Down (IFSD) rate due to engine control system without any modification is acceptable for Cat A helicopter operation.

Nevertheless, Turbomeca reinforced replacement of specific Ta capacitor (modification TU 128, SB 319 73 2128) with better proved reliability. This non mandatory modification would further improve the calculated IFSD rate due to engine control system.

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



IRELAND

Registration	Aircraft Type	Location	Date of event	Event Type
G-CDTK	SCHWEIZER 269C	Clonshanny, Co. Offaly	12/09/2007	Accident

Synopsis of the event: While returning to base from a local flight, the engine stopped, at a reported height of 1,000 ft. The helicopter landed heavily from the ensuing auto-rotation. The heavy landing severely damaged the helicopter, and caused serious injury to the passenger. The pilot was less severely injured. The investigation concluded that the helicopter had run out of fuel.

Final Safety Recommendation IRLD-2008-013: EASA should review the situation with regard to the regulation of corporate aviation activity in Europe as a matter of urgency.

Reply: EASA will publish its opinion for the corresponding implementing rules. All type of operations will be regulated by those rules.

Category: Agreement - **Status:** Closed

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

Synopsis of the event: On 12 July 2007, the helicopter was undertaking a routine safety inspection of gas pipelines under contract to the National gas supplier. A crew of two were on board, a Pilot and an Observer. The inspection route took the helicopter south of Ennis and along the Shannon estuary towards Foynes. In the vicinity of Lisheen, a descent was made to facilitate closer inspection of works on the surface. A 360-degree inspection turn was carried out to the left before following the pipeline onwards. Shortly after the completion of the inspection turn, the engine stopped suddenly and without warning. The Pilot lowered the collective and attempted to enter autorotation from a low level and over difficult and undulating terrain.

The helicopter impacted into farmland to the west of Ballynacally in rising terrain. The Observer was pronounced dead at the scene. The Pilot suffered serious impact injuries and was airlifted by Coast Guard helicopter to hospital in Galway.

The Investigation determined that the engine stoppage was as a result of the 41-tooth Bevel Gear disintegrating due to fatigue. The 41-tooth Bevel Gear is a component of the engine accessory gearbox, and resulted in a loss of drive to the Fuel Control Unit (FCU) stopping the engine within seconds.

Final Safety Recommendation IRLD-2009-003: EASA and Eurocopter take appropriate action to verify that APC-type Starter-Generators used on the Arriel 1 and 2 engines, installed in AS350 series helicopters, and also those in the component supply chain, have been correctly overhauled.

Reply: EASA concurs with the investigation that if the damping system of the starter-generator is incorrectly adjusted (which was the case in the EI-IHL accident and other events), torque oscillations may not be limited and can induce bending stress on the 41-tooth pinion of the engine accessory gear box, contributing to the pinion failure.

EASA has issued Airworthiness Directive No. 2009-0004 dated 12 January 2009 to require an inspection of the alignment and torque of the APC starter-generator damping assembly and, in case of discrepancies, the accomplishment of corrective actions. This AD was then superseded by AD 2009-0027 issued on 18 February 2009 which requires accomplishment of a new adjustment procedure which has proven to be reliable and optimises the performance of the APC starter-generator damping assembly.

**Category:** Agreement - **Status:** Closed**Final Safety Recommendation IRLD-2009-004:** EASA issue an Airworthiness Directive to all operators of AS350 series helicopters for a mandatory modification of original seats as described in Service Bulletin SB25.00.63 (or optionally SB25.00.57) as outlined in the Manufacturer's Service Letter 1424-25-99 dated 24 November 1999.**Category:** Unknown - **Status:** Open**Final Safety Recommendation IRLD-2009-006:** EASA review the suitability of single-engine helicopters engaged in Low Level Aerial Work operations.**Category:** Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
EI-SBM	AGUSTA - A109	Lagore, Dunshaughlin, Co. Meath	20/03/2008	Accident

Synopsis of the event: The Pilot, the sole occupant of EI-SBM, was on a flight from Celtic Heliport, Knocksedan, Co. Dublin to Weston Airport, Co. Kildare. En route, the Pilot advised Air Traffic Control (ATC) that he was approaching Dunshaughlin. Shortly thereafter, he informed ATC that he had a problem and then, almost immediately, reported that he would have to make an emergency landing and made a "MAYDAY" call. This was the Pilot's final transmission to ATC. The helicopter landed heavily on soft ground and rolled over onto its left hand side. The helicopter was substantially damaged and the Pilot suffered serious back injuries. During the initial AAIU Investigation at the accident site, some cleaning cloth material was found entangled on the long tail rotor drive-shaft, between the first and second bearing (first bearing facing FWD). It was also found that the drive-shaft had completely severed just forward of the second bearing, thus cutting off the vital drive to the tail rotor gearbox. The Investigation concluded that the cloth induced out-of-balance forces on the shaft, causing the drive-shaft to fail. There was no fire.

Final Safety Recommendation IRLD-2009-012: The European Aviation Safety Agency (EASA) should strongly encourage all helicopter pilots to undergo Simulator Training, where available, on their initial Type Rating Course and, thereafter, to undertake recurrent Emergency Training when training for its revalidation.

Reply: Most of the national helicopter flight crew licencing regulations, based on JAR FCL-2 contain the requirements. JAR FCL-2 and EASA Notice of Proposed Amendment (NPA) 2008-17B already contains credit provisions for Flight Simulation Training Devices in any Commercial Pilot Licence (Helicopter) CPL(H), Airline Transport Pilot Licence (Helicopter) ATPL(H), Instrument Rating (Helicopter) IR(H), integrated and modular courses. In addition Type Rating training, skill test and proficiency check can be conducted on helicopter flight simulators.

A number of in-flight failures and emergency situations are modelled nearest to realistic conditions. However a part of emergency situations involving aerodynamic behaviours cannot be accurately simulated. This limitation results in producing only an approximate experienced emergency situation; that does not reflect all actual in-flight aerodynamic conditions.

As such, JAR FCL-2 and EASA-NPA 2008-17B already encourage simulator training. EASA considers that no specific additional action is necessary, pending the transition from JAR FCL-2 into a European FCL rule.

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



ITALY

Registration	Aircraft Type	Location	Date of event	Event Type
TS-LBB	ATR - ATR72	Palermo - Sicily	06/08/2005	Accident

Synopsis of the event: The aircraft took off from Bari at 12:32 UTC with 39 persons on board (4 crew, 35 passengers). 45 min later, while cruising at FL 230, the crew experienced engine N°. 2 failure and the pilot in command decided to divert to Palermo with only one engine operating. After 3-4 min, while performing the descent check list, engine N°. 1 also stopped working. Three engine relights were attempted with no success. After gliding for about 16 min, the a/c performed a ditching procedure 23 NM off shore from Palermo a/p.

Final Safety Recommendation ITAL-2005-016: EASA in expectation of the eventual installation modification of the FQI, consider the possibility of: a) requiring to operators whose fleet includes ATR 42 and ATR 72 aircraft to implement ad hoc maintenance procedures in order to avoid the installation of ATR 42 type FQIs on ATR 72 aircraft and vice versa; b) requiring the creation of labels to be applied on the FQIs in order to show which aircraft type they must be installed on, ATR 42 or ATR 72.

Category: Unknown - **Status:** Open

Final Safety Recommendation ITAL-2005-017: EASA to consider the possibility of integrating information available in emergency procedures concerning the ditching, in order to consider also the possibility of ditching without both engines operating.

Category: Disagreement - **Status:** Open

Final Safety Recommendation ITAL-2005-018: EASA and FAA to consider the possibility of carrying out studies aimed to define guidelines and/or issue regulatory requirements, concerning P/N assignment methods for aviation components.

Reply: Requirements covering the identification of products, parts and appliances are already part of the Annex Part 21 to Commission Regulation (EC) 1702/2003, as last amended by Commission Regulation (EC) 1057/2008 of 27 October 2008. Section A, Subpart Q defines these requirements. Chapter 21A.804 "Identification of parts and appliances" requires a marking of the part number as defined in the applicable design data. In addition, 21A.805 requires that "critical parts" shall be identified with a part number and a serial number.

Chapter 21A.807 requires the European Technical Standard Order (ETSO) articles marking including type, part number or model designation and serial number.

While the safety benefits of introducing a world wide standard for part numbers is recognised, the development and implementation of such a standard is considered to introduce an economical burden on the industry which is not considered commensurate with the safety benefit achieved.

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

Final Safety Recommendation ITAL-2005-019: EASA and FAA to consider the possibility of carrying out studies aimed to define guidelines and/or issue regulatory requirements, concerning the possibility of providing suitable installation modifications on the aircraft or on the component itself, in order to avoid that components with same functions and ostensibly similar but with different performance, could be installed in error.



Reply: The review of the existing regulation already provides a system which ensures that components are adequately identified and traced during their service life.

First of all, components shall meet the requirements covering the identification of products, parts and appliances in the annex Part 21 of Commission Regulation (EC) 1702/2003, as last amended by Commission Regulation (EC) 1057/2008 of 27 October 2008. Section A, Subpart Q defines these requirements:

- Chapter 21A.804 "Identification of parts and appliances" requires a marking of the part number as defined in the applicable design data.
- In addition, 21A.805 requires the "identification of critical parts" with a part number and a serial number.
- Chapter 21A.807 requires European Technical Standard Order (ETSO) articles marking including type, part number or model designation and serial number.

Second, components identification is available to operators through Certificate Holders' (Type Certificate, TC or Supplemental Type Certificate, STC) maintenance manuals and instructions for continued airworthiness (refer to Part 21 chapters 21A.61 and 21A.120). Any component installed on an aircraft shall be part of the ones which are identified and authorised by the manufacturers in their published manuals.

Third, whenever a change is made to a component, it shall be taken into account to update instructions for continued airworthiness which shall be made available to operators [refer to Part 21 chapters 21A.61(b) and 21A.120(b)].

The operators and continuing airworthiness management organisations shall implement an adequate quality system (as required by the Annex Part M to Commission Regulation (EC) 2042/2003, as last amended by Commission Regulation (EC) 1056/2008) allowing to verify that any components installed on an aircraft is authorised by TC or STC holders manuals.

As the result of the considerations above, the Agency doesn't intend to require the modification of components which are used on different aircraft applications with different customised performances. This measure is deemed to have a substantial economic impact on the industry which is not commensurate to the limited safety benefit it would bring.

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

Final Safety Recommendation ITAL-2005-020: EASA, FAA and Tunisian DGAC to consider the possibility that all air transport operators perform a systematic check of the correspondence between P/Ns shown in the applicable IPC with information contained/recorded in software/databases generally used for spares management, with particular reference to components which directly influence the aircraft's operation and safety.

Category: Unknown - **Status:** Open

Final Safety Recommendation ITAL-2005-021: EASA, FAA, ENAC and Tunisian DGAC to sensitize the airlines to the importance of the safety demonstration (briefing) addressed to the passengers, emphasising the importance of carefully following the cabin crew's instructions, especially during emergencies.

Reply: Each operator does specify in its Operating Manual (OM), the procedures applicable to its own fleet, and the flight attendants perform the safety briefings for each phase of flight (before/after take-off/landing), in accordance with the approved Standard Operating Procedures (SOP). The oversight of the operator is within the scope of the National Aviation Authorities (NAA), so a letter has been sent to the NAAs of the EU Member States, addressing the issue highlighted in the safety recommendation.

It will be up to each NAA to supervise the implementation of any SOPs into the Operating Manuals, of each concerned national air transport operator.

Category: Agreement - **Status:** Closed



Registration	Aircraft Type	Location	Date of event	Event Type
OE-AGG	DIAMOND - DV20	San Vito Romano, Sabaudia	08/07/2006	Accident

Synopsis of the event: Dopo 13 minuti di volo dal decollo l'aeromobile era costretto ad un atterraggio fuori campo a causa dello spegnimento del motore.

Final Safety Recommendation ITAL-2007-002: Considerare la possibilità di installare su aeromobili KATANA DV 20 e della stessa classe un sistema di indicazione basso livello carburante provvisto di segnalazione luminosa, con circuito indipendente da quello di segnalazione quantità.

Reply: The Agency has considered the need for a separate independent low fuel level indication system on very Large Aeroplanes (VLA). It has concluded that no change is needed. Several reasons justify this decision.

First, pilots knowledge of the aeroplane and the application of adequate pre-flight and in-flight checking procedures are deemed to be the prime effort to be put in place to protect against the risk of fuel starvation. In this frame, the French BEA recently published a study entitled "Pannes d'essence en aviation générale" (fuel starvation in general aviation) which concluded: Good knowledge of the performance and characteristics of the aircraft, as well as comparison between the information in the logbook, gauges and the visual examination of the level in the tanks are necessary to avoid fuel starvation. These elements are an essential part of flight preparation. Good fuel management during the flight will then allow the right decision at the right time: to divert or continue the flight.

Second, VLA aeroplanes are of simple design architecture, thus fuel system failure scenarios are simple and relatively easy to identify before flight or in-flight.

Third, even in the case of fuel starvation in-flight, the situation is easier to be managed with a VLA in term of un-planned landing; indeed, these aeroplanes have small size, good handling characteristics, low stall speeds, and short landing distances.

The Agency therefore disagrees with the recommendation and is of the opinion that correct flight preparation will result in the correct fuel management.

Category: Disagreement - **Status:** Closed

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

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

Le sei persone a bordo perdevano la vita, mentre il velivolo andava completamente distrutto nell'impatto.

Final 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: 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-MRG	BOEING - 737	Florence Airport	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.

Final 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 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

Final 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 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

**KOREA, REPUBLIC OF**

Registration	Aircraft Type	Location	Date of event	Event Type
HL7594	AIRBUS - A321	20 nm south east of Anyang VOR, Republic of Korea	09/06/2007	Accident

Synopsis of the event: On June 9, 2006, about 17:40, flight 8942, an Airbus 321-100 (Registration HL7594), en route from Jeju International Airport (Jeju Airport hereinafter) to Gimpo International Airport (Gimpo Airport hereinafter), encountered a thunderstorm accompanied by hailstones around 20 miles southeast of Anyang VOR at an altitude of 11,500 ft during descending to approach Gimpo Airport, and the radome in the nose section of the aircraft was detached and the cockpit windshield was cracked due to impact with ice stone carried by the thunderstorm.

Final Safety Recommendation KORR-2007-013: It is recommended that EASA consider the Hailstorm Certification Requirement in the radome design and establish a way to obtain the data of radome performance test and standardized test.

Reply: According to the data available to the Agency only two radomes of large aeroplanes have separated in flight due to lightning strike compared to one, as a result of hail damage (the subject aircraft). Thus the Agency, considers that the current airworthiness Certification Specification are sufficient to ensure the safe operation of an aeroplane when operated in accordance with the recommended procedures.

The Agency however recognises that operations in hailstorms can cause extensive impact damage to the structure and in particular to composite structures. As a result the Agency has launched a related research. Results from this may be use to develop appropriate standards and amendments to the current Certification Specifications.

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

**NORWAY**

Registration	Aircraft Type	Location	Date of event	Event Type
OY-JRJ	ATR - ATR42	Bergen Airport	31/01/2005	Accident

Synopsis of the event: Flight DTR54, an aircraft of type ATR 42, had declared an emergency and returned for landing directly after take-off from Bergen Airport Flesland. The emergency landing was caused by control problems, and inspection after landing revealed that the right side elevator had partially detached and was hanging below the tail surface.

Final Safety Recommendation NORW-2006-013: The cockpit voice recorder from the occurrence was recorded over, because the duration of the recording was only 30 minutes, and the power supply to the recorder was not disconnected after landing. The AIBN has noted that several operators lack procedures to ensure that registered data is retained, and recommend that JAA/EASA consider whether the regulations (Appendix 1 JAR OPS 1.1045 pt. 11) should specify that procedures must be drawn up for preservation of data from flight and cockpit voice recorders are included in operation manuals, so that the JAR OPS 1.160 requirements are better adhered to.

Reply: NPA (Notice of Proposed Amendment) 2009-002, dealing with Implementing Rules for Air Operations of Community Operator, contains the appropriate provisions in AMC to OR.OPS.015.MLR.

Category: Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
SE-HSI	HUGHES - 369	Gåsvassryggen Store Gåsvatn lake, Skjærstad in Nordland	02.09.2003	Accident

Synopsis of the event: SE-HSI, with its Commander and one passenger on board was flying on a reindeer-herding mission. While the helicopter was hovering into the wind, the yellow caution light for T/R XMSN CHIPS illuminated (warning of metal fragments in the tail rotor gear box), at the same time as an abnormal sound was heard from the rear of the helicopter.

Approx. 2 seconds later the commander lost control of the tail rotor, and the helicopter began to rotate around the main rotor axle. The Commander used maximum pedal deflection to combat the rotation, without any effect being noted.

The pilot then shut off the power and landed the helicopter on the ground. The rotation stopped but the landing was hard. The main rotor blades cut the tail boom during touch down and impact with the sloping terrain and were destroyed.

The Commander shut down the helicopter and he and the passenger evacuated the helicopter uninjured. There was mobile phone coverage in the area and the pilot phoned his company in Adolfström in Sweden which in turn informed the Joint Rescue Co-ordination Centre for Northern Norway (I-IRS). A Sea King rescue helicopter was sent to pick up the pilot and passenger and flew them to Bodø airport.

Safety Recommendation NORW-2006-017: The text in the helicopter type's maintenance documentation may allow misinterpretation. The Swedish Civil Aviation Authority (Luftfartsstyrelsen), in agreement with FAA and MD Helicopters, is advised to consider whether the maintenance requirement for the helicopter's drive train related to sudden stoppage, tail rotor



blade strike and impact damage should be clarified in the helicopter type's Maintenance Manual and Component Overhaul Manual.

Reply: FAA and MD Helicopters Inc (MDHI) have provided following response to this safety recommendation:

Based on a March 2007 accident investigation of a Model 369FF fatal accident in Hawaii, it was determined that an improvement to the MDHI Component Overhaul Manual(COM) could be made to clarify the inspection criteria for accepting or scrapping parts, especially those involved in sudden stoppage mishaps. The COM has been revised and is available on MDHI's web site. EASA concurs and considers that this closes the Safety Recommendation.

Category: Agreement - **Status:** Closed

Safety Recommendation NORW-2006-018: Components that have been involved in an accident may have suffered overload damage that may be difficult to prove using FPI/MPI. The Swedish Civil Aviation Authority (Luftfartsstyrelsen), in agreement with FAA and MD Helicopters, is advised to consider whether more detailed guidelines for demands relating to continued airworthiness/scrapping of components in a helicopter's drive train that have been involved in an accident should be specified.

Reply: FAA and MD Helicopters Inc (MDHI) have provided following response to this safety recommendation:

An on-going effort is being taken to review and revise MDHI manuals to emphasize additional repair/overhaul requirements for parts that were involved in an accident or incident with a sudden stoppage, striking or impacting damage conditions. When repair or overhaul instructions are not published for certain abnormal conditions (example: water submergence), MDHI will require operators to contact MDHI Field Service for further guidance/instructions before starting the repair. EASA concurs and considers that this closes the safety recommendation.

Category: Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
LN-FAO	ATR - ATR42	GLACIER FOLGEFONNA	14/09/2005	Serious incident

Synopsis of the event: Flight 602 from Stord Airport Sørstokken to Oslo Airport Gardermoen had 24 passengers and a crew of 3 on board when it took off on the morning of 14 September 2005. A cold front had passed over the coast and was on its way east, and local moderate icing was forecast.

While climbing, when passing flight level FL100 (approx. 10,000 ft), ice began to form on the aircraft. The aircraft's de-icing systems were switched on and functioned normally. Nevertheless, more ice built up and, when passing through FL120, there was a marked reduction in the aircraft's climb ability. At FL140 the autopilot disconnected, at much the same time as the aircraft entered an uncommanded roll to approx. 45 degrees to the right and began to lose height. When the crew believed they had regained control, the aircraft suddenly rolled uncommanded to the left in a similar manner. Around one and a half minutes after the first uncommanded roll movement, the climb was stable once more. The flight continued to Gardermoen without any further problems.

The loss of altitude in the incident was approx. 1500 ft, and was not critical in relation to terrain height. No personal injuries or material damage occurred.



Final Safety Recommendation NORW-2009-003: 2009/03T: It is important that flight crews on the ATR 42 know by heart the manual actions to take if uncommanded roll movements occur during icing conditions. This is to avoid losing control of the aircraft, and/or to regain control more quickly. Experience has shown that crews forget to extend flaps to 15°. The AIBN recommends that the CAA-N should request EASA reconsider the layout of the procedure in question in AFM in consultation with ATR. The item on setting flaps to 15° after losing control in icing conditions ought to be an item that should be known off by heart, and this should be reflected in the manufacturer's training programme.

Reply: After consultation with ATR the following was agreed:

a) ATR will create a new "generic" AFM Emergency Procedure to extend 15 deg flaps in case of stall or abnormal roll control. This will be a memory item applicable in all cases, not only those under Severe Icing Conditions.

b) ATR will let the current Severe Icing Emergency Procedure as it is today (request to extend flaps 15 in case of stall or abnormal roll, but no memory item).

The main rationale behind this is that most of the times flight crews do not establish the link between icing conditions and stall/abnormal roll/loss of aircraft control when this happens. With the agreed solution the memory item will be directly linked to the loss of aircraft control and applicable too to any other circumstance, not only those originated by severe icing conditions.

Category: Unknown - **Status:** Open

Final Safety Recommendation NORW-2009-004: 2009/04T: Experience with aircraft type ATR 42/72 shows that it can be particularly vulnerable to severe icing. A new system has been developed that is better able to detect increased icing intensity and the effect of this (Aircraft Performance Monitoring, APM). The system warns the crew before the situation becomes critical, to allow the routing to be changed in time. APM is not currently mandatory. The AIBN recommends that the CAA-N should request that EASA assess the system's suitability and whether this or equivalent systems should be mandatory on all ATR 42/72 aircraft.

Reply: EASA performed an analysis of the in service experience of ATR 42/72 fleet in the light of this safety recommendation SL no 2009/04T as well as the feedback from other NAAs/Investigation Bodies. In addition an analysis was requested from the Type Certificate Holder ATR. After having concluded the analysis, EASA has issued a Notification of a Proposal to issue an Airworthiness Directive, PAD n° 09-059, on 24th April 2009. Currently this PAD is under Public Comment Period.

Category: Agreement - **Status:** Closed

**PORTUGAL**

Registration	Aircraft Type	Location	Date of event	Event Type
C-GITS	AIRBUS - A330	Lajes Airport, Azores	24/08/2001	Accident

Synopsis of the event: Flight TS236, was en route at FL390 when at 05:36 UTC, the crew became aware of a fuel imbalance between the left and right-wing main fuel tanks. Five minutes later the crew concerned about the lower-than-expected fuel quantity indication, decided to divert to Lajes Airport in the Azores. At 05:48 UTC, when the crew ascertained that a fuel leak could be the reason for the possible fuel loss, an emergency was declared to Santa Maria Oceanic Control. At 06:13, at a calculated distance of 135 miles from Lajes, the right engine (Rolls-Royce Trent 772B) flamed out. At 06:26, when the aircraft was about 85 nm from Lajes and at an altitude of about FL345, the left engine flamed out. At 06:39 the aircraft was at 13,000 feet and 8 miles from the threshold of runway 33. An engines-out visual approach was carried out and the aircraft landed on runway 33. Eight of the plane's ten tyres burst during the landing. Investigation has determined that a low-pressure fuel line on the right engine, had failed probably as the result of its coming into contact with an adjacent hydraulic line.

Final Safety Recommendation PORT-2004-004: It is recommended that the CAAs of other states, as well as the EASA:
Review the adequacy of their regulations related to the safeguarding of on-board aircraft recordings (AI).
It is recommended that Transport Canada and DGAC-France and EASA:
Review the adequacy of applicable regulations, standards and aircraft manuals to ensure that necessary information and guidance is made available to the crews to properly safeguard on-board recordings following an occurrence (AH).

Reply: NPA (Notice of Proposed Amendment) 2009-002, dealing with Implementing Rules for Air Operations of Community Operator, contains the appropriate provisions in AMC to OR.OPS.015.MLR.

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

**SPAIN**

Registration	Aircraft Type	Location	Date of event	Event Type
EC-IHD	CESSNA - 208	Barcelona Airport	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).

Final Safety Recommendation SPAN-2006-024: Unusual operational scenarios imply a risk to the operations due to the novelty factor faced by crews. Flight in conditions of ice formation is very dangerous due to the effects on the aircraft's characteristics of controllability and airworthiness and, therefore, crew training is important. For this reason, 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.
- Capability and limits of de-icing and anti-icing equipment and systems.

Category: Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
F-GPJF	AEROSPATIALE SA316	- La Pobleta de Bellvei	25/04/2006	Accident

Synopsis of the event: While carrying out scheduled Inspection work on the high voltage line near the town of La Pobleta de Belivel, the aircraft crashed into the ground and caught on fire, as a result of which it was destroyed. All four crewmembers were fatally injured in the event.

During an inspection of the terrain, a piece of the aircraft, the freewheel, was found. This part transfers power to the main gear box (MGB).

The report determined the most probable cause of the accident was the detachment of the freewheel in flight, which interrupted power to the main rotor while the helicopter was under flight conditions and in an area that did not allow for a safe emergency landing.



The detachment of the freewheel was caused by the fatigue failure of the bolts and the flange used to connect the freewheel to the engine coupling. The fatigue process was triggered by contamination from water and other impurities in the freewheel lubricant.

The lubricant was probably contaminated due to non-compliance with the instructions in the manufacturer's maintenance manual on storage.

Final Safety Recommendation SPAN-2009-006: It is recommended that Eurocopter France modify those maintenance instructions aimed at detecting and correcting any contamination of the main gear box (MGB) lubricant so as to increase the reliability of the methods employed.

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
EC-HFP	DOUGLAS - DC9	Madrid-Barajas Airport	20/08/2008	Accident

Synopsis of the event: The aircraft was scheduled to fly to Las Palmas as the second flight of the same crew that day. After first lining up at the runway for takeoff, the crew experienced high RAT probe temperature and returned to parking position. Maintenance technician after checking the MEL opened the relevant circuit breaker and dispatched the aircraft. During the second takeoff based on FDR data the flaps were retracted, the aircraft stalled at the altitude of 40 ft and crashed next to the runway. Post-impact fire destroyed most of the wreckage.

Final Safety Recommendation SPAN-2009-002: It is recommended that the FAA and EASA require the manufacturer, Boeing, to include in its Aircraft Maintenance Manual (AMM) for the DC-9, MD-80, the Troubleshooting Manual for the MD-90 and the Fault Isolation manual for the 717 series of airplanes, specifically identified instructions to detect the cause and to troubleshoot the fault involving the heating of the RAT temperature probe while on the ground.

Category: Unknown - **Status:** Open

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

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

Final Safety Recommendation SPAN-2009-009: It is recommended to the European Aviation Safety Agency and to the FAA of the United States that the design of Takeoff Warning Systems 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: 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

Final Safety Recommendation SPAN-2009-010: It is recommended that the European Aviation Safety Agency and the FAA of the United States revise regulations CS-25 and FAR 25, respectively, on the certification of large transport airplanes to add a requirement that ensures that Takeoff Warning Systems (TOWS) are not disabled by a single failure or that they provide the crew with a clear and unequivocal warning when the system fails.

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

Final Safety Recommendation SPAN-2009-011: It is recommended that the European Aviation Safety Agency revise the accompanying guidelines and the clarifying material for the CS-25 certification regulations for large transport airplanes so as to consider the human errors associated with faults in takeoff configurations when analytically justifying the safety of the TOWS, and to analyze whether the assumptions used when evaluating these systems during their certification are consistent with existing operational experience and with the lessons learned from accidents and incidents.

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

Final Safety Recommendation SPAN-2009-012: It is recommended that the International Civil Aviation Organization (ICAO), the FAA of the United States and European Aviation Safety Agency jointly promote the holding of an international conference, to be attended by every civil aviation representative organization, such as authorities, industry, academic and research institutions, professional associations and the like, for the purpose of drafting directives on good industry practices in the area of aviation operations as they apply to checklist design, personnel training and improved procedures and cockpit work methods so as to ensure that crews properly configure aircraft for takeoffs and landings.

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

Final Safety Recommendation SPAN-2009-013: It is recommended that the European Aviation Safety Agency compile the results of studies and works done, as well as any instructions and directives issued by civil aviation authorities to date, concerning the principles and guidelines relative to the:

- design of checklists and
- working methods in the cockpit,

so as to allow European operators and manufacturers and national authorities to have clear references on the state of the art in the design and application of checklists.

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



SWEDEN

Registration	Aircraft Type	Location	Date of event	Event Type
SE-HSI	HUGHES - 369	Linetjakke	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.

Final 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 Agency concurs that the introduction of maximum permitted cyclic, stick and pedal control forces within the Certification Specification CS27 and CS29 will increase safety. This approach has already been applied via special condition to 2 recent rotorcraft certification projects. The task to update the relevant Certification Specifications has been introduced into the rulemaking inventory.

Category: Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
SE-DSP	BAE - AVRO146RJ	south-west of Bromma airport, AB county	22/03/2007	Incident

Synopsis of the event: The events consist of two independent incidents, where the second incident was a consequence of the first. The events have therefore been described here as the first incident and the second incident respectively.

The first incident

The aircraft taxied out at Stockholm/Bromma airport for a scheduled flight to Gothenburg/Landvetter Airport. Due to the changing weather conditions, the switches for the aircraft's de-icing system and air conditioning system (which among other things pressurises the cabin) were switched on and off at various points during the take-off and climb out. The climb checklist did not contain any specific item for checking the air conditioning unit ("pack") switches, which control the pressurisation of the cabin, only a summary item in respect of the air conditioning system in general. At about 10 000 feet the "Avionics fan off" warning light lit in the cockpit. The pilots began to read the emergency checklist for this warning, which may among other things be initiated by low air pressure, but there were no instructions for checks or measures to be taken related to this warning. At about 18 000 feet one of the cabin crew called and said that the oxygen masks above the passenger seats in the cabin had dropped down.

The pilots discovered that the aircraft cabin was not pressurised and immediately began to descend to a safe altitude. The aircraft had reached an altitude of 19 000 feet before the descent began. During the descent, the warning light for high cabin altitude came on, that according to the specifications should have warned the pilots when the cabin altitude exceeded 10 000 feet. On investigation it was found that the relevant pressure sensor was damaged.



The reason why the aircraft climbed to about 19 000 feet without the cabin being pressurised was that the checklist was not defined clearly enough. A contributory factor was that the inspection interval for the cabin low pressure sensor was probably too long.

The second incident

When the oxygen masks dropped from above the passenger seats, the cabin crew could see that a large number of masks on the left side had not dropped. After checking the status of the pilots the chief cabin attendant went along the cabin without oxygen and started to move passengers from the left side to the right side of the aircraft. Shortly afterwards the chief cabin attendant was given a portable oxygen bottle by a colleague and together they tried to open more hatches with oxygen masks for the passengers. A small tool that is meant for manually opening the hatches could not be found during the incident. The oxygen pressure at an altitude of 19 000 feet is only about half the pressure at sea level, and results in an equivalent reduction of the oxygen level in the blood. Human reaction to this depends on the individual, but even at low altitudes the effects of oxygen deprivation can become apparent in the form of a lowering of both physical and mental capacity. The reason why 20 of the oxygen mask hatches did not open was that the company's quality control was deficient in connection with the repacking of the hatches.

Final Safety Recommendation SWED-2008-001: It is recommended that EASA takes steps to ensure that the inspection interval for cabin pressure sensors in this particular type of aircraft is reduced.

Reply: The proposed change to the inspection interval for the Cabin High Altitude Switch was approved as part of Issue 2 Revision 15 of the Maintenance Review Board Report (MRBR) on 02 April 2009. It will be included in the Instructions for Continuing Airworthiness (ICA) for operators to be published by BAE Systems on their ISapphire system in June 2009.

Category: Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
SE-HCM	HUGHES - 269B	Grundagssättern, 25 km North of Idre, W län (Dalarna County)	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.

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

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-LTF	DIAMOND - DA40	Road E45, North of Kungälv	07/02/2008	Accident

Synopsis of the event: The pilot took off from Gothenburg City Airport for a solo navigation exercise to gain a night-time endorsement to his pilot's licence. After about ten minutes of flight the engine stopped. The pilot carried out an emergency landing on the only available lit area, on



the E45, which is a four-lane motorway. The right wing struck a lighting column before the aircraft landed on the ground. Immediately after touching down the aircraft collided with a private car. The aircraft then slid off the road and continued along the grass to the left of the road. Another private car was struck by gravel and wreckage parts as the aircraft finally stopped.

The pilot was unhurt and could exit the aircraft without assistance. Neither of the car drivers were injured.

Final Safety Recommendation SWED-2009-015: It is recommended that EASA considers a fresh evaluation of its criteria in assessing airworthiness, so that aircraft with known serious design faults are not permitted to fly.

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 KINGDOM

Registration	Aircraft Type	Location	Date of event	Event Type
AP-BAT	BOEING - 747	Manchester International Airport	13/06/2002	Incident

Synopsis of the event: The aircraft was operating a scheduled service between New York Kennedy Airport and Manchester International Airport. An uneventful approach and touchdown were carried out on Runway 24R following which reverse thrust was selected on all engines to approximately three-quarters power. At around 80 kt reverse thrust was cancelled, engine Nos 1, 2 and 4 reversers stowed normally but flight deck indications showed No 3 reverser remained unlocked and in transit.

After the landing of the B747, a Boeing 757 aircraft was cleared to cross Runway 24R, from the F2 holding point on the north side to the south side. While crossing behind the B747 the first officer on the B757 noticed a large piece of engine cowling falling from the aircraft during its landing roll. He notified Air Traffic Control (ATC) who took action to prevent other aircraft landing on the runway. ATC also offered the support of the emergency services to the commander of the B747 which was declined. The B747 continued taxiing to its allocated parking stand where, following engine shutdown, the passengers were disembarked.

Final Safety Recommendation UNKG-2004-009: The FAA and the EASA, in conjunction with the manufacturers of the thrust reverser system and the affected aircraft types, should consider requiring an inspection procedure, to be performed whenever reverser re-rigging becomes necessary, to ensure the soundness of the bonding and mechanical fastenings attaching the clevis fittings to the transcowling of the thrust reversers of CF6-6 and CF6-50 engine installations.

Reply: On 5 August 2009, upon request of General Electric (GE), Middle River Aircraft Systems (MRAS) the supplier of GE's CF6-6 and CF6-50 jet engine thrust reversers published the Fan Reverser Service Memorandum (FRSM) No.6 as regards translating cowl periodic structural inspections. FRSM No.6 provides detailed instructions for on-wing and off-wing translating cowl inspections and recall the maximum serviceable limits, maximum repairable limits and the available repair methods as well. The technical content of FRSM No.6 has been reviewed and agreed by the FAA. EASA considers that the content of FRSM No.6 meets the intent of the safety recommendation.

Category: Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
G-BXKD	AIRBUS - A320	London Gatwick Airport, Sussex	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.

Final Safety Recommendation UNKG-2005-074: For newly manufactured aircraft, the European Aviation Safety Agency should require that no single electrical bus failure terminates the recording on both cockpit voice recorder and flight data recorder.



Reply: The Agency will introduce a new task into the rulemaking inventory to address the requirement that no single electrical bus failure terminates the recording on both cockpit voice recorder (CVR) and flight data recorder (FDR).

This task will propose an amendment of Certification Specifications which will address new Types or Types subject to Major changes. The requirement for newly manufactured aircraft will also be considered.

Note: this recommendation is already part of the EUROCAE ED-112 standard ("Minimum Operational Performance Specification for crash protected airborne recorder systems"): chapter 2-5.3.9 "Where practical, each flight recorder should be powered from an electrical source other than that providing power to any other flight recorder".

Category: Unknown - **Status:** Open

Final Safety Recommendation UNKG-2005-075: For newly manufactured aircraft, the European Aviation Safety Agency should require that the cockpit voice recorder and cockpit area microphone are provided with an independent 10 minute back-up power source, to which the cockpit voice recorder and cockpit area microphone are switched automatically, in the event that normal power is interrupted.

Reply: The Agency will introduce a new task into the rulemaking inventory to address the requirement that the cockpit voice recorder (CVR) and cockpit area microphone are provided with an independent 10 minute back-up power source, to which the cockpit voice recorder and cockpit area microphone are switched automatically, in the event that normal power is interrupted.

This task will propose an amendment of Certification Specifications which will address new Types or Types subject to Major changes. The requirement for newly manufactured aircraft will also be considered. The Agency will study options to be proposed for application; this can be done either through the future Operations regulation or by introduction into the future CS-26 and then implemented using a Safety Directive (the Safety Directive concept is envisaged by NPA 2009-01 and should be incorporated into Part-21 sometimes in 2011 after the publication of an Agency opinion and its adoption by the European Commission following the Comitology process).

Note: this recommendation is already part of the EUROCAE ED-112 standard ("Minimum Operational Performance Specification for crash protected airborne recorder systems"): chapter 2-5.3.10 and chapter 5.

Category: Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
G-BNLG	BOEING - 747	en route from Los Angeles Int. Airport to London (Heathrow) Int. Airport	20/02/2005	Incident

Synopsis of the event: Immediately after the aircraft took off on a night flight from Los Angeles to London, a banging sound was heard and passengers and ATC reported seeing flames from the No 2 engine. The symptoms and resultant turbine over-temperature were consistent with an engine surge; the crew completed the appropriate checklist, which led to the engine being shut down.

After assessing the situation, and in accordance with approved policy, the commander decided to continue the flight as planned rather than jettison fuel and return to Los Angeles. Having reached the east coast of the USA with no indications of further abnormality and with adequate predicted arrival fuel, the crew decided to continue to the UK. The winds and available flight levels were subsequently less favourable than anticipated and, nearing the UK, the crew decided to divert to



Manchester in order to maintain the required arrival fuel reserve. In the latter stages of the flight the crew encountered difficulties in balancing the fuel quantities in the four main tanks.

They became concerned that the contents of one tank might be unusable and declared an emergency in accordance with the operator's procedures. The aircraft landed with low contents in both outboard main tanks, although the total fuel quantity was in excess of the planned reserve. The fuel system, in the configuration selected, should have continued to feed the operating engines until all tanks emptied.

Final Safety Recommendation UNKG-2006-027: It is recommended that the FAA, EASA and the UK-CAA should require that, as part of any flight recorder readout procedure mandated by regulation, an assessment is conducted to ensure that the quantity and quality of all data recovered from the FDR is correct for the data rate of the system and the recorder part number concerned.

Reply: Attachment D to ICAO Annex 6 Part I provides guidance for a proper maintenance of the recorders. Relevant provisions exist in EUROCAE Annex I-A to ED-112. NPA (Notice of Proposed Amendment) 2009-002, dealing with Implementing Rules for Air Operations of Community Operator, contains provisions [GM OPS.GEN.505 c) and d)] which should satisfy the intent of the safety recommendation.

Category: Agreement - **Status:** Closed

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

Synopsis of the event: 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.

Final Safety Recommendation UNKG-2006-102: Considering the circumstances of air ambulance flights, the Civil Aviation Authority in conjunction with the JAA should review the circumstances in which a second pilot is required for public transport flights operating air ambulance services.

Reply: The Safety Recommendation has been transferred to EASA by the UK CAA and was assessed in accordance with EASA rulemaking procedures.

As a result, task OPS.062, addressing "Second pilot requirement for air ambulance flights with aeroplanes" has been introduced in the Agency 4-year Rulemaking Programme.

Category: Unknown - **Status:** Open

Final Safety Recommendation UNKG-2006-103: The Civil Aviation Authority in conjunction with the JAA, should consider mandating the carriage of a radio altimeter, or other independent low height warning device, for public transport IFR flights operating with a single pilot.



Reply: The Safety Recommendation has been transferred to EASA by the UK CAA and was assessed in accordance with EASA rulemaking procedures.

As a result, task OPS.038, addressing "Independent low height warning devices (e.g. RadAlt) for single pilot IFR/CAT aeroplanes" has been introduced in the Agency 4-year Rulemaking Programme.

Category: Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
G-BHDZ	CESSNA - F172	Snetterton, Norfolk	28/10/2006	Accident

Synopsis of the event: An electrical system failure which occurred in-flight, but close to an airfield, resulted in flames and smoke emanating from behind the left instrument panel, after the pilot attempted to re-set the alternator circuit breaker. During short final approach to the airfield for a precautionary landing, the engine stopped and the aircraft landed in a field close to the runway. A combination of a defective battery and a failure of the voltage regulator was identified as the main causal factor of this event.

Final Safety Recommendation UNKG-2007-048: It is recommended that the European Aviation Safety Agency, in conjunction with the Civil Aviation Authority, publish specific information aimed at discouraging the resetting of high power circuit breakers on light aircraft, such as those that control alternators, whilst in flight unless considered essential for the safe continuation of the flight.

Reply: EASA issued Safety Information Bulletin 2009-007 titled "Resetting Tripped Circuit Breakers".

Category: Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
EC-JCU	SWEARINGEN - SA227	Lasham Airfield, Hampshire	10/10/2006	Serious incident

Synopsis of the event: The lightly loaded aircraft commenced the takeoff with its centre of gravity towards the forward end of the permitted range. The co-pilot was the handling pilot. The aircraft did not respond as expected when he attempted to rotate the aircraft and he handed control to the commander. The commander aborted the take-off and the aircraft overran the paved surface of the runway on to an area of grass stubble.

The investigation found no fault that could have contributed to the apparent control problem. Experience had shown that, for this type of aircraft, a large after control column input is required during rotation when the centre of gravity is close to the forward limits and it was considered that this was a fact in the incident. The aircraft has subsequently carried out a number of uneventful takeoffs and responded normally to control inputs.

Final Safety Recommendation UNKG-2007-060: It is recommended that the European Aviation Safety Agency require operators to conduct an annual operational check and evaluation of recordings from FDRs to ensure the continued serviceability of the system. The annual check should require, as a minimum, a readout of the FDR and an evaluation of the data, in engineering units, in order to establish compliance with recording duration, error rates and validity of all recorded parameters.



Reply: Attachment D to ICAO Annex 6 Part I provides guidance for a proper maintenance of the recorders. Relevant provisions exist in EUROCAE Annex I-A to ED-112. NPA (Notice of Proposed Amendment) 2009-002, dealing with Implementing Rules for Air Operations of Community Operator, contains provisions [GM OPS.GEN.505 c) and d)] which should satisfy the intent of the safety recommendation.

Category: Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
VP-BJM	BOMBARDIER - CL600 2B19	8nm west of Midhurst VOR, West Sussex, UK	11/11/2005	Serious incident

Synopsis of the event: About four and half hours into a flight from Lagos, Nigeria, the autopilot pitch trim failed and subsequently the stabiliser trim system failed. Attempts were made to re-engage the stabiliser trim channels, resulting in channel 2 appearing to engage with no response to trim commands, and channel 1 engaging intermittently. During the flight the stabiliser occasionally trimmed nose down, despite applications of nose-up trim commands. The trim eventually reached almost full nose down. To counteract this, both flight crew members had to apply prolonged aft pressure on the control column. The aircraft diverted to London Heathrow for a landing with flap retracted, although the QRH required 20° flap following a stabiliser trim failure. The commander made the decision as the crew considered that applying flap would substantially increase the control column load required to maintain level flight.

Subsequent investigation found contamination, formed by electro-migration in the presence of moisture, within the Horizontal Stabiliser Trim Control Unit (HSTCU). The moisture was probably created by humid air condensing on the cooling motherboard during prolonged flight at altitude.

Final Safety Recommendation UNKG-2007-061: It is recommended that the EASA, in collaboration with other airworthiness authorities, including the FAA and Transport Canada, amend their requirements relating to the design and installation of electronic components in aircraft, so that fluid and moisture contamination, as a source of common cause failures, is specifically taken into account and adequate measures take place to minimise the risk.

Reply: The Agency considers Certification Specifications CS25.1431 and CS25.1309 (a) and (b) already adequately address this issue. CS25.1431 requires that "In showing compliance with CS25.1309 (a) and (b) with respect to radio and electronic equipment and their installations, critical environmental conditions must be considered" and CS25.1309 (a) and (b) requires that equipment and systems are designed and installed in such a manner that those required for type certification perform as intended under all operating and environmental conditions and that "any catastrophic failure condition (i) is extremely improbable; and (ii) does not result from a single failure".

Category: Disagreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
G-EFSM	SLINGSBY - T67	near Cambridge Airport, Bedfordshire	23/11/2006	Serious incident

Synopsis of the event: Whilst attempting to recover from a spin during an aerobatic training flight, the instructor was initially unable to move the rudder pedals from their fully pro-spin position. He managed to free the pedals by applying a high pedal force and was then able to recover from the spin. The restriction delayed recovery by an estimated two and a half turns. The



restriction had probably been caused when one of the pedals contacted a fixed bracket, probably due to a relatively small lateral displacement of the rudder pedal mechanism.

Final Safety Recommendation UNKG-2007-078: The European Aviation Safety Authority should require changes to the engine control cable bracket on relevant Slingsby T67 aircraft to increase its clearance from the No 3 rudder pedal, in order to prevent possible interference with the free movement of the rudder pedals.

Reply: Slingsby Advanced Composites Limited (SACL) Service Bulletin (SB) No.187 and No.188 both at issue 4 provide inspection instructions to confirm clearance between rudder pedals and mixture/propeller speed brackets. These SBs also include inspection instructions for ground towing damage and general rudder clearances as well. EASA published AD 2009-0013 on January 2009 to mandate SACL SBs No.187 and No.188, as applicable to aeroplane models. AD 2009-0013 requires these inspections to be repeated at intervals not to exceed 300 FH or 12 Months for all aeroplanes and in addition mandates in its paragraph (1) the SACL mandatory Modification Bulletin (MB) No. M1030 'Introduction of Revised Propeller Speed Bracket for Increased Rudder Pedal Clearance'. EASA consider that the required actions by means of AD 2009-0013 meet the intent of safety recommendation UNKG-2007-078.

Category: Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
G-BHCP	CESSNA - F152	Meden Vale, Nottinghamshire	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. A search of the Civil Aviation Authority's Mandatory Occurrence Reporting database revealed 23 similar events. The Bureau D'Enquêtes et D'Analyses Pour La Sécurité De L'Aviation Civile (BEA) has reports of 34 similar events occurring in France. This AAIB report carries seven safety recommendations.

Final Safety Recommendation UNKG-2007-094: It is recommended that the European Aviation Safety Agency review the Airworthiness Directive 1998-225(A) R6 issued by Direction Générale de l'Aviation Civile (DGAC) in France with a view to issuing an EASA Airworthiness Directive to cover this area of concern.

Reply: EASA addressed this subject with the FAA Primary certificating Authority for the concerned engines – and the Type Certificate Holder Lycoming which have shown that no such occurrences had been reported in the USA. The defect in question - cylinder barrel circumferential crack - originates from a corrosion pit on an external cylinder barrel and grows radially through the barrel, near the cylinder base plate. It is assumed that such corrosion had been made possible during overseas shipment or storage because of improper corrosion prevention treatment.

To inform maintainers and operators about this issue, EASA published the Safety Information Bulletin (SIB) No.2009-24 on 06 Aug.09. This SIB contains instructions to be done so as to detect crack initiations in engines with cylinders of non-improved design. EASA considers that SIB No.2009-24 meets the intent of Safety Recommendation UNKG-2007-094.

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

Registration	Aircraft Type	Location	Date of event	Event Type
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TF-CSB	DORNIER 328	Aberdeen airport	22.06.2006	Serious incident
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Synopsis of the event: After a normal landing at Aberdeen the co-pilot, who was the pilot flying (PF), was unable to release the latches on the power levers and move them rearwards from the flight idle position into the beta control range to assist with aircraft retardation. After two further unsuccessful attempts the commander took control and, whilst braking aggressively, made four further unsuccessful attempts to release the latches.

The aircraft overran the end of runway 34, and travelled some 350 m over rough grass before coming to rest. The commander steered the aircraft to avoid lights and antenna installations and attempted to move the condition levers to shut the engines down. Although aircraft movement over the uneven ground and the design of the condition levers made this difficult, he was eventually successful. The aircraft came to rest intact, there was no fire and all occupants were uninjured.

Safety Recommendation UNKG-2007-104: The European Aviation Safety Authority should require the Dornier 328 Type Certificate holder to re-design the power lever/beta/reverse latch system to eliminate the shortcomings of the present arrangement.

Reply: EASA has reviewed the service history of the Dornier 328-100 with the Type Certificate (TC) Holder in respect of the power lever handling.

Despite TC Holder had previously published crew training and procedural information in response to earlier similar incidents, this information, in long term, has not avoided preventing re-occurrence.

In response to the EASA review, the TC Holder has proposed design changes improving crew awareness of the power lever position and mechanical characteristic of the latches. These changes have been successfully evaluated by the TC Holder and EASA flight test. The related design change was approved by EASA and a service bulletin for retrofit of the modification is available.

As conclusion, EASA has issued an Airworthiness Directive, AD 2009-0196, on 04 September 2009, mandating the modification of the power lever control box.

Category: Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
G-BYOB	SLINGSBY - T67	Stapleford Tawney Airport, Essex	03.08.2007	incident

Synopsis of the event: As the crew carried out functional checks of the flight controls while taxiing for take-off, the left wheelbrake master cylinder became detached from the rudder/brake pedal mechanism. The failure was consistent with the effects of previous overload and consequent weakening of the mechanism as a result of inadvertent exceedance of the maximum allowable nosewheel steering angle during ground towing.

Safety Recommendation UNKG-2008-008: It is recommended that EASA require the development of modifications for the Slingsby Advanced Composites Ltd T67 aircraft, aimed at eliminating the possibility that the forces generated during towing could cause undetected damage to the rudder/brake pedal mechanism.

Reply: The Safety Recommendation arises from an early Slingsby assessment of the Rudder Pedal problems. Since that time Slingsby have established a number of additional possible contributory factors including incorrect use of unapproved tow bar with a tow vehicle, incorrect assembly of handed rudder support brackets and reduced strength floor structure.



Slingsby have since produced clarification in SB 187 and 188 Issue 4 (mandated by EASA AD 2009-0013 dated January 2009), the need to use an Slingsby approved tow bar that incorporates a weak link to protect the rudder circuit, and clarified the position at which specific rudder support brackets are to be used. Issue 5 of SB 187 and 189 are now the subject of a further EASA Airworthiness Directive that mandates the implementation of Mod Bulletin M919 to introduce additional cloth layers under the floor at the position of the left hand rudder pedals.

EASA considers that the required actions, by means of AD 2009-0218 dated 12 October 2009, meet the intent of this safety recommendation.

Category: Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
EI-SLD	ATR - ATR42	Stansted Airport, UK	18/01/2007	Serious incident

Synopsis of the event: Soon after takeoff from London Stansted Airport the aircraft developed a yawing motion which persisted as a yawing/rolling motion of varying severity. The yaw damper could not be engaged.

An emergency was declared and the aircraft returned to Stansted. No mechanical fault was found which would have caused the motion, although an undetected and intermittent fault affecting components within the rudder control system could have degraded the aircraft's handling characteristics with the yaw damper not engaged, as could a takeoff with the rudder control system incorrectly configured.

The nature of the motion and observed control deflections were such that an inadvertent and inappropriate rudder input by a pilot would have been required for the oscillations to persist.

Final Safety Recommendation UNKG-2008-019: The European Aviation Safety Agency should, when considering AAIB Safety recommendation 2007-60, include in its deliberations the FDR deficiency identified in this investigation and the adverse effect this had on the investigation process, with a view to expediting any remedial actions.

Reply: In response to this recommendation, related provisions GM OPS.GEN.505 c) and d) were included in NPA (Notice of Proposed Amendment) 2009-002, dealing with Implementing Rules for Air Operations of Community Operator.

Category: Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
EI-CZO	BAE - BAE146	London City Airport	20/02/2007	Serious incident

Synopsis of the event: On 20 February 2007 London City Airport notified the Air Accidents Investigation Branch (AAIB) of a serious incident involving EI-CZO in which the aircraft burst all four main landing gear tyres during the landing. Enquiries by AAIB revealed that the aircraft had overrun the landing distance available (LDA), but remained on the paved surface, and that the flight crew had reported a total failure of the aircraft's brakes.

Final Safety Recommendation UNKG-2008-062: It is recommended that the European Aviation Safety Agency should mandate BAe Systems Service Bulletin 27-73-00889 for the BAe 146 series of aircraft, which increases the operating force in the forward direction from zero to 12 lb, of the lift spoiler/airbrake selector lever, to prevent the lever moving forward under the influence of vibration or being inadvertently nudged forward during the landing roll.



Reply: EASA issued AD 2009-0206 "Flight Controls - Airbrake Lever Detent Mechanism - Modification" on 30 September 2009.

Category: Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
VP-CRC	BOMBARDIER - BD700 1A10	London Luton Airport	29/01/2008	Accident

Synopsis of the event: Following an extended period of heavy rain, VP-CRC took off from a dry runway for a long-range flight to London Luton Airport. During the subsequent landing roll, the left inboard main landing gear tyre suffered a slide-through failure resulting from an initially locked wheel. This tyre failure caused extensive damage to the flight control system. Although the aircraft landed safely, the investigation revealed a significant flight safety risk and four Safety Recommendations are made.

Final Safety Recommendation UNKG-2008-073: It is recommended that the Federal Aviation Administration, the European Aviation Safety Agency and Transport Canada raise awareness of the vulnerability of carbon brakes to freezing in flight following exposure to moisture on the ground emphasising the significance of the slow drying rate of saturated breaks even in warm, low humidity conditions.

Reply: EASA issued Safety Information Bulletin 2008-89 on 19 December 2008 titled Tire Failure - Locked Carbon Disc Brake due to Moisture Absorption and Freezing.

Category: Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
G-EZAC	AIRBUS - A319	near Nantes France	15/09/2006	Serious incident

Synopsis of the event: The serious incident occurred to an Airbus A319-111 aircraft operating a scheduled passenger flight between Alicante, Spain and Bristol, UK. The aircraft had experienced a fault affecting the No 1 (left) electrical generator on the previous flight and was dispatched on the incident flight with this generator selected off and the Auxiliary Power Unit generator supplying power to the left electrical network.

While in the cruise at Flight Level (FL) 320 in day Visual Meteorological Conditions (VMC), with the autopilot and autothrust systems engaged, a failure of the electrical system occurred which caused numerous aircraft systems to become degraded or inoperative. Some of the more significant effects were that the aircraft could only be flown manually, all the aircraft's radios became inoperative and the Captain's electronic flight instrument displays blanked.

Attempts by the flight crew to reconfigure the electrical system proved ineffective and the aircraft systems remained in a significantly degraded condition for the remainder of the flight, making operation of the aircraft considerably more difficult. The flight crew were unable to contact air traffic control for the rest of the flight. The aircraft landed uneventfully at Bristol, with the radios and several other systems still inoperative.

Final Safety Recommendation UNKG-2008-081: It is recommended that the EASA require modification of Airbus A320-series aircraft to provide automatic changeover of the electrical power feed to the AC Essential busbar in the event of de-energisation of the AC BUS 1 busbar.

Reply: After review of the potential issues and concerns resulting from the consequence of the various system losses as a result of the loss of power supply to alternating current (AC) BUS 1 and



the in-service experience in respect of the necessary corrective actions EASA will mandate the installation of Airbus modification 37317 (SB A320-24-1120) by the issuance of an Airworthiness Directive.

Category: Unknown - **Status:** Open

Final Safety Recommendation UNKG-2008-083: It is recommended that the EASA and the FAA introduce certification requirements aimed at ensuring that flight deck control selectors are designed such that an immediate and unmistakable indication of the selected position is always provided to the flight crew.

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

Final Safety Recommendation UNKG-2008-084: It is recommended that the EASA requires the modification of affected Airbus A320-series aircraft so that the loss of a single busbar does not result in the complete loss of Radio Telephony communications.

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

Final Safety Recommendation UNKG-2008-085: It is recommended that the EASA and the FAA re-categorise the loss of all Radio Telephony communications for public transport aircraft as 'Hazardous'.

Reply: In the case of the A319 G-EZAC incident, the failure effects are not limited to the loss of radio-communication but include also the loss of multiple aircraft systems: autopilot, flight director, autothrust, EGPWS, Transponder and TCAS, as a consequence of the unsuccessful reconfiguration of the electrical feed to the AC Essential busbar.

According to current CS-25 (Amdt 6) Book 2 - AMC 25-11 Note to § 4 a. (3) (viii), the non-restorable loss of all navigation and communication functions is classified catastrophic, but the failure condition "Loss of communication" alone is classified major.

EASA considers that this classification is still correct, taking into account existing large aeroplane designs and known service experience.

Notwithstanding the above statement, for the A320 aircraft family, it is recognised that the risk of incomplete or unsuccessful manual reconfiguration of the electrical network, in case of loss of AC BUS 1, which leads potentially to loss of multiple systems, needs to be addressed. AD action (Proposed Airworthiness Directive (PAD) Nr 09-086 "Electrical Power AC and DC ESS BUS Power Supply - Modification" issued the 29 June 2009) is taken to mandate a modification of the electrical network configuration management logic consisting in adding an automatic switching of the AC and DC ESS BUS power supply such that upon the loss of the AC BUS 1, the AC BUS 2 will automatically take over the power supply.

Category: Disagreement - **Status:** Closed

Final Safety Recommendation UNKG-2008-086: It is recommended that the EASA require Airbus to review the A320-series Master Minimum Equipment List (MMEL) for the validity of dispatch with an IDG inoperative, given that an intermittent fault in a Generator Control Unit can result in significant disruption of aircraft 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

Final Safety Recommendation UNKG-2008-087: It is recommended that the EASA require Airbus to revise the A320-series Master Minimum Equipment List to include a requirement to check for correct operation of the manual AC ESS FEED changeover function prior to dispatch with a main generator inoperative.

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

Final Safety Recommendation UNKG-2008-089: It is recommended that the EASA and the FAA require that approved component repair organisations have procedures in place to identify units with an excessive service rejection rate or recurrent faults.

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

Final Safety Recommendation UNKG-2008-090: It is recommended that the EASA require improvements to the fault monitoring logic of the type of Generator Control Unit (GCU) used on A320-series aircraft with the aim of preventing the monitoring system from incorrectly interpreting a fault within the GCU as an external system fault.

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

Final Safety Recommendation UNKG-2009-063: It is recommended that the EASA extend the guidance material provided for the EASA 25-1309 certification standard for failure effect analyses, to include consideration of the effects of delayed or non-achieved crew actions, in addition to crew errors.

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
G-CHCF	AEROSPATIALE AS332	- Aberdeen Airport	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. Rotor RPM (RRPM) decayed rapidly and the helicopter touched down firmly before RRPM 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.

Final 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.

Category: Unknown - **Status:** Open

Final 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.

Category: Unknown - **Status:** Open

Final Safety Recommendation UNKG-2009-006: It is recommended that the European Aviation Safety Agency should ensure that where a Training Idle System is fitted to a flight simulator the handling qualities and performance of the helicopter, following the failure of the operating engine, are accurately modelled.

Category: Unknown- **Status:** OPEN

Registration	Aircraft Type	Location	Date of event	Event Type
F-JQHZ	DYN AERO - MCR01	Highclere, Hampshire	11/04/2008	Accident

Synopsis of the event: On approach to a small private landing field, the aircraft rolled left and crashed in the garden of a private house. The loss of control was probably caused by loss of airspeed in gusty conditions as the pilot attempted to approach the confined landing area. The investigation found no indication of any mechanical defect that would have contributed to the accident.

Final Safety Recommendation UNKG-2009-008: It is recommended that the Federal Aviation Administration, the Civil Aviation Authority and European Aviation Safety Agency, cooperate to require the application of warning placards of a common agreed standard, to be applied to all aircraft fitted with ballistic parachute recovery systems for which they have airworthiness responsibility, to maximise the possibility of first responders being made aware of the danger posed by a live system following an accident. These placards should be applied in such a manner that at least one such placard should remain visible regardless of the stationary attitude of the aircraft.

Reply: The recommendation has been addressed by ICAO.

ICAO published the State Letter AN 6/26-05/46 dated 12 August 2005, warning states of the danger of rocket- assisted parachute systems and amendments to the Manual of Aircraft Accident and Incident Investigation (Doc 9756 part III - Advance edition). The ICAO Airworthiness Panel concluded that requiring a warning placard would increase safety, however in some conditions



associated with aircraft accidents such a warning placard would not be visible until personnel are within the danger zone, hence the mandatory carriage of such a placard would be of limited benefit.

As a result of the above ICAO State Letter and Airworthiness Panel review, the Agency considers that no further action is warranted.

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

Registration	Aircraft Type	Location	Date of event	Event Type
G-SNIF	CAMERON - A300	Croxton, Staffordshire	07/08/2008	Accident

Synopsis of the event: After a firm landing in a field, the balloon bounced twice before coming to rest on its side. During the landing, one of the passengers was injured. She later discovered her knee suffered a fracture in the landing.

Final Safety Recommendation UNKG-2009-012: It is recommended that European Aviation Safety Agency require new balloon baskets certified for Public Transport flights, to contain dense foam seating blocks and additional padding to reduce the effect of impact with the basket structure.

Reply: It is agreed to have all new baskets equipped with improved padding (including the fuel cells). CS 31HB.59 addresses padding.

Seat foam blocks, however, are only used during the short phase of landing. They cannot be stowed away and they reduce for all other flight phases the occupant's ground floor standing area. They can also invite occupants to step on the blocks, significantly reducing the internal basket rim height.

Around 30% of the UK Air Operator's Certificate (AOC) balloons regularly use seat foam blocks. Some operators would not fly without them, some think they are unsafe. The feedbacks received from the use of seat foam blocks do not support an amendment to CS-31, as proposed by the recommendation.

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

Registration	Aircraft Type	Location	Date of event	Event Type
G-IIEX	EXTRA - EA400	Hastingleigh near Ashford Kent	26/05/2008	Accident

Synopsis of the event: The aircraft was en-route from a flying display at Southend Airport, to its home base at Shoreham. Due to inclement weather, with a low cloudbase and poor visibility, the pilot planned to fly around the Kent coast, but having encountered better weather than expected when airborne, he set off across the county.

Unfortunately the visibility deteriorated and the cloudbase lowered so he decided to abandon his route and re-trace his path. Instead of reversing his course, however, he turned through approximately 270°, and found he was flying up a valley. He elected to carry out a precautionary landing into a field, but lost control of the aircraft on final approach. The aircraft struck the ground at low speed while rolling and banked to the right. Although the airframe remained relatively intact and no ground fire occurred, both occupants were injured, one seriously.

Final Safety Recommendation UNKG-2009-014: It is recommended that the European Aviation Safety Agency revise their certification requirements applicable to light aircraft crash survivability, with the aim of reducing occupant injury in otherwise survivable accidents. Detailed consideration should be given, for example, to requiring energy absorption provisions for seats,



improved padding of aircraft components that might be impacted by an occupant and the fitment of air bag systems for both crew and passengers.

Reply: 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

Final Safety Recommendation UNKG-2009-015: It is recommended that the European Aviation Safety Agency consider requiring the modification of light aircraft types for which they have airworthiness responsibility, where the extant restraint systems are unlikely to prevent contact of the occupants with hard parts of the aircraft, with the aim of reducing the likelihood and severity of occupant injury in an otherwise survivable accident. Detailed consideration should be given, for example, to requiring energy absorption provisions for seats, improved padding of aircraft components that might be impacted by an occupant, and the fitment of air bag systems for both crew and passengers.

Reply: EASA 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
G-BYAO	BOEING - 757	Stansted	22/10/2006	Serious incident

Synopsis of the event: Shortly after reaching cruise altitude on a scheduled passenger flight from Newcastle to Larnaca, a blue haze was observed in the passenger cabin. A precautionary diversion was made to London Stansted, where an emergency evacuation was carried out successfully. One cabin crew member initially had difficulty in opening the rear cabin doors, due to insufficient force being used.

The blue haze could not be reproduced on initial investigation, which included engine ground runs. A planned post-maintenance proving flight was aborted during the takeoff roll when smoke entered the flight deck and cabin. Further investigation, which included ground runs at higher engine power settings, identified the source of the smoke to be the No 2 (right) engine. The cause was determined to be a fractured No 1 bearing floating seal ring, which had allowed engine oil to leak into the compressor airflow path and to be ingested into the bleed air system, which provides air to the cabin air conditioning system.

Final Safety Recommendation UNKG-2009-042: It is recommended that the European Aviation Safety Agency ensure that effective measures are in place for cabin crews to become, and remain familiar with, the different opening procedures and characteristics of aircraft exits in both normal and emergency modes of 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
G-YMMM	BOEING - 777	London Heathrow	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.

Final Safety Recommendation UNKG-2009-029: It is recommended that the Federal Aviation Administration and the European Aviation Safety Agency consider mandating design changes that are introduced as a result of recommendation 2009-028, developed to prevent ice from causing a restriction to the fuel flow at the fuel oil heat exchanger on Boeing 777 aircraft powered by Rolls-Royce Trent 800 engines. (2009-028: It is recommended that Boeing and Rolls-Royce jointly review the aircraft and engine fuel system design for the Boeing 777, powered by Rolls-Royce Trent 800 engines, to develop changes which prevent ice from causing a restriction to the fuel flow at the fuel oil heat exchanger.)

Reply: EASA Airworthiness Directive (AD) 2009-0142 has been issued instructing installation of the modified Fuel Oil Heat Exchanger (FOHE) for all Rolls-Royce Trent 800 engines.

Category: Agreement - **Status:** Closed

Final 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: 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

Final 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: 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

Final 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 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

Final Safety Recommendation UNKG-2008-049: It is recommended that the Federal Aviation Administration and the European Aviation Safety Agency review the current certification requirements to ensure that aircraft and engine fuel systems are tolerant to the potential build up and sudden release of ice in the fuel feed system.

Reply: Further research on the subject will be carried out.



When this is done, a rulemaking action will be launched to consider improvements of existing CS-E and CS-25 requirements (in particular CS 25.951 and CS E.470), to minimise the formation of ice in the aircraft fuel system and mitigate the effect of ice release to the engine fuel system. Such rulemaking task has been put in the inventory list.

In the meantime, at aircraft level a Special Condition is raised on the subject on current certification projects. The applicant will have to ensure that:

- either the free water (or ice) remains evenly dispersed in the fuel under all operating conditions,
- or that the amount of ice that could be released as a slug is minimised. The applicant must establish the threat(s) (quantity of ice, temperature) that can be released. The complete fuel system (including the engine) must be shown to be tolerant to such sudden release of ice, without significant adverse effect(s) on the powerplant system.

Category: Unknown - **Status:** Open

Registration	Aircraft Type	Location	Date of event	Event Type
G-THOF	BOEING - 737	Approach to Bournemouth Airport, Hampshire	23/09/2007	Serious incident

Synopsis of the event: The Boeing 737-300 was on approach to Bournemouth Airport following a routine passenger flight from Faro, Portugal. Early in the ILS approach the auto-throttle disengaged with the thrust levers in the idle thrust position. The disengagement was neither commanded nor recognised by the crew and the thrust levers remained at idle throughout the approach. Because the aircraft was fully configured for landing, the air speed decayed rapidly to a value below that appropriate for the approach. The commander took control and initiated a go-around. During the go-around the aircraft pitched up excessively; flight crew attempts to reduce the aircraft's pitch were largely ineffective. The aircraft reached a maximum pitch of 44° nose-up and the indicated airspeed reduced to 82 kt. The flight crew, however, were able to recover control of the aircraft and complete a subsequent approach and landing at Bournemouth without further incident.

Final Safety Recommendation UNKG-2009-044: It is recommended that the European Aviation Safety Agency review the requirements of Certification Standard 25 to ensure that the disengagement of autoflight controls including autothrottle is suitably alerted to flight crews.

Reply: The Agency has reviewed the latest version of CS-25 as recommended and concluded that sufficient provisions exist to suitably and clearly alert flight crews when the autothrottle or autothrust is disengaged.

The Notice of Proposed Amendment (NPA 18/2006) that is relevant to this Safety Recommendation introduced improvements to address the performance and safety required of modern flight guidance systems including autopilot, autothrust and flight director systems. These revisions took into account recommendations of the Federal Aviation Administration (FAA) Human Factors Team showing difficulties for flightcrews interacting with the increasing automation of flight decks. Among the various specific issues addressed by the NPA, there was the "Insufficient crew awareness of flight guidance system (FGS) behaviour and operation" and "History of lack of awareness of unusual/hazardous attitudes during FGS operations". These improvements were introduced in CS-25 Amdt 4, dated 27 December 2007.

CS 25.1329 defines the level of alert corresponding to a disengagement of the autothrust function. AMC 25.1329 provides for more details concerning the way this alert should be presented to flight crews.

These provisions are deemed sufficiently extensive, and the autothrust or autothrottle disengagement alerting efficiency has to be evaluated on every new aeroplane type depending on the particular FGS architecture.



Category: Agreement - **Status:** Closed

Registration	Aircraft Type	Location	Date of event	Event Type
G-DHJH	AIRBUS - A321	Manchester Airport	18/07/2008	Accident

Synopsis of the event: During a landing at Manchester Airport the aircraft was not flared sufficiently and a 'hard' landing, categorised as 'severe hard', occurred. The possibility of a landing parameter exceedance was not reported by the crew following discussion with ground engineers who had been on the flight. The presence of a landing parameter exceedance report was identified after a further two sectors had been flown, when an unrelated inspection of the landing gear found a crack in a wing rib gear support lug.

Final Safety Recommendation UNKG-2009-061: It is recommended that the EASA ensure adequate training is provided for ground engineers maintaining Airbus aircraft regarding the correct approach to troubleshooting suspected hard landings and the correct means of obtaining and interpreting the Airbus LOAD <15> report.

Reply: The technical investigation underlined that the ground engineers consulted by the flight crew were unaware that LOAD<15> report would not always be automatically printed and the subsequent lack of even a precautionary tech log entry meant that no process for a formal engineering investigation was initiated. Consequently the Data Management Unit (DMU) was not interrogated and the presence of the LOAD<15> report confirming the hard landing was not identified before.

Annex I to Commission Regulation EC 2042/2003 (Part M) as last amended by EC 1056/2008, chapter M.A.201 (h) provides in the case of commercial air transport the responsibilities of an operator for the continuing airworthiness of the aircraft it operates.

In this frame, ED Decision 2003/19/RM (AMC to Part M) as last amended by ED Decision 2008/013/R chapter M.A.201 (h) provides further explanations on how these responsibilities should be interpreted:

Subparagraph 4) states that. "An operator should therefore have adequate knowledge of the design status (type specification, customer options, airworthiness directives (AD), airworthiness limitations including Critical Design Configuration Control Limitations (CDCCL) modifications, major repairs, operational equipment) and required and performed maintenance. Status of aircraft design and maintenance should be adequately documented to support the performance of the quality system."

And Subparagraph 5) adds. "An operator should establish adequate co-ordination between flight operations and maintenance to ensure that both will receive all information on the condition of the aircraft necessary to enable both to perform their tasks."

Furthermore Part M chapter M.A.301 "Continuing airworthiness tasks" provides for the aircraft continuing airworthiness and the serviceability of both operational and emergency equipment; its related AMC chapter M.A.301 -1- states that:

3). "In the case of commercial air transport, an operator should publish guidance to maintenance and flight personnel and any other personnel performing pre-flight inspection tasks, as appropriate, defining responsibilities for these actions and, where tasks are contracted to other organisations, how their accomplishment is subject to the quality system of M.A.712. It should be demonstrated to the competent authority that pre-flight inspection personnel have received appropriate training for the relevant pre-flight inspection tasks. The training standard for personnel performing the pre-flight inspection should be described in the operator's continuing airworthiness management exposition."

At last, it is specified in Annex II to Commission Regulation EC 2042/2003 (Part 145) as last amended by EC 1056/2008 chapter 145.A 35 (e), that maintenance organizations shall establish a program for continuation training for certifying staff.



The oversight of the operators is within the scope of the National Aviation Authorities (NAAs), a letter has been sent to the NAAs of the European Union Member States, addressing the issue highlighted in the Safety Recommendation. It will be up to each NAA, in coordination with each of the concerned national air transport operators, to:

- Ensure that maintenance personnel have adequate knowledge on the correct method to troubleshoot a suspected hard landing, whatever the aeroplane type,
- Supervise the training of certifying staff involved in Airbus aeroplanes maintenance to ensure their adequate knowledge of the Airbus AIDS and DMU so that they are able to obtain and interpret the Airbus LOAD<15> report.
- Ensure that each of the concerned operators have established adequate co-ordination between flight operations and maintenance to ensure that both will receive all information on the condition of the aircraft necessary to enable both to perform their tasks.

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

Registration	Aircraft Type	Location	Date of event	Event Type
G-REDU	EUROCOPTER - EC225	offshore_132 nm east Aberdeen	18/02/2009	Accident

Synopsis of the event: The helicopter was approaching its destination, the ETAP oil production platform located 132 nm east of Aberdeen, at night, when it was seen by observers on the platform to strike the surface of the sea. The helicopter remained afloat, all the occupants escaped into two life rafts and all were subsequently rescued. Although the accident was observed from the ETAP platform and a Search and Rescue (SAR) operation was initiated immediately, it was some time before the passengers and crew were located.

Final Safety Recommendation UNKG-2009-066: It is recommended that European Aviation Safety Agency require manufacturers of Emergency Locator Transmitters (ELTs)/Personal Locator Beacons (PLBs) units to add details, where absent, of the correct use of the antenna to the instructions annotated on the body of such beacons.

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
G-REDL	AEROSPATIALE AS332	11 miles NE Petershead (Offshore)	01/04/2009	Accident

Synopsis of the event: The helicopter was operating a return scheduled passenger flight from Aberdeen to the Miller Oil Platform, situated in the North Sea approximately 145 nm north-east of Aberdeen. When it arrived from its previous flight to the Bruce Platform, approximately 190 nm north-east of Aberdeen, a 'rotors running' crew change was carried out. The helicopter was serviceable except for a deferred defect affecting a part of its ice detection system. The daily in-flight checks had already been completed satisfactorily by the off-going crew. The helicopter was refuelled, the passengers boarded, and it lifted off at 1040 hrs. The helicopter landed on the Miller platform, after an uneventful flight, at 1149 hrs, where it was refuelled again with the rotors-running. Fourteen passengers boarded the helicopter for the return flight to Aberdeen when the refuelling was complete. The weather conditions were benign with light south to south-easterly winds, good visibility with generally clear skies but with occasional broken cloud at 5,000 to 6,000 ft. Flying conditions were reported as smooth and the sea was calm.



The helicopter lifted from the Miller Platform at 1203 hrs and climbed to 2,000 ft, tracking inbound towards Aberdeen. Recorded information on the combined Cockpit Voice and Flight Data Recorder (CVFDR) shows that the crew were engaged in routine cockpit activities and there were no operational abnormalities. At 1254 hrs the co-pilot made a routine call on the company operating frequency stating that the helicopter was serviceable and the ETA was 1314 hrs. Twelve seconds later one of the pilots made a brief MAYDAY call on the ATC frequency. This was followed by a similar call that included some position information, from the other pilot. The radar controller at Aberdeen acknowledged the MAYDAY call and tried unsuccessfully to contact the crew of G-REDL. He then asked the crew of another helicopter, outbound on a similar routing, to examine the sea in the area of the last radar position. Recorded radar information showed the aircraft flying inbound towards Aberdeen at 2,000 ft, climbing momentarily to 2,200 ft and then turning right and descending rapidly. Surface visibility was good and an eye witness, working on a supply vessel approximately 2 nm from the accident site, heard the helicopter and saw it descend rapidly before it hit the surface of the sea. Immediately after impact he saw the four main rotor blades, still connected at their hub, strike the water. Around this time, he also heard two bangs close together. He immediately raised the alarm and the ship turned towards the accident site, which by now was marked by a rising column of grey then black smoke. The ship launched a fast rescue boat whilst making way towards the scene. The crew of the fast rescue boat and the helicopter arrived promptly on the scene to discover an area of disturbed water, roughly 150 m in diameter containing debris from the helicopter. Other search and rescue vessels, aircraft and helicopters arrived on scene within 40 minutes. All persons on board were fatally injured.

Final Safety Recommendation UNKG-2009-049: It is Recommended that the European Aviation Safety Agency (EASA) evaluate the efficacy of the Eurocopter programme of additional inspections and enhanced monitoring and, when satisfied, make the Eurocopter Alert Service Bulletin mandatory by issuing an Airworthiness directive with immediate effect.

Reply: EASA issued on 11/04/2009 the Emergency Airworthiness Directive AD 2009-0087-E for AS332 and EC225 helicopters related to Main Rotor Drive, Magnetic Plug of Main Gear Box Epicyclic Reduction Gear Module-Check.

Category: Agreement - **Status:** Closed

Final Safety Recommendation UNKG-2009-051: It is recommended that Eurocopter with the European Aviation Safety Agency (EASA), develop and implement an inspection of the internal components of the main rotor gearbox epicyclic module for all AS332L2 and EC225LP helicopters as a matter of urgency to ensure the continued airworthiness of the main rotor gearbox. This inspection in addition to that specified in EASA Emergency Airworthiness directive 209-0087-E, and should be made mandatory with immediate effect by an additional EASA Emergency Airworthiness Directive.

Reply: EASA have issued three Emergency Airworthiness Directives (AD) for the AS332 L2 and EC225 helicopters. The first two have been superseded by AD 2009-0099-E, which now requires inspection of the main gearbox epicyclic module for metal particles and embodiment of a modification to improve the likelihood of chip detection. EASA believe that these actions are appropriate to address the conditions which have so far been identified by the accident investigation. Should the investigation identify additional information regarding the cause of this accident, EASA will evaluate the need to take further mandatory action.

Category: Agreement - **Status:** Closed

Final Safety Recommendation UNKG-2009-074: It is recommended that the European Aviation Safety Agency, in conjunction with Eurocopter, review the instructions and procedures contained in the Standard Practices Procedures MTC 20.08.08.601 section of the EC225LP and



AS332L2 helicopters Aircraft Maintenance Manual, to ensure that correct identification of the type of magnetic particles found within the oil system of the power transmission system is maximised.

Reply: As part of the process following G-REDL accident, Eurocopter have revised contents of the Standard Practices Manual by issuing Safety Information Notice (SIN) 2075-S-63 rev. 0 (09 July 2009). This adds procedures to enhance detection of exceptional events that might lead to incipient fatigue crack or even fracture.

The SIN has been endorsed by EASA via Safety Information Bulletin (SIB) No. 2009-27, issued on 21 August 2009.

Category: Agreement - **Status:** Closed

Final Safety Recommendation UNKG-2009-075: It is recommended that the European Aviation Safety Agency, in conjunction with Eurocopter, urgently review the design, operational life and inspection processes of the planet gears used in the epicyclic module of the Main Rotor Gearbox installed in AS332L2 and EC225LP helicopters, with the intention of minimising the potential of any cracks progressing to failure during the service life of the gears.

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

Registration	Aircraft Type	Location	Date of event	Event Type
N14053	AIRBUS - A300	New York	12/11/2001	Accident

Synopsis of the event: On November 12, 2001, about 0916:15 eastern standard time, flight 587, an Airbus Industrie A300-605R, N14053, crashed into a residential area of Belle Harbor, New York, shortly after 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.

Final Safety Recommendation UNST-2004-063: The NTSB recommends that the DGAC-F review the options for modifying the Airbus A300-600 and the Airbus A310 to provide increased protection from potentially hazardous rudder pedal inputs at high airspeeds and, on the basis of this review, require modifications to the A300-600 and A310 to provide increased protection from potentially hazardous rudder pedal inputs at high airspeeds.

Reply: The NTSB Safety Recommendation A-04-63 had been initially addressed to DGAC -France. EASA has taken over responsibility for this Recommendation and has carried on the work initiated by DGAC-France, following an agreement based on DGAC-France proposal (DGAC letter SFACT/N.AT/2004/4669).

EASA confirms that the following actions have been taken, through the mechanism of DGAC-France Airworthiness Directives Nr:

- F-2000-137-305(B),
- F-2000-115-304R5,
- F-2001-467(B),
- F-2005-111R1

It is the view of the EASA that these measures have increased aircraft protection, as intended by the NTSB Safety Recommendation A-04-63.

In addition, Airbus has analysed 5 possible architectures to modify the current rudder control system. The effects of these on the rudder have been evaluated through 9 scenarios, for each aircraft type (A310 and A300-600). These scenarios, defined as 'speed / altitude' couple, have been associated with different manoeuvres combining pedal reversals and roll inputs in various configurations (pedals / control column coordination, anti-coordination, inputs frequency, etc.).

The conclusion of this study has identified as a potential design improvement a change referred to as, 'Reduced Pedal Travel Limiting Unit (PTLU)', which provides increased protection from potentially hazardous rudder pedal inputs.

However, the EASA considers that the main cause for the American Airlines (AAL) flight 587 accident has been established as unnecessary and excessive rudder pedal commands.

The crew response has been linked to an airline training regime which has been abandoned in light of the investigation findings as it trained crews to improperly use rudder pedal inputs in response to upset events.

In addition, Airbus is continuing to develop the 'Reduced PTLU' modification, and its implementation will be recommended. EASA supports this safety initiative, but in light of the above will not mandate the embodiment of this modification.



In conclusion, EASA considers that existing actions as defined by the above listed DGAC-France ADs are sufficient to mitigate the risk of a similar event, and believes that the NTSB Safety Recommendation A-04-63 is adequately addressed.

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

Registration	Aircraft Type	Location	Date of event	Event Type
N862DA	BOEING - 777	FL 390, en route between Shanghai and Atlanta	26/11/2008	Serious incident

Synopsis of the event: An instructor with a student and a passenger were performing a navigation flight from Växjö/Kronoberg airport, intending to land at Värnamo airport. When they were approaching Värnamo the engine revolutions suddenly increased and at the same time oil pressure fell, whereupon it went to zero. Shortly thereafter, the oil pressure increased above the normal value and then disappeared. After a brief period the engine stopped. The crew followed the steps given in the checklist for engine failure and got the engine running for about 10 seconds before it stopped again. When the engine stopped smoke penetrated the cabin and sparks and flames were seen under the engine cowling. These went out after a few seconds. The instructor took over control of the aircraft from the student and initiated a forced landing on a plot on an industrial estate. The landing was successful and the aircraft sustained only negligible damage. The crew and the passenger left the aircraft unharmed. There was no fire, nor any leakage of fuel; nor was there any effect on the environment.

Final Safety Recommendation UNST-2009-019: The National Transportation Safety Board recommends that the European Aviation Safety Agency require that Rolls-Royce redesign the RB211 Trent 800 series engine fuel/oil heat exchanger (FOHE) such that ice accumulation on the face of the FOHE will not restrict fuel flow to the extent that the ability to achieve commanded thrust is reduced.

Reply: An extensive investigation into the causes of the fuel flow restriction problem has been undertaken by Rolls-Royce and Boeing. This investigation has established the fuel/oil heat exchanger (FOHE) inlet blockage and clearing characteristics of the original FOHE design and has tested and compared a modified FOHE design. The investigation enabled a good understanding of the nature of the ice blockage and has therefore informed the redesign process to good effect. The testing phase of the investigation was therefore able to demonstrate a significant improvement in the ice clearing capability for the modified FOHE.

In addition to the above, an exercise to demonstrate the ability of the modified FOHE to cope with the worst case icing condition was also completed. An estimate of the actual ice quantities involved in the in-service events was made based on the level of restriction of flow recorded compared with the restrictions achieved during the experimental work. The ice quantity estimate was further corroborated by accumulation trials in the laboratory carried out with aircraft pipework. A test of the modified FOHE was then performed, under the most adverse conditions, to show a significant margin of capability beyond the actual in-service event icing level.

EASA decided to mandate installation of the modified FOHE for all RB211 Trent 800 series engines by means of AD 2009-0142 that was published on 13 July 2009. The required actions of AD 2009-0142 are believed to meet the intent of the Safety Recommendation UNST-2009-019.

Category: Agreement - **Status:** Closed

Final Safety Recommendation UNST-2009-020: The National Transportation Safety Board recommends that the European Aviation Safety Agency once the fuel/oil heat exchanger (FOHE) is redesigned and approved by certification authorities, require that operators of Boeing 777-200 airplanes powered by Rolls-Royce RB211 Trent 800 series engines install the redesigned FOHE at



the next scheduled maintenance opportunity or within 6 months after the revised FOHE design has been certificated, whichever comes first.

Reply: EASA Airworthiness Directive (AD) 2009-0142 has been issued instructing installation of the modified Fuel Oil Heat Exchanger (FOHE) for all engines.

The compliance time required through the AD has taken into account time for industrialisation of the new FOHE design and fleet retrofit. Therefore, the AD compliance time has been set as 'Within 6 000 flight hours from 10 July 2009 or before 01 January 2011, whichever occurs first'

EASA and the FAA are working with Boeing and Rolls Royce to establish the most effective schedule for incorporation of the modified FOHE. The incorporation program for engines will be closely managed by Rolls-Royce and routinely reviewed by EASA to ensure continued adherence. The intent of this program in addition to the target mentioned above is to achieve full risk mitigation well before the deadline set by the EASA AD.

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



5 Annex B: DEFINITIONS

The following definitions are extracted from Directive 94/56/EC of 21 November 1994.

Accident: occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, in which:

1. 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

2. 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 the engine, its cowlings or accessories; or for damage limited to propellers, wing tips, antennas, tyres, brakes, fairings, small dents or puncture holes in the aircraft skin;

1. 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 an accident nearly occurred;

The incidents listed below are typical examples of serious incidents. The list is not exhaustive and only serves as a guide to the definition of 'serious incident'.

A near collision requiring an avoidance manoeuvre or when an avoiding manoeuvre would have been appropriate to avoid a collision or an unsafe situation.

- Controlled flight into terrain (CFIT) only marginally avoided.
- An aborted take-off on a closed or engaged runway or a take-off from such runway with marginal separation from obstacle.
- A landing or attempted landing on a closed or engaged runway.
- Gross failure to achieve predicted performance during take-off or initial climb.
- All fires and smoke in the passenger compartment or in cargo compartments, or engine fires, even though such fires are extinguished with extinguishing agents.
- Any events which required the emergency use of oxygen by the flight crew.
- Aircraft structural failure or engine disintegration which is not classified as an accident.
- Multiple malfunctions of one or more aircraft systems that seriously affect the operation of the aircraft.
- Any case of flight crew incapacitation in flight.
- Any fuel state which would require the declaration of an emergency by the pilot.
- Take-off or landing 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 which is mandatory for flight guidance and navigation.

Investigation: process conducted for the purpose of accident prevention which includes the gathering and analysis of information, the drawing of conclusions including the determination of cause(s) and, when appropriate, the making of safety recommendation, (definition given in Directive 94/56/EC of 21 November 1994).

Safety recommendation: “any proposal by the investigating body of the State conducting the technical investigation, based on information derived from that investigation, made with the intention of preventing accidents and incidents”. (definition given in Directive 94/56/EC of 21 November 1994).



6 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.